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Determining the critical success factors for the Caribbean e-Learning student

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ABSTRACT

The success of any online learning programme is crucial especially in the current economic global climate where resources are scarce and demands are constantly being made on universities to increase their intake and revenue. Implementing an online programme is challenging and it is even more so for universities with a multi-cultural audience that is spread across many geographically dispersed countries such as the Caribbean.

This study seeks to determine the factors that play the most significant role in the success of an online learning programme for a university that is based in the Caribbean and whose primary audience is the Caribbean student. The factors determining the success of the online learning programme are derived primarily from the student's perspective and secondarily from the lecturer's perspective. The outcome (success) factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer have two primary inputs: Learner factors and Institutional factors. The Learner factors are student based and they include general self-efficacy, online self-efficacy, motivation, prior knowledge and course expectation. The Institutional factors include learner support, social presence, direct instruction, learning platform, instructor interaction, learner interaction, learning content and course design.

Using the results of a questionnaire adapted from Barbera and Linder-Vanberschot (2011), multiple regression analysis was utilised to determine the factors that had the greatest influence on Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer to students of the University of the West Indies (UWI). In adapting the questionnaire, additional factors of bandwidth and the use of English as the primary teaching language were included.

The 226 student responses and 32 lecturer responses were also utilised to draw a comparison between the Caribbean-based university and universities based in China, Mexico, the United States of America and Spain using Hofstede's (2001) cultural dimension framework.

It is hoped that by utilising this study, designers and implementers of online learning programmes will be better able to address the cultural differences that exist, especially those in the Caribbean, to deliver a successful online learning programme

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List of Abbreviations and Terms

- BOLD – Blended Online Learning Design
- CES – Challenge Examination Scheme
- CoI – Community of Inquiry
- COP – Communities of Practice
- CPD – Continuous Professional Development
- DAI – Digital Access Index
- DOI – Digital Opportunity Index
- HEI – Higher Education Institutions
- ICT – Information and Communication Technology
- ITU – International Telecommunication Union
- IP – Internet Protocol
- IPTV – Internet Protocol Television
- ISP – Internet Service Provider
- LMS – Learning Management Systems
- MOOC – Massive Open Online Courses
- M.Sc. in BCSD – Master of Science / Diploma Biodiversity Conservation and Sustainable Development
- MST – Motivation Systems Theory
- PKU – University of Peking
- SMS – Short Messaging System
- TT – Trinidad and Tobago
- UCWI – University College of the West Indies
- UNM – University of New Mexico
- UOC – Open University of Catalonia
- UPEAP – Popular Autonomous University of the State of Puebla
- USAID – United States Agency for International Development
- UWI – The University of the West Indies
- UWIDEC – University Distance Teaching Centre
- UWIDITE – University Distance Teaching Enterprise
- UWIOC – University of the West Indies Open Campus

- Toe the line – conform to rule or standard
- ‘Trinbagonian’ – a citizen of Trinidad and Tobago (Trinidadian or Tobagonian)

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Chapter 1 Introduction

1.1 Introduction – Areas of study

The focus of this research is to determine the critical success factors for the Caribbean e-Learning student. This research will utilise data from Caribbean-based e-Learning students who are students registered on e-Learning programmes designed and delivered by a university in the Caribbean. The primary source of data for analysis is the M.Sc. / Diploma in Biodiversity Conservation and Sustainable Development (BCSD) at the University of the West Indies (UWI). The programme is unique for this region since it is the first to offer partnership degrees between the campuses of UWI, the University of Guyana, the University of Belize and the Anton De Kom University of Suriname and, outside of the UWI Open Campus (UWIOC) programme. It is the first time for any of the universities that all the taught courses of a graduate degree programme are being delivered completely online.

The second source of data is from the B.Ed. Early Childhood Development and Family Studies (ECDFS) programme in the UWI Open Campus. This is a new programme offered by the UWI Open Campus and is one of the first to be delivered completely online by the UWIOC.

1.2 Key research questions

The title of the thesis is **"Determining the critical success factors for the Caribbean e-Learning student".**

Using the systemic multicultural model designed by Barbera and Linder-VanBerschot (2011) as a base, the research will focus on the following research question: "What factors predict the likelihood that students would report that they had a successful e-Learning programme?". In the systemic multicultural model Barbera and Linder-VanBerschot (2001) identified two sets of factors: Learner factors (self-efficacy, online-efficacy, motivation, prior knowledge and course expectation) and Institutional factors (learner support, social presence, direct instruction, learning platform, instructor interaction, learner interaction, learning content and course design) that contribute to the Outcome factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer and by extension the overall success of the e-Learning programme. I have introduced as part of the research two additional Institutional factors:

1) Bandwidth – the ability to access the Internet and

2) English as the primary teaching language

This primary research question above has several related sub-questions and they are outlined below:

1) What are the most significant Learner factors and Institutional factors in predicting Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student?
2) How does the Institutional factor of the ability to access the Internet affect outcome variables (Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer) for the Caribbean e-Learning student?
3) How does the Institutional factor of English as the primary teaching language affect the outcome variables (Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer) for the Caribbean e-Learning student?
4) What predictor variables are different and similar when comparing five universities from China, Mexico, Spain, USA and the Caribbean from the learners' perspective?

While there are studies examining the factors that lead to the delivery of successful e-Learning programmes globally, none have focused on programmes developed in the Caribbean that are primarily geared towards the Caribbean student. The main purpose of this study therefore, is to identify the factors affecting success in e-Learning from the Caribbean students' perspective.

1.3 Specific objectives

Based on the research questions above, I have outlined below four specific objectives that the study will focus on:

1) To determine the extent to which Learner Satisfaction, Knowledge Transfer and Knowledge Acquisition of the programme can be predicted from the learners' perspective;
2) To determine the relationship between accessing the Internet and each Outcome factor;
3) To determine the relationship between using English as the primary teaching language and each Outcome factor;
4) To identify and compare the critical success factors in e-Learning in a Caribbean-based university to those of universities based in Mexico, Spain, China and USA with specific reference to culture.

In the next section I discuss my positionality and why I chose to pursue this research.

1.4 Positionality

Writing has always been a challenge for me. I am an engineer by training, with a B.Ed. degree in Land Surveying and an M.Sc. degree in Project Management with a focus on Civil Engineering. All my professional career has largely involved Information Technology and none of these career paths involved much writing at all except for the occasional email.

So why pursue a doctoral degree in education? Well I was sitting in traffic one day and lamented that the time it takes me to get to work during the school term is triple or quadrupled the time it would take me if school was out on vacation, so why not get more children to stay home and learn? As fate would have it, there was an advertisement by the University of the West Indies around the same time looking for a part-time Educational Technologist to spearhead a new programme that was to be launched. I applied and got the position. The job required me to develop a solution for the backend of a new, completely online programme that the Department of Life Sciences was launching – the Masters of Science/Diploma in Biodiversity and Sustainable Development. Working on the M.Sc. in BCSD gave me a very hand on and intimate knowledge of what is required to design and deliver a degree programme online.

I was involved in all the technical aspects of the M.Sc. in BCSD programme from developing Microsoft PowerPoint presentations, to customizing Moodle and beta testing different platforms from audio and video delivery via the Web. It was around this time that the University of Sheffield advertised in the daily newspaper inviting interested applicants to join their Doctoral programme in Education.

I applied and was successful. In my degree cohort, I really stuck out as a sore thumb since I was only one of two men in the class and was the only person NOT involved in education on a full-time basis whether it be teaching or working at the Ministry of Education. I chose to do this programme firstly as a challenge to myself to step outside of my comfort zone and expose myself to another way of thinking. Secondly, I was blessed with a daughter after being told by many doctors that my wife and I would not be able to conceive and the programme has provided me with such invaluable insight into education that I probably would not have gained elsewhere unless I decided to do a degree in education.

My status as new parent and my experience in developing the M.Sc. in BCSD have shaped my approach and enriched this research. They've driven me to become more curious to find out what makes the Caribbean student "*tick*" and even more so in the online environment since in a couple of years' time it is where my daughter will most likely be learning.

1.5 Justification for the research question

In 1947 the University College of the West Indies (UCWI) was established with funding from the government of the United Kingdom and contributions from various governments in Caribbean territories such as Barbados, Trinidad and Tobago and Jamaica. At UCWI degrees were done via correspondence courses from the UK. Also in the late 1940s the Extra-Mural Department of the UCWI was established to serve the students in the region, from Belize in the north to Trinidad and Tobago in the south, who could not attend the single campus of UCWI in Jamaica. In 1960, the St. Augustine campus was formed out of the merger of UCWI and the Imperial College of Tropical Agriculture and in 1970 with the establishment of the Faculty of Law the Cave Hill campus was established. The single campus of the UCWI was now restructured in the three separate campuses of the new University of the West Indies and evolved, as did the region, with issues of regional fragmentation, integration, and political independence (UWI, 2016). By 1965, campuses were firmly established in Jamaica, Barbados and Trinidad and Tobago and became more autonomous and were issuing their own degrees (Thurab-Nkhosi, 2010) and the role of the Extra Mural Department expanded even further as the demands for its services increased.

In the 1970s, the UWI introduced the Challenge Examination Scheme (CES), to enable students in the non-campus countries to sit first year examinations for degrees in social sciences and law in their home countries. There were no classes and students were expected to study on their own to pass the examinations. While the CES continued the UWI embarked on another projected aimed at broadening its reach called the University of the West Indies Distance Teaching Experiment or "UWIDITE". UWIDITE was the first programme to utilise telecommunications as a means of reaching students in non-campus islands such as Grenada, Dominica and St. Lucia and offered formal university certificates to participants. Over time the CES also utilised the telecommunications infrastructure from UWIDITE to support the Challenge examinations. UWIDITE and the CES programme evolved into the University Distance Teaching Centre (UWIDEC) in 1996. In its 1990–2000 development plan, distance learning was the third highest spending priority (out of 19). By the early 2000s UWIDEC was

facilitating the delivery of the UWI degree and diploma level programmes to thirty-one of its centres in the anglophone Caribbean territories.

In 2008 UWIDEC, Tertiary Level Institutions Unit (TLIU), School of Continuing Studies (formerly the Extra-Mural Department of the UCWI) and the specialised units of the Caribbean Child Development Centre, the Hugh Lawson Shearer Trade Union Education Institute, the Human Resources Development Unit, the Social Welfare Training Centre and the Women and Development Unit were all amalgamated to form the UWI Open Campus (UWIOC). The goal behind the formation of the UWIOC was to unify the UWI's outreach, teaching and public service areas (UWI Open Campus, 2016). The UWIOC is currently responsible from designing, administering and delivering online courses for the UWI.

While Professor John Agard, the Head of the Department of Life Sciences, Faculty of Science and Technology at the UWI agrees with the move to put more programmes online he disagrees with the way it is currently handled and the fact that it resides solely in one place that focuses only on the English-speaking Caribbean. He argues:

> *"With declining resources, and the university being short of money every year, more and more the technology is one of the ways to reach people without spending huge sums of money, comparatively. (Moving to online) is going to happen on its own as a matter of economics. Economics is going to drive, there is a more efficient way of our doing it ... you'll have to embrace this or die."* (Agard, J. (2013). Personal communication, 16 August).

Agard (2013) believes that the selection of the more generic programmes, e.g. the M.Sc. in Development Studies that are being developed for online delivery, while necessary from an economic point of view, is not necessarily the way to go. He believes that UWI has something special to offer for niche markets, e.g. Tropical Biodiversity Conservation, Calypso, Steelpan that no one else can offer and these programmes, once developed correctly, can be a source of great pride and revenue for the UWI.

> *"There are some things in which we cannot compete but there are some things in which we have a natural advantage, biodiversity is one of those things ... Trinidad in particular is very neatly located at the boundary of the South American fauna and flora and the Antillian, the islands have high endemic rates of unique species ... this particular M.Sc. has a niche"* (Agard, J (2013). Personal communication, 16 August).

This is one of the major factors that he believes contributes to the success of the M.Sc. in Biodiversity Conservation and Sustainable Development. In the year 2013, the University of Belize alone received 50 applications to join the programme, the majority of whom had to be turned away (Beddoe, L (2013). Personal communication, 16 August; Agard, J (2013). Personal communication, 16 August).

There is clearly a market for the specialised programmes that UWI can offer and the question is not why but when will more courses move to the online environment? That is the question according to Agard (2013) and by extension, what will it take to deliver the best possible Caribbean experience (to the online student) who is primarily from the Caribbean and secondarily an international student. A balance needs to be found so that the product stays as true to its Caribbean roots as possible, yet remains attractive to its desired market. Students both regionally and globally have become more exposed to doing courses online but at present however, there is no way to determine if the programmes that are being developed are indeed successful and meet their expectations (Gay, 2016). As part of the team that has worked on developing the M.Sc. in BDSD, I have realised that there is a need for us to critically look at ourselves to see if we are meeting the needs of our students. At UWI, online programmes such as the M.Sc. in BCSD are still relatively new and it is one of the main reasons that I have decided to look at the Learner and Institutional factors that play the most significant part in the programme so that we can adjust them where necessary to meet the needs of the students in the shortest time possible. In the next section I will discuss what I hope this research will achieve and in the following section, my interest in the research problem.

1.6 What I hope this research will achieve

One of the primary audiences for this research will be those universities, especially those based in the Caribbean and South America, who are interested in establishing online-only postgraduate programmes and whose primary audience are Caribbean students and secondarily students outside of the Caribbean. The research draws a picture of the culture of Caribbean students that are involved in e-Learning. The research also identifies the factors that most significantly influence the success of e-Learning programmes being delivered in the region.

Secondly, I hope that the research can act as a guideline for what is required from universities in the region, from a resource perspective, to assist with the delivery of an effective online Masters of Sciences programme that is primarily geared towards a Caribbean audience and

secondarily to a global audience. It is aimed at assisting the Information Technology departments, online course designers, strategic planning departments and anyone involved in designing and delivering online courses at these universities, so that they can make informed decisions with respect to transitioning from delivering courses face-to-face to delivering courses in the online environment.

Thirdly, by exposing universities within the Caribbean region to the culture of the online students that they serve and the requirements as well as benefits of delivering courses online, it is hoped that this research will encourage other universities in lesser developed countries to further invest in the development and delivery of online courses. Based on the research, I will make recommendations with regard to how best to improve Caribbean online programmes so that the learning curve for implementation will be reduced.

1.7 My interest in in this research problem

Over the past couple of years, the UWI has progressively received less and less funding from local and regional governments yet the mandate to increase student intake remains the same. The primary goal for increasing the student intake is in keeping with the *raison d'être* of the University of providing tertiary education, combined with offsetting the decrease in the government's funding to the institution. One of the primary tools to reach more students with the limited human resources available to the University is to utilise technology, specifically through the medium of online learning (UWI Strategic Plan, 2012).

The transition to online learning poses several challenges other than simply implementing the technology of delivering the course online. It also involves moving the students who have traditionally been taught in a face-to-face classroom environment to the online environment and developing the culture of online or e-Learning.

There are numerous educational institutions in the Caribbean. In the field of medicine alone, for example, there are over 65 (Study in the Caribbean, 2016). The majority are affiliated with foreign universities that offer online programmes but none to date have been developed from the Caribbean except those delivered by the UWI. Until 2002, the online degree programmes for the UWI were delivered by the UWIOC and were focused entirely on the English-speaking Caribbean countries where the UWIOC has a physical presence. The UWIOC delivered their courses using a Blended Online Delivery method but only recently started to move courses to be delivered completely online. The Department of Life Sciences, by developing the M.Sc. in

Biodiversity Conservation and Sustainable Development, has decided to "*break from the norm*" and develop the programme on their own. The M.Sc. in BCSD is a specialised programme that focuses on Biodiversity and Sustainable Development as it relates to the Caribbean environment.

In the following section I will give a short introduction to the history of the UWIOC and the M.Sc. in BCSD. I will identify the differences between delivering a course face-to-face to using the online method and the Blended Online Learning Design model. I will also briefly look at culture and its impact on online learning. I will now give a brief history of the University of the West Indies and the UWI Open Campus.

1.8 University of the West Indies Open Campus (UWIOC)

In 1978 the Challenge Examination Programme was introduced. The aim of the programme was to allow learners in non-campus countries to sit the first-year social science and law examinations offered by the UWI in their home country. The students were provided with recommended readings and a syllabus and were expected to study on their own to pass the examination. In 1992 UWI sought to widen the access of the programme following the receipt of a three-year grant from USAID in the sum of US$600,000.00. The expanded Challenge Programme grew into the UWI Distance Teaching Experiment or UWIDITE. This project removed the requirement for the student and lecturer to be in the same physical environment by introducing a distance learning component and began the shift to the use of Information and Communication Technology (ICT) for teaching and learning at the UWI.

In the 1990–2000 development plan UWI identified distance learning as the third highest priority on its list of 19 priorities. Its plan was to expand the distance education which it saw as essential for the university's growth. In 1996, there was an amalgamation of several specialised units in UWI and the UWI Distance Education Centre (UWIDEC) was formed. UWIDEC started delivering UWI degrees and diploma programmes to the 31 countries throughout the English-speaking Caribbean including the British Virgin Islands, St. Kitts and Nevis, St. Lucia, Turks and Caicos to name a few. By 2007, UWIDEC included a full B.Sc. in Educational Administration, and a certificate in Gender and Development Studies among others.

UWIDEC was not without its challenges. The first was motivating academic staff. Staff on the physical campus were required to develop courses for distance learning while still

conducting their regular classes. This often led to untimely delivery of regular assignments and grading of examination scripts since staff seemed to place distance education lower on their list of priorities than their face-to-face ones (Thurab-Nkhosi, 2010). Another challenge was the preparation of the students for the online environment. Change is usually difficult and is often met with resistance and this was true for many students switching to the online environment; while some were capable and willing others were reluctant and unprepared. The course had to cater for students with little computer literacy skills and no online interaction experience.

As UWIDEC continued to expand so did the cost of running the programme. In 2003, a new vision for UWIDEC was proposed and in 2007 the Council of the UWI approved the development of the UWIOC.

The intention was for the Open Campus to be the sole creator of online courses for UWI. The courses are available for any student not registered with one of the physical campuses of the university. The UWIOC is designed to be autonomous and this provides campus with control over the development and delivery of all programmes to distance education students and establishes the UWIOC as the leader in the use of online and blended programmes for the entire UWI. Currently the UWIOC has over 52 centres in 16 anglophone countries and almost 400 staff to meet the needs of over 20,000 students scattered across the Caribbean region (UWIOC, 2016).

The UWI Open Campus (UWIOC) has just celebrated its 6th anniversary and many of the institutional and resource issues faced by the Faculty of Science and Technology staff running the M.Sc. programme are like those faced by the UWIOC not so long ago.

1.9 M.Sc. in Biodiversity Conservation and Sustainable Development (BCSD)

The economy, environment and indeed the social heritage of the islands of the Caribbean are linked to their biological diversity. The land and marine resources of these small islands are under daily pressure to meet social and economic demands and are often overexploited (UN, 2007). To attain some of its Millennium Development Goals, the United Nations (UN) has through its EDULINK programme sought to create a cadre of qualified professionals with specific skills in conservation and sustainable use and development, to inform policymakers in the Caribbean and South America on how best to preserve the biodiversity of the region.

One of the primary phases of this three-year project by the UN is the development of an M.Sc./Diploma in Biodiversity Conservation and Sustainable Development for the Caribbean (hereafter referred to as only the M.Sc. throughout the rest of this document). The M.Sc. is a joint venture between The University of the West Indies, the University of Guyana, the Anton de Kom University of Suriname and the University of Belize in the Southern Caribbean, together with the University of Oxford in the United Kingdom. With UWI as the Project Coordinator, the universities were charged with designing, developing and delivering a joint web-based M.Sc. in Biodiversity Conservation and Sustainable Development for the Caribbean (EDULINK, 2011) via distance learning.

The online M.Sc. in BCSD received its first cohort of full-time students in 2013 and the participants in the programme were academics and professionals in the field who would have had to complete nine months of taught courses and a three-month research project with stand-alone modules offered as continuous professional development (CPD) courses. The courses were assessed using, among other criteria: assignment submissions (with no final examination), attendance, participation, etc. Part-time students must attend the same number of courses as the M.Sc. students but have two to five years in which to complete the courses and research project.

The modules of the M.Sc. were designed to be student–centred and are delivered online so that students do not have to leave their country of origin or their current employers to participate. The modules were also designed to facilitate discussion between e-tutors and groups via the web-based delivery system.

The primary goals of the EDULINK project were to:

1. Create an effective network of Caribbean Higher Education Institutions (HEI) in research and science especially as it relates to biodiversity conservation and sustainable use. The programme also sought to improve the academic and teaching excellence in the participating HEI through knowledge sharing.
2. Enhance the knowledge of the professionals in the environmental sector. By using the network, professionals will be able to share contacts and best practices with other professionals in the region who face similar environmental challenges. Participating countries will now have resident expertise in sustainable development who can now contribute to the socio-economic development of the country (EDULINK, 2011)

Other online Masters programmes emanating from the UWI campus have been focused on the English-speaking Caribbean. The M.Sc. in BCSD is the first to be designed from the onset to

be delivered primarily to a regional audience that included non-English-speaking countries. One of the other partner universities involved in the M.Sc. in BCSD, the University of Belize (University of Belize, 2014) has no programme above the Bachelor of Sciences level while the other two partners, the University of Guyana (University of Guyana, 2014) and the Anton de Kom University of Suriname (University of Suriname, 2014) have 6 and 4 respectively. As this accredited M.Sc./Diploma programme has become successful, it has acted as a stepping stone for other such collaborations for the universities within the region. The programme has now expanded to include students from Fiji, from the Solomon Islands and Haiti among others.

Up until 2011, classes for the BCSD were delivered using the face-to-face model, but they have now been redesigned to be delivered via the online medium. This research examines the rationale behind moving from face-to-face classes to online classes with a focus on the culture of the online Caribbean student. It is to be noted that while the taught courses of the BCSD came online in 2011 the practicum component of the programme still requires some face-to-face interaction. Steps are, however, being made to see how the practicum component can be modified so that it can be done virtually making the delivery of the programme completely online.

The M.Sc. in BCSD is unique for the UWI since it is the first university within the Caribbean region to offer partnership degree between the universities of UWI, the University of Guyana, the University of Belize and the Anton De Kom University of Suriname using a Blended Online Learning Design (BOLD) approach. Outside of the UWI Open Campus, the M.Sc. in BSCD programme is the first of its kind to be designed for the English and non-English speaking Caribbean online student.

1.10 The differences between face-to-face and online learning

The physicality of the face-to-face environment does indeed lend itself to creating a better atmosphere of belonging than does the online environment. Other learners who are comfortable in the online environment may feel less daunted by the lack of physical contact, and may prefer not being contained in any one physical space (Jaggers, 2014). The face-to-face environment enables spontaneity and non-verbal expression with body language which some persons may find more comfortable, whereas others may prefer the structured organised nature of online classroom delivery (Wang and Reeves, 2007; Paechter and Maier, 2010).

The online environment gives the learner more time to reflect upon classes especially those that can be replayed later, and this may be especially useful for those who have difficulty with the language of the lecturer or have issues connecting to sessions in real time.

Students who are not used to writing or typing in class may find the online environment onerous since they may be more familiar or are better able to express their views in the verbal face-to-face environment (Schneider, et al., 2002). Students who are more comfortable in the face-to-face environment may even find themselves assuming a different persona if their communication is written real time for online discussion, e.g. in the online environment students may use more formal language than in the face-to-face (Warchauer, 2002).

Students who avoid or are not comfortable with face-to-face communication may find the online environment more suited to their needs (Voorn and Kommers, 2013) while those that prefer verbal communication may find the online environment isolating and frustrating (MacGregor, 2002; Yee, et al., 2007). I believe that lecturers who are aware of the different learning styles of their students can suitably adapt their mode of delivery to deliver their material in the most effective manner regardless of the environment.

In the face-to-face environment, the lecturer has a stronger sense of leadership, he is the '*sage on the stage*' especially in the Caribbean education system (Woodall, 2011) and can exercise greater control over the students' attention especially in smaller class sizes. It is easier for them to motivate students if attention breaks down. In the online environment, the role of the lecturer is somewhat different. The lecturer is more of a facilitator and motivator, leading in a more collaborative learning environment than an autocratic one. As we will see later student-centred, student-guided classes and discussions are more effective in the online environment than those led by the lecturer.

In the traditional classroom or face-to-face environment learning is synchronised; it normally occurs in a specific time and place and is directed at the lecturer's pace. In the online environment learning can be synchronous or asynchronous. One of the primary advantages of the online environment is the flexibility to learn at different times and in different spaces for the student. As discussed later in this thesis self-paced and student-directed is allowed and should be encouraged.

The face-to-face environment requires little or no technical knowledge on the part of the student and communication is both verbal and non-verbal. In the online environment students require some technical knowledge, especially as it relates to the Internet, and are required to

spend a lot more time writing (typing) with their peers and lecturers than they would in the face-to-face environment. In the online environment lectures and discussions can be archived and can be accessed at a further date whereas in the traditional classroom environment lectures or discussions are done in real time and are rarely ever recorded. The cost for setting up the physical infrastructure for the face-to-face classes may vary but the online environment normally requires a high initial investment in hardware and software and there are recurring costs for Internet access, hardware and software maintenance and software development just to name a few (Barrerra, et al., 2016).

Barrerra, et al. (2016) explain that in the face-to-face environment although discussions are limited to a predefined time frame, immediate adjustment to respond to a misunderstanding is possible and feedback is often delivered immediately through verbal/visual/ textual modalities. The face-to-face environment may, however, inhibit reticent students from participating in discussions which is important since the human interactions are inversely correlated to dropout rates. The online environment, because of the level of anonymity it enables, gives the reticent students more freedom to speak up more easily and actively. Discussion is not limited to class time but feedback is normally delayed and delivered through text or e-mail. While the online environment is more conducive to student-centred learning, students are required to master new skills in technology and dropout rates tend to be higher due to lack of human contact and technical challenges that may be faced by either the student or teaching institution or both (Levy, 2007; Lee, Choi and Kim, 2013).

As Vaughan (2010) emphasises, some lecturers find it difficult to adapt to the dynamitic technologically enhanced online landscape and fail to "make a transformational shift in their approach to teaching from one of disseminating information to one of creating learning environments where students co-construct knowledge through interactions." The lecturers' workloads change as do their role and the very nature of the form of delivery of their material to the student.

The move from face-to-face to online teaching is a redesign to a more constructivist approach with changes in roles and responsibilities; the use of technology; relationships; presence and even perceived lack of prestige (Yang and Cornelius, 2004; Redmond, 2011).

Anderson, et al. (2001) define teaching presence as "the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes." Teaching presence consists of 3 roles:

instructional design and organisation; facilitating discourse; and direct instruction. The teaching presence is the visible action or verbal communication of the lecturer to the student during the course and directly affects the overall experience of student satisfaction.

1.11 E-Learning, online learning, blended learning and BOLD

The concept of e-Learning, online learning and blended learning have often been used interchangeably and have all been associated with the concept of distance education. The University of Plymouth (2016) defines distance education as "*instruction delivered through electronic means such as television, interactive video conferencing, or the internet*." Blended learning often occurs when traditional forms of teaching and learning, e.g. classrooms are used in conjunction with e-Learning as a medium for course or programme delivery. Blended Online Learning Design (BOLD) is a combination of both.

BOLD refers to a combined synchronous and asynchronous-based learning environment that is fully online that facilitates knowledge sharing and has advanced creation tools (Power and Morven-Gould, 2011). In the BOLD environment, there is a combination of a Learning Management System (LMS) and a virtual learning environment that may or may not be completely integrated. The BOLD environment is therefore a blend of synchronous and asynchronous activities and faculty-led and system-led activities. The environment seeks to release the users from spatial restrictions but not necessarily from temporal ones.

Figure 1.1 details a four-quadrant matrix that shows where the BOLD environment lies in relation to the mode of teaching (synchronous versus asynchronous) and the delivery modes (on campus vs. online). Traditional higher education (face-to-face) is in the lower left-hand quadrant of the matrix where teaching is synchronous and classes are delivered on campus. To the right is video conferencing where there is an overlap between the online and physical classroom space. Above the traditional higher education quadrant, the top left-hand quadrant, are library-type resources that can be accessed asynchronously but are not available online, only on campus. Completely online courses reside in the top right-hand quadrant. These online courses are delivered asynchronously with no physical classroom. Blended learning lies in the middle of the matrix, overlapping all four quadrants combining campus and online-based activities. BOLD is located entirely on the right-hand side of the matrix.

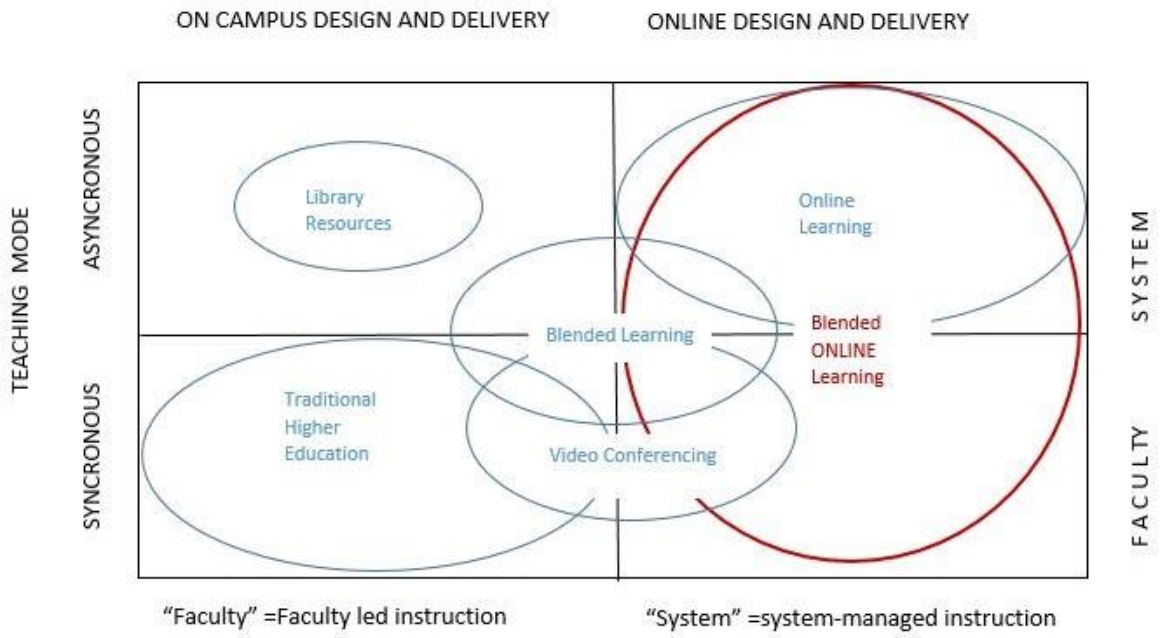

Figure 1.1 Blended Online Learning Design (BOLD) Model – Power and Vaughan (2010)

According to Power and Vaughan (2010) BOLD addresses the priorities of the traditional universities that have unsuccessfully tried to implement distance education, online learning or blended learning. BOLD does so in the following ways:

1) BOLD offers more accessibility and it is not restricted by physical space. Lecturers can work with students wherever they may be geographically. Typically, classes are recorded so students can access these recordings as often as they like. This is especially important for students whose first language is not that of the lecturer delivering the course.
2) The synchronous nature of BOLD likens it more to a traditional classroom form of material delivery, thereby making the transition from classroom to online easier. The environment is more engaging than strict distance education with more interaction between the student and lecturer.
3) BOLD makes it possible for courses for which there may be little or no local demand but for which there may be a substantial international demand for the programme to be made available.

The taught courses for the M.Sc. in BCSD lie in the upper right-hand quadrant while the practicum follows a more blended approach. Most of the online sessions for the M.Sc. in

BCSD are recorded and kept for approximately 1 month (depending on the storage space available on the server). These recorded sessions are there for the convenience of the students who may have missed the session or for reference purposes. The M.Sc. therefore follows a BOLD model for the convenience of the students. In the B.Ed. in Early Childhood Development and Family Studies student classes are in the upper right-hand quadrant as well.

1.12 What is culture?

Research has revealed that defining culture has always been difficult. Ke and Chavez (2013) conceptualised culture as

> *" ... a set of existing patterns, habits, or rules of thinking and doing of a social group and the dynamic adjustment of this social group to surroundings and needs, which then create a sum total of rules or patterns of acting/thinking to be inherited by future members of the group."* (Ke and Chavez, 2013, p.5)

Traditionally, culture has been defined by features such as nationality, ethnicity and language but the lines for defining culture are blurred. Social-constructionist views of culture identify seven dimensions of culture: cultural artefacts, repeated patterns of behaviour, collective religious conceptions and belief systems, ways of thinking, emotions, ways of communicating and relating to one's surroundings and self-concept (Lahdenpera, 2000).

Hall (1976) suggests that culture does not pass on from generation to generation and cannot exist in a vacuum but is part of the society in which it is shared. Based on the results of the study, Hall advocates that there are several dimensions of culture, for example, there are high and low context cultures. In high context cultures messages are not communicated by the spoken word of the person alone but is also transmitted by other non-spoken means, e.g. the person's body language. Conversely, in low-context cultures communication is the opposite; i.e. the "code" is explicit and information is transmitted without any undertones or hidden means (Hall, 1976). Hall (1976) identifies Western/Northern European cultures as low-context cultures while Asian cultures are described as high-context.

Hofstede (2001) explains that culture refers to the mind of the group and how it is programmed as a collective and this is what distinguishes one group, or members of the group, from another. Hofstede (2001) suggests that culture is the repetitive way people act, think and feel and this pattern of behaviour embeds itself in people's psyches. The influence of culture starts at the

family level and is experienced in all aspects of a person's life – in their school, at their work place, and in their communities throughout their entire lifetime. Hofstede (2001) goes on to clarify, however, that culture identifies with a group or class of people and is different from an individual's personality or human nature.

Adler and Gunderson (2007) define culture as a way of life of a group of people; it is handed down from generation to generation and it is the learned behaviour that is described as "stereotypical" of that group of people.

House, et al. (2004) described culture as "*a set of parameters of collectives that differentiate the collectives from each other in meaningful ways.* House, et al. (2004) goes on to define culture in terms of several shared processes which include: shared historical and religious events of their members; common uses of technology; common understanding of their members' identities and shared ways of thinking, feeling, and reacting.

Universities in the Caribbean, by embarking on this M.Sc. programme, have now started to truly encounter multiculturalism in the online environment. Of the students involved in the programme 70% are from Trinidad, 4% from Guyana, 11% from Belize, 5% from Suriname and 10% from other countries such as Haiti, Solomon Islands, Fiji, etc. While some of the lecturers involved in the programme have some online lecturing experience, most have not. Many have struggled to adapt the skills that they have honed over years of teaching in the traditional classroom environment to the new demands of online learning, and this is now coupled with the varying cultures of the new student population.

In reviewing the literature, Germain-Rutherford and Herr (2008) highlighted several instructional design models for culturally inclusive online teaching and learning and they included the following:

Reeves' 14 Dimensions of Interactive learning – Reeves (1992) developed 14 dimensions of interactive learning. Each dimension represented a scale to determine where the instructional practices of a culture lay. These dimensions and their related scales are outlined in Figure 1.2 below.

Figure 1.2 Reeves' 14 Dimensions

The Multidimensional Model of Collis, Vingerhoets and Moonem - 1997 – According to the model of Collis, Vingerhoets and Moonem (1997) 7 aspects of flexibility must be included in the design of an online course to ensure that the student's choice is at the heart of the design. The 7 aspects involve:

1) learner to learner and learner to instructor interaction
2) course content, progression, and learning activities

3) learning materials
4) mode of interaction
5) learning platform
6) language(s) used in the course, and
7) whether the course is delivered entirely online or not.

Added to these seven aspects of flexibility is additional flexibility in terms of time; parameters for admission; means of assessment and instructional approach (Collis, Moonen and Vingerhoets 1997).

Seufert's Cubic Model - 2000 – Seufert (2002) proposed a 3-dimensional model with 3 interacting categories that should be considered when designing a course that responds to cultural diversity:

1) "*flexibility*" and "*variety*" that must exist in the technological and communications tools, to be utilised in the course. They must also exist in the methodologies that instructors and students use in their learning situation and the resources that they utilise in the course's pedagogical framework.
2) Showing how simple and appropriate the technology chosen for the course is to use and how effective it is.
3) awareness of cultural differences especially in online discussions and interactions, course content, course presentations, etc.

Morse's High - versus - Low Context Cultures – High context learning cultures (e.g. Asian) were compared to low context cultures (Western). Here Morse (2003) examined the impact of cultural factors on student behaviours in an online course.

McLoughlin's Inclusive Pedagogical Model – 2007 – In McLoughlin's (2007) Inclusive Pedagogical Model the acquisition of knowledge is a process of acculturation. Diversity can be accommodated by firstly adopting cognitive models and learning theories that favour inclusiveness. Secondly, by recognising the plurality and cultural diversity of learning contexts and students, and thirdly by learning and evaluation activities that are consistent with culturally inclusive pedagogical goals and approaches.

Henderson's Multicultural Model - 2007 (displayed in Figure 1.3 on p.20) – Henderson (2007) criticised Reeves' model for being culturally biased towards the right (Western) and proposed a more "*flexible*" approach which suggested that the course be flexible enough to cater to

diverse cultural perspectives. In Henderson's (2007) Multicultural Model epistemological and educational philosophy differences among the academic, dominant and minority cultures should be considered in the course design. Henderson (2007) argues that different cultures' points of view must be integrated into each of the educational dimensions involved in the design of a teaching and learning environment.

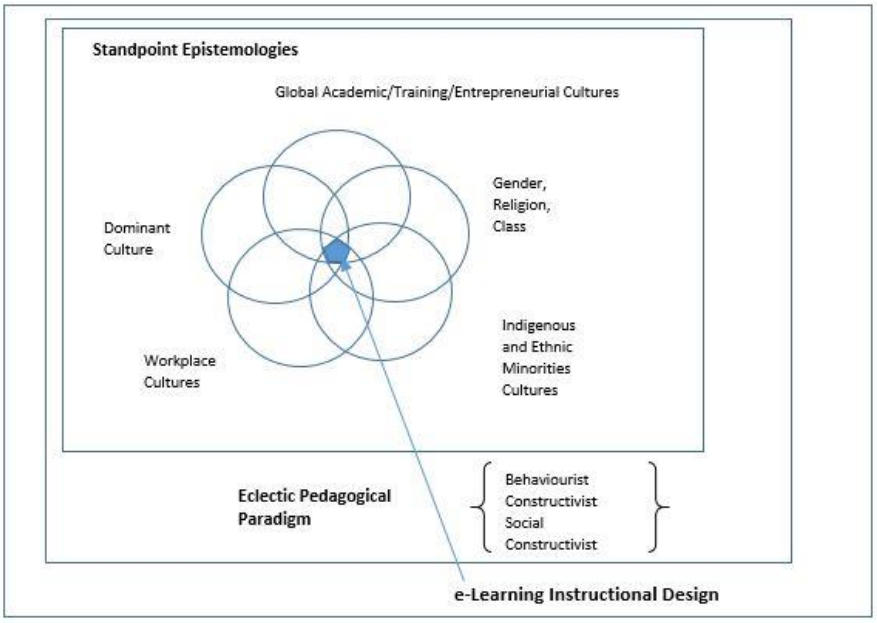

Figure 1.3 – Multi-Cultural Model Henderson - 2007

Perhaps the most outstanding framework to conceptualise cultural factors to aid in culturally inclusive design has been Hofstede's (2011) model of cultural differences. In the 1970s-80s Hofstede – "*more or less by accident*" – gained access to a survey by IBM that looked at values and related sentiments of more than 100,000 of IBM employees (Hofstede 2011). By analysing the results, Hofstede, et al. (2010) formulated a model that compared countries at the macro-level (national) utilising four dimensions. These dimensions are:

1) power distance
2) individualism versus collectivism
3) masculinity versus femininity
4) tolerance of uncertainty and ambiguity

He later added two additional dimensions:

5) long-term versus short term orientation
6) indulgent versus restraint

Hofstede's model forms the basis of many subsequent models including the Cultural Dimension of Learning Framework (CDLF) (Parrish and Linder-VanBerschot, 2010).

The CDLF reflects values which are "*acquired early in life and are the deepest and most enduring aspects of culture*" (Parrish and Linder-VanBerschot, 2010). The values or dimensions of the CDLF offer insight into the culturally-based learning differences among learners as they manifest themselves. The dimensions are:

- Equality and authority;
- Individualism and Collectivism;
- Nurture and Change;
- Stability Seeking and Uncertainty Acceptance;
- Logic Argument and being Reasonable;
- Causality and Complex Systems;
- Clock and Time Event;
- Linear Time and Cyclical Time.

Goodfellow and Lamy (2009) argue that culture can be defined

> "*…as the manifestations in individuals of all the values, beliefs and ways of thinking and doing things that come with the memberships of particular national, tribal, ethnic, civic or religious communities. Culture, in this view, is a consequence of geographical, historical, climatic, religious, political, linguistic and other behavioural and attitude shaping influences that are assumed to act on everyone who shares the same physical and social environment.*" (Goodfellow and Lamy, 2009, p.7)

Like much of the work that had gone before Goodfellow and Lamy's work raises the issue of ethnocentrism whereby most of the culturally based research is done from a Western anglophone standpoint. They take a more holistic view of Internet learning culture, viewing it as a "*Cultural learning style"* (i.e. based on the preferences of the individual), an "*emerging identity*", a different "*culture of learning*" (as opposed to the culture of the traditional classroom). Charles Ess and Sudweeks (2005) suggest that a combination of the different cultural traditions of the student and the online culture is what is being used to formulate a "*third culture*" and is part and parcel of the creation of the student's online identity.

It is this "*third culture*" that we are looking at in this research, specifically the online e-Learning culture of the students in the Caribbean and to a limited extent South America.

1.13 Why culture?

Online learning has a critical role to play in the future of education. The explosive growth in the number of online courses being offered by universities and the phenomenal popularity of Massive Open Online Courses (MOOC) such as coursera.com, futurelearn.com, iversity.org, etc. among others is evidence of that. There is evidence to support, however, that the online environment imposes a different type of cognitive load on the learner when compared to traditional methods and the load differs qualitatively from that of traditional learning environments (Ullmer, 1992; Clem, 2004). Learning becomes more of a social process with culture playing a pivotal role.

Vygotsky (1978) viewed cultural development as a social-cultural product with cultural knowledge and values acting as the groundwork for reasoning, inferencing and interpreting meanings. Building on Vygotsky's (1978) work, Madyarov and Taef (2012) go on to explain the different generations of Activity Theory and explain that Activity Theory focuses on the sociocultural nature of intellectual development and is based on three assumptions:

1) behaviour is goal-directed and practical;
2) cognitive development is a product of social and cultural history;
3) cognition is a mediated process.

The theory of situated learning also suggests that learning is a social process that is influenced by thought, perception, problem-solving and interaction; a by-product of complex social interaction. This raises the question: to what extent do these values and goals reflect an individual's cultural identity?

Values are prioritised differently by institutions and societies into value systems and these are the main determinant of one's culture (Rokeach, 1973). How do we determine therefore the value system of a society or even a country? It was not until the 1980s when Hofstede (2001) published his work on a survey he conducted on over 100,000 IBM employees that a statistically defendable method of placing countries in six different clusters of values was created. Many amendments have been made to Hofstede's (2001) work with new systems such as the CDLF expanding the value clusters even further.

What is the link therefore between goals, values, and cognition? What motivates learners to want to learn? The answer lies in Ford's Motivation Systems Theory (MST). According to

Ford motivation is defined as "*the organised patterning of an individual's personal goals, emotion and personal agency beliefs"* (Ford, 1993, p. 78).

Ford gave the most weight to an individual's goals when it comes to influencing motivation. Goals and the values that support them are heavily influenced by culture (Rokeach, 1973; Hofstede, Hofstede and Minvokv, 2010). As indicated above culture also greatly influences the cognitive. The schematic representation of the linkages between culture, values, cognition, and the factors that influence motivation is seen in Figure 1.4 below.

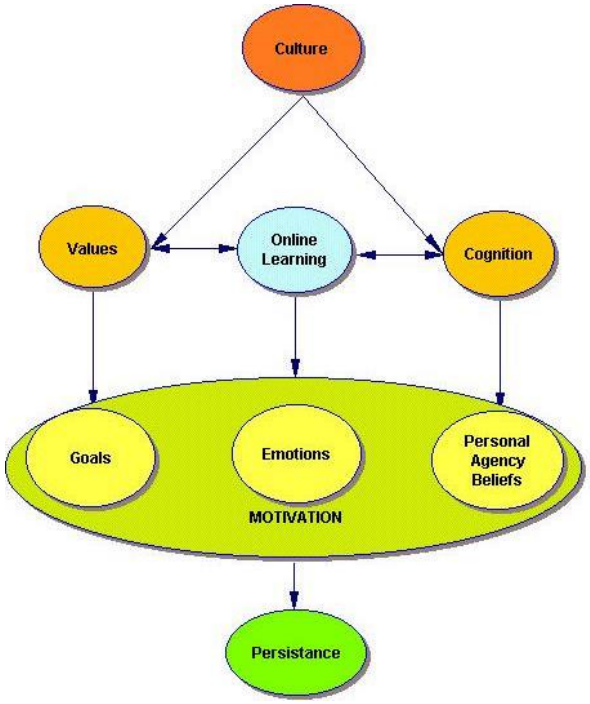

Figure 1.4 Linkages between culture and online Learning (Clem, 2004)

Culture therefore, by its direct link to goals and values that support them, is perhaps one of, if not the most influential factor in online learning and one of the most under-represented fields in online learning (Kinasevych, 2010).

Most of the research done around culture and its influences in online learning had been done comparing eastern and western cultures but none has been done on the cosmopolitan Caribbean region and it is for this reason that this research is so important. There are only two countries from the Caribbean on Hofstede el al.'s (2010) indexed list of countries – Trinidad and Tobago and Jamaica. The UWI campus at St. Augustine, Trinidad and Tobago is responsible for administering and project managing the M.Sc. in BCSD and is the only one of the two countries involved in the M.Sc. programme listed on Hofstede, et al.'s (2010) index. Trinidad is ranked

in all the six dimensions of culture while Jamaica is in only four (Hofstede, et al., 2010). It is hoped that the research will be a stepping stone to drawing a more complete picture of the Caribbean student so that online programmes can be designed to best meet their needs.

Sharpe and Benfield (2005) indicate that where "*e-learning adopts new or unusual pedagogies for the learner"*, learners report an intensely emotional experience and a major concern with time and time management. Sharpe and Benfield (2005) go on to say that "*it is here that some of the individual differences emerge, particularly in how successfully students are able to adapt to these new environments*".

The universities involved in the Caribbean programme come from different cultural and social backgrounds and the host countries are at different stages in their technological development. The research will examine the culture of the students and teachers of these universities and how they compare to other universities in China, USA, Spain and Mexico. The research will also evaluate the culture of the online Caribbean student, so that universities will have a better idea of the tools and resources that are required to deliver the best possible online programme for students within the region. In the next section I will discuss the data collection process for the research.

1.14 Data collection

The data were collected using an online survey. The initial survey was developed by Barbera and Linder-VanBerschot (2011) and permission was granted by Professor Barbera-Gregori to utilise it. I subsequently modified it to include additional questions that focused on the topics of:

1) Internet access/Bandwidth speeds
2) English as the primary teaching language
3) Moving from face-to-face delivery to the online environment
4) Technology utilised in the delivery of the online course(s)

The survey was conducted in two parts. The first focused on the demographic data of the student and the student factors of Course Expectation, Prior Knowledge, Motivation, General Self-Efficacy and Online Self-Efficacy. The questionnaires for the survey were distributed twice: the first time was within the first three weeks of the first two semesters of the 2013-2014 academic year for both the B.Ed. Early Childhood students and the M.Sc. Biodiversity

Conservation and Sustainable Development students and the second part within the last three weeks of the first and second semesters of 2013-2014.

Along with the demographic and Learner factor data I also requested that the student provide the day of his/her birth, the last digit of the year they were born and the last letter of his/her first name. The combination of these was used as a unique identifier to connect the responses from the first questionnaire to the second.

The questionnaires were prepared using Google Sheets and the analysis done in SPSS version 22.

A copy of the 4 questionnaires (2 to students and 2 to lecturers) can be found in Appendices B-E. The text that was contained in the body of the email that was sent inviting students and lecturers to participate in the survey can be found in Appendix A. In the next section I will discuss the boundaries of the research and in the following section, the key methods adopted in the research.

1.15 Boundaries to the research

This study focuses specifically on the M.Sc. in Biodiversity Conservation and Sustainable Development managed by the Faculty of Natural Sciences at The University of the West Indies. (the courses of the M.Sc./Diploma are outlined in Appendix F). The courses of the programme are those related to biology and sustainable development. They contain a mixture of both Science, Technology, Engineering and Mathematics (STEM) and non-STEM courses. The M.Sc. programme was designed initially to accommodate 20 students per year; however, at the end of the (third) year since its inception there were more than 80 students enrolled. An online questionnaire was sent to these 80 plus students and their lecturers that consisted of four parts (see Appendices B-E). Because of their geographical spread and the researcher's resource limitations the questionnaires were conducted in online form and the results collected and analysed.

The questionnaires were also sent to the first-year students at the B.Ed. Childhood Development and Family Studies at the UWIOC which provides both face-to-face and online courses but is focused on the anglophone Caribbean countries. Interviews were conducted with key members of the UWIOC including the director, programme managers and other senior personnel and I was also able (since stated permission was not required) to conduct a similar online survey on the UWIOC students and lecturers.

The questionnaires targeted the new students at UWIOC studying for the B.Ed. Childhood Development and Family Studies as well as the new students studying for the M.Sc. in Biodiversity Conservation and Sustainable Development. There are some responses, three, from the M.Sc. in BCSD that were doing the course part-time and had taken some of the programme courses already in the year before. It was not possible to tell if they responded due to their anonymity. In general, though, when I refer to students or learners in this research I refer to 'new students' or students taking a course for the first time as opposed to the entire population of all students.

1.16 Key methods adopted

The research took place at the UWI, St. Augustine Campus. The data were collected using an online survey developed by Barbera and Linder-VanBerschot (2011) which identified key features and variables involved in the performance of students in e-Learning. To gain access to the questions utilised in Barbera and Linder-VanBerschot's (2011) survey, Elena Barbera Gregori, one of the initial authors of the systemic multicultural model, was contacted via email and permission was granted (see Appendix G). An online version of the 4 questionnaires required was sent by Armando Cortes, a student of Professor Barbera-Gregori, and then modified by me to include additional required information.

The results from the questionnaires were analysed using several different statistical methods including reliability analysis, one-way ANOVA and multiple regression analysis. The results and findings were represented numerically, graphically and in a tabular format where necessary (Norman, 2010).

The study targeted undergraduate students at the UWIOC and their lecturers and postgraduate students on the M.Sc. in BCSD in the Faculty of Life Sciences and their lecturers. The study consisted of two pairs of questionnaires, one pair for students and another for the lecturers. The first half of the questionnaire for both the students and the lecturers were administered at the start of semester 1, 2014 and the second half at the end of the semester. The same questionnaire was again sent to the students in the second semester so that responses for different courses (semesters 1 and 2) were captured.

1.17 Structure of thesis

In the first chapter I introduced the areas of study and the research question which I then broke down into 4 sub-questions and outlined some specific objectives that the research sought to evaluate.

I went on to discuss the justification behind my research and what I hoped it would achieve. This was followed by a clarification of my own interest in the research problem and a brief historical context of the two programmes that were involved in the research. In the next section of the chapter I explored the differences between face-to-face learning (the more traditional classroom environment for teaching) followed by a definition of e-Learning, online learning and blended online learning. I then introduced the concept of culture and its linkages to online learning. Finally, in this first chapter, I acknowledged my positionality and identified some of the limitations of the research and the key methods introduced to tease out the research problem.

In Chapter 2, the theoretical framework underpinning the research is presented and discussed. After a brief introduction to the chapter, I introduce the dominant theories underpinning the research, namely the work of Barbera and Linder-VanBerschot (2011) who developed the Systematic Multicultural Model that formed an important part of the research design and the work of Hofstede (2001) who explored the Dimensions of Culture, which again was critical to my research. Next in chapter 2, I considered the impact of Internet access for Caribbean states and briefly examined English in the Caribbean. The chapter concludes with an examination of the epistemology and ontology underpinning the study.

Chapter 3 focuses on the methodology adopted in the study. I start the chapter by reiterating the research question, and developing a research design along with an explanation of the research context that provided a clarification and justification of the samples used. I next give a breakdown of the questionnaires (instruments) used in the study and outline the number and types of questions. The chapter concludes by stating how and when the data were collected and by explaining how the data would be analysed.

In chapter 4 the results of the analysis conducted are presented alongside a brief discussion of the results. The first section gives a demographic breakdown of the students and lecturers involved in the questionnaire. The next section shows the reliability of the student and lecturer data. This is followed by the results of the regression analysis between (a) the Learner factors

and Outcome factors and (b) between the Institutional factors and Outcome factors. Following on from the results of the analysis, in the next section I briefly discuss the results from the regression analysis as it relates to the first of the research sub-questions. Next I examine the second research sub-question that is related to Bandwidth by stating the results of the univariate analysis between bandwidth and the Outcome factors and giving a brief explanation of the results. The next section also provides the results of univariate analysis, but this time it is for the comparison between English as the primary teaching language and the Outcome factors. In the following section of the chapter I examined the fourth research sub-question comparing the results of the research to results from a similar questionnaire from other universities. The final sections of the chapter outlined the gap between what I had planned to accomplish in terms of data collection and analysis and what I did collect and analyse.

Chapter 5 provides an in-depth discussion about the findings of the research. The chapter first clarifies the relationship between the Learner and Institutional factors that influence the successful Outcome factors for Caribbean students. It progresses to examine issues associated with Bandwidth and the digital divide in the Caribbean. The section is followed by a discussion on the significance and importance of English as the primary teaching language and on the influence of fluency in the teaching context. Finally, the limitations and implication of the study are considered.

This final chapter concludes the research by revisiting the research questions and detailing some of the more significant findings. The chapter concludes with some recommendations arising from the research, suggestions for future research and the contribution that this research has made to the existing understanding of teaching and learning around e-Learning.

Chapter 2 Theoretical framework

2.1 Introduction

The issue of what defines a successful e-Learning programme is becoming more and more prevalent. As universities seek different ways to cut costs and increase revenue moving programmes to the online environment seems like a natural step. Access to the Internet has become increasingly commonplace and progressively lower costs to deliver online courses together now make the online environment a very competitive global space. Universities must now deliver a product that meets the many needs and expectations of the students whom they serve.

E-Learning in the Caribbean is a recent paradigm shift from what students and lecturers are accustomed to in terms of teaching and learning in the region. Most of the recent literature coming out of the region on this topic tends to focus on a specific country or on certain technology contexts and this is not related to the context of my study. To ensure that my literature covered more general concerns and the focus would encompass and accommodate the context of my study, I needed to select pertinent literature that is not specific to the region and is sometimes over 10 years old.

This chapter will explore the dominant theories that will assist in defining what a successful Caribbean based e-Learning programme is for the Caribbean student and the factors that most influence the successful outcome. The term e-Learning has several definitions which include:

> *"... the use of the internet to access learning materials, to interact with content, instructor, and other learners; and to obtain support during the learning process, in order to acquire knowledge, to construct personal meaning and to grow from the learning experience*" (Anderson and Elloumi, 2004).

For this study, the terms "*e-Learning*" and "*online learning*" are used interchangeably throughout as are "*student"* and "*learner", "instructor"* and *"lecturer"*.

2.2 The dominant theories underpinning this study

There are several theories which I will draw upon in this research:

- Social Constructivism theory (Vygotsky, 1978; Kim and Bonk, 2002; Moule 2007)

- Success factors in online learning which deem that external factors such as Learner and Institutional factors are relevant to online learning success (Gunawardena and Zittle, 1997; Barbera and Linder-VanBerschot, 2011)
- Perspectives on culture in online learning (Parrish and Linder-VanBerschot, 2010; Hofstede, 2011)
- The significance of Internet access on online learning in the Caribbean (Miller and Slater, 2000; Best, 2008; Ramlal and Watson, 2014)
- The significance of the English language as the primary teaching language to the Caribbean online student (Pincas, 2001; Bates 2011; Gunawardena, Wilson and Nolla, 2003; Olaniran, 2007).

Figure 2.1 below is a Venn that shows the interaction among the dominant underpinning theories utilised in this study as outlined above. The critical success factors for e-Learning students in the Caribbean and their cultural profile, based on Hofstede's dimensions of national culture, can be found at the intersection of the three circles of the Venn diagram

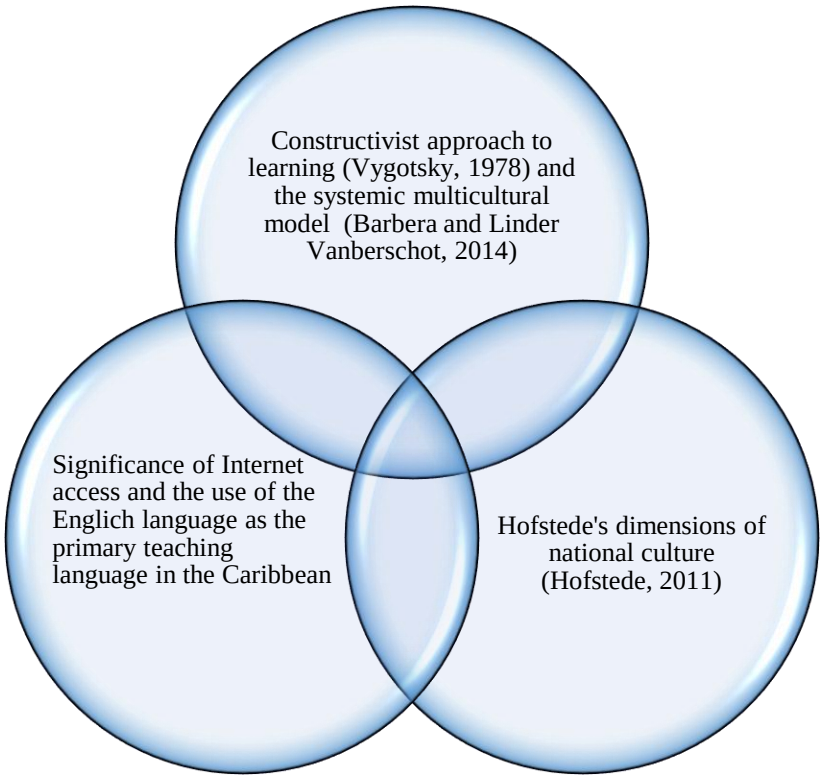

Figure 2.1 Interaction of underpinning theories of study

2.3 Constructivist approach to learning

Social constructivism theory has as its base a learner-centred environment that is collaborative, supportive, active and productive. Learning for the student is obtained by actively participating in an equal partnership with his or her instructor in creating new and meaningful information. The theory stands on two pillars. The first is cognitive constructivism; it focuses on how the student understands new information and is based on their developmental stage and learning style. The second pillar is social constructivism. Social constructivism places emphasis on how meanings and understandings are formed from social interactions (Vygotsky, 1978; Maypole and Davies, 2001; Kim and Bonk, 2002).

Constructivist concepts suggest that new knowledge is formed when the student is exposed to new experiences and the process of learning occurs when new knowledge is integrated with the old (Piaget, 1970). Each learner is unique and as such, constructs their own meaning with their own unique view of the knowledge gained. Social constructivism requires that learners be active, not passive, and as learners acquire more knowledge their viewpoint changes.

In social constructivism, the teacher is more of a facilitator and an equal who guides the classroom and participates intermittently. Students do not view the teacher as the '*guru in the classroom'* or '*sage on the stage'* and are not spoon-fed knowledge but instead are actively encouraged to create their own understanding.

Knowledge is developed both culturally and socially as each individual learns from the interactions shared with one another in the surroundings in which they live. Learning is part of the social process that takes place when people interact with one another in social activities whether it be face-to-face or in the online environment. The social interaction gives the learner the opportunity to explain understandings and receive feedback to clarify meanings and reach group consensus.

Moule's (2007) "e-Learning ladder", starts with an Instructivist approach to e-Learning at the bottom 'rung' which implies the use of bibliographic databases or accessing course notes as the primary form of data gathering. This is followed by using interactive media on the next rung, video conferencing on the next, e-mail and online discussion, virtual chat and finally a Community of Practice on the final top rung that is described as Constructivist Learning which is an isolated approach from the Instructivist one at the bottom of the ladder. According to Moule (2007) the skills needed to attain the highest rung on the ladder include: IT skills,

technical support, ICT access, the ability to work in groups, longevity of engagement and facilitation. These skills would increase as one climbs the e-Learning ladder. Moule (2007) goes on to state that *"These 'rungs' support a social constructivist approach to learning based on the theories of Vygotsky (1978), where learning is constructed through social interaction."*

Such concepts arise out of Vygotsky's (1978) "*zones of proximal development"* (p.90) based on the theory that the group will contribute more to the learner's understanding than he or she can constructing individually. In the online environment, the social conversation of the group, facilitated by the e-Learning medium, can provide the learner with a context and stimulus for thought construction and learning. Wenger's (1998) concept of communities of practice provides insights both into the mechanism for designing learning communities and cultivating such a community online.

2.4. Systemic model of success prediction

This research focuses on the factors that are deemed critical for an e-Learning student in the Caribbean. The systemic multicultural model (Barbera & Linder-VanBerschot, 2011) was chosen since it clearly identifies the factors that would be used as the measure of success of an e-learning programme and takes into consideration most of the e-Learning elements and activities that would contribute to these factors. Figure 2.1 on p.32 illustrates the conceptual model which comprises three dimensions: Learner factors, Institutional factors and Outcome factors.

There are several advantages for utilising the component of that study for my research:

1) it is conducted in several different countries including Spain, China, Mexico and the USA,
2) it is designed specifically to consider cultural nuances,
3) factors under consideration have been theoretically based as relevant in research on the subject,
4) it measures the influence of Institutional and Learner factors on learning, from the point of view of both teachers and students.

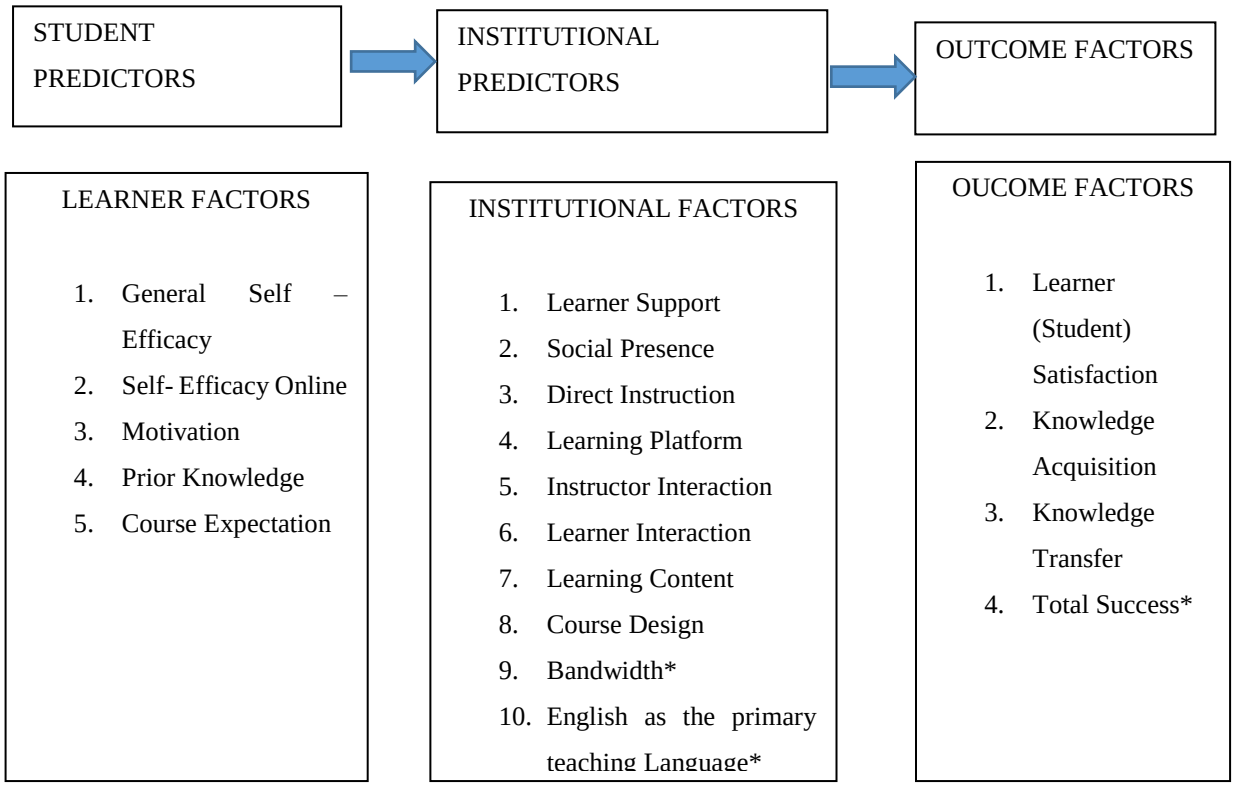

Figure 2.2 Systemic Multicultural Model.

In the following sections, 2.4.1 to 2.6.3, I will discuss each of the factors in the Systemic Multicultural Model in detail.

2.4.1 Learner Factors

Learner factors have their origins in social constructivism theory. Each learner or student is unique and comes with their own prior knowledge and personal experiences. This makes the learning experience unique for each student. Learner factors therefore are a culmination of what the students bring to the online learning experience. These learner factors act as input/predictors to the outcome variables of overall Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer. When Bandura (1977) opened the door to the concept of self-efficacy several other theorists (Wang and Newlin, 2002; Bates and Khasawneh, 2007; Holder, 2007) saw the connection between the learner's desire to work hard, persevere and go around or through obstacles set in their path and the online learning environment. In the online environment students may differ substantially with respect to their experience on the Internet, as well as their ability to access the Internet. Researchers have found that students with a high level of online-efficacy are often associated with high performance in the online learning environment (Wu, Tennyson and Hsia 2010). Infrequent users of the computer and the Internet

who may have low online self-efficacy are therefore at a disadvantage, especially if they do not have up-to-date hardware and software that may restrict them from taking advantage of the online environment. They may be unaware due to their lack of knowledge or experience and may find the online environment daunting and demotivating.

Castillo-Merino and Serradell-Lopez (2014) argue that motivation directly influences a learner's perception of e-Learning and their satisfaction with learning. The more confident a student is with the learning skills the more motivated they are to learn which ultimately leads to better student performance. Learners who have prior knowledge in the domain of the course material and are familiar with the Internet (Internet self-efficacy), often feel more comfortable navigating the Learning Management System (LMS) and this often acts as a positive predictor to the student's satisfaction (Kuo, et al., 2014).

2.4.2 General Self-efficacy

Bandura (1997) defines self-efficacy as an individual's belief in his or her capabilities to design and implement plans to meet desired outcomes. Self-efficacy is a subjective judgement of one's level of competence in executing certain behaviours or achieving certain outcomes and is not necessarily an accurate assessment of one's actual competence. Self-efficacy is an example of a person's confidence in their ability to exert control over their behaviour, motivation and social environment, as well as their ability to perform certain tasks to meet required outcomes.

Bandura (1977) has found that perceived self-efficacy accounts for a wide range of a person's behaviour including levels of psychological stress reactions, self-regulation, desire to achieve and choice of career pursuits, to name a few. Bandura (1997) also found that self-efficacious students have several characteristics in common which include: participating more readily, working harder, persisting longer and having fewer adverse emotional reactions to obstacles. Not surprisingly, in the online learning environment, self-efficacy especially as it relates to course content has been identified as having a positive correlation to student motivation and achievement (Wang and Newlin, 2002; Bates and Khasawneh, 2007; Holder, 2007).

With specific reference to e-Learning and the online learning environment, Lee (2015) in reviewing the literature has found that an individual's self-efficacy for course content has a significant impact on the following:

1) Actual performance
2) Emotions
3) Perceived satisfaction

4) Outcome expectations
5) Mastery perceptions
6) Amount of effort and perseverance expended on learning

Learner self-efficacy has been correlated to self-regulation and the use of more effective learning strategies (Zimmerman, Bandura and Martinez-Pons, 1992; Pintrich and De Groot, 1990). Students with higher self-efficacy set higher mastery goals and choose to engage in more challenging tasks (Bandura, 1993; Walker and Green, 2009). Lee and Witta (2001) have found that self-efficacy is a significant predictor for student satisfaction. Kwahk and Park (2016) have found that self-efficacy also positively influences knowledge sharing in social media contexts which is particularly useful in the online learning environment.

2.4.3 Online Self-Efficacy

Online (Internet) efficacy refers to the learner's self-assessment of their ability to organise and execute Internet-related activities that elicit the desired results (Eastin and LaRose, 2000). E-Learning students are required to interact with online technologies extensively, using tools such as online chats, e-mail, social media, etc. To be successful in e-Learning requires that the student can access and manipulate the course material, send and receive e-mail and online messages, participate in online discussions and browse the website effectively. Students may differ substantially in their experience to access and use the Internet and this directly impacts learner motivation (Liang and Wu, 2010), the learning process (Tsai, 2012) and learning outcomes (Tsai, et al., 2011). Students who have limited or no experience online often feel anxious or stressed when using the Learning Management System online for their courses due to lack of confidence. Precious time might be spent floundering around trying to learn the new media as opposed to the subject matter (Davie and Wells, 1991). Thompson and Lynch (2003) examined the psychological process underlying resistance to web-based instruction and found that students with weak Internet self-efficacy beliefs tended to resist Web-based instruction. Students with high online efficacy are more likely to have good academic performance, good information searching skills and show positive attitudes towards online learning environments (Liang and Tsai, 2008).

Bates and Khasawneh (2007) have found that learners develop online self-efficacy over time having had positive experiences with communicating with their instructors (especially with respect to receiving feedback), e-Learning technologies and different forms of learning online. These factors have an impact on a learner's self-efficacy and can be further enhanced if the learner has as much control over their learning environment as possible (Luskin and Hirsen,

2010). Online efficacy was found to be positively correlated to students' satisfaction (Kuo, et al., 2014).

2.4.4 Motivation

According to Kawachi (2002) motivation is the degree of willingness of a person to do what is necessary to achieve an objective. Self-determination theory redefines the two basic types of motivation: intrinsic and extrinsic into a distinction between autonomous motivation (self-determined) and controlled motivation. Autonomous motivation is associated with the experience of enacting with a sense of volition and choice, e.g. going out to party as opposed to controlled motivation which refers to feeling pressured into doing an activity to receive a reward, e.g. doing laborious work (Vansteenkiste, Lens and Deci, 2006).

Autonomous motivation is associated with more positive outcomes such as high interest and enjoyment of a course especially in the online learning environment and in education. Autonomous motivation is reached when the learner experiences a sense of volition and psychological freedom in learning (need for autonomy), feels effective in learning (need for competence) and experiences a sense of friendship and closeness to peers (need for relatedness) (Sierens, et al., 2009). The online learning environment should seek to satisfy these needs to enhance the learner's autonomous motivation. Sierens, et al. (2009) has recommended that the instructor creates an environment that provides autonomy supports, structure and involvement.

Kim (2004) has stated that in the online environment there are two questions that need to be answered with respect to motivation: 1) what is the value that the learner assigns to the task? and 2) what are the expectations of the learner for completing the task or course? Motivation directly influences a learner's perception of e-Learning and their satisfaction with learning. Motivation has often been cited as the most important driving force for leaners to pass examinations (Huet, et al., 2011; Chua and Don, 2013; Castillo-Merino and Serradell-Lopez, 2014). The more confident an online student is in their learning skills the more motivated they are which ultimately leads to better performance and grades (Castillo-Merino and Serradell-Lopez, 2014).

2.4.5 Prior Knowledge

Prior knowledge is the range of knowledge a student has accumulated on a specific domain prior to embarking on a course of study in that domain (O'Donnell, et al., 2014). Prior knowledge is the foundation on which new knowledge is formed.

In traditional e-Learning systems, all students are presented with the same learning content. The student's prior knowledge is often not taken into consideration. Some students therefore may not require access to all the information in a course especially at the lower levels, while others who may not have the foundation may require access to all. Access to an overload of unnecessary information may lead to cognitive overload in some students (O'Donnell, et al., 2014) so it is therefore important that instructors and course designers for e-Learning courses be made aware of an individual student's prior knowledge in the domain. This can be determined by outlining specific entry criteria for doing an online course and/or by testing the student prior to taking the course. Based on the learner's prior knowledge a personalised learning experience may prove beneficial as opposed to the "*one size fits all*" approach in the online learning environment (De Bra, et al., 2007). A personalised e-Learning experience would present students with only what they need based on their learning requirements and thereby prevent cognitive overload.

Prior knowledge includes conceptual knowledge, competencies and skills and directly influences future understanding and learning performances (Sah, 2009; Donovan and Bransford, 2005; Stiller and Jedlicka, 2010). A Learning Management System (LMS) is what is often used for the delivery of an online learning programme and is a server or cloud based software. The learner's prior knowledge with the online environment directly influences their ability to interact with webpages and adaptive hypermedia, and it is directly correlated to their satisfaction with the LMS (Kuo, et al., 2014).

2.4.6 Course Expectation

Tavani and Losh (2003) in their research have found that expectation is the strongest predictor of a student's performance in school. They imply that if students have a strong belief that they will accomplish a goal, this greatly increases their chances of attaining it. Students' achievement goals contribute to perceived learning achievements. According to expectance-value theory of motivation the gains in competencies are directly related to the value that the student places on the achievement of said goals. Students who attach a high value to specific achievements are likely to invest more effort in learning the required material to accomplish said goals. Instructors should therefore influence motivation and goals by adapting instructions accordingly (Paechter, Maier and Macher, 2010).

Brinkerhoff and Koroghlanian (2007) in a survey of 249 students from 13 institutions across the United States found that the four most predominant expectations that students have in the e-Learning environment are:

1) E-mail communication with the instructor
2) Online gradebook
3) Instructor feedback while working on assignments
4) Instructor feedback after completion of assignments

These results were similar to a study conducted by Mupinga, Nora and Yaw (2006) on online learners from Indiana State University. In their results, it was found that the top three expectations of the online learners were: challenging online courses, instructor communication and instructor feedback. The most desired feature of the e-Learning system was communication from the instructor or their designate. This is directly related to their performance and the perceived quality of the course. Students expect to receive support from the instructor and this relates directly to their satisfaction with the course and positive learning outcomes.

Students expect feedback when working on assignments as well as upon completion especially those who place the most emphasis on passing the course. Students expect the feedback to be timely (Choy, McNickle and Clayton, 2002) and accurate. Students also expect to not only be challenged but rewarded for their efforts. According to Mupinga, et al.'s (2006) study, learners expected that the demands of the online courses be similar or comparable to those of the traditional face-to-face courses with distinct guidelines for assessment.

2.5 Institutional factors

Institutional factors include what the university and instructors bring to the table in terms of the learning experience and support. Institutional factors, according to Barbera and Linder-VanBerschot (2011) are: learner support, social presence, instruction, learning platform, instructor interaction, learning content and course. The factors or variables in the institutional dimension are those that the institution offers to assist students in their academic performance.

2.5.1 Learner Support

The impact of online learning has had a profound impact on not just the way in which courses are delivered, but also how they are supported by teachers and students alike. There is no longer a stationary brick and mortar location where knowledge is disseminated and assistance can be found. Students in the online environment can now source and create their own content

rather than have it delivered to them. It is a radical shift in pedagogy and student support. Students now have access to libraries across the globe at their fingertips in the online environment. The role of the instructor is therefore very different in the online environment especially in providing learner support. The instructor is now a coach, mentor and facilitator whose job it is to guide the online student not only through the course material but also to other sources (persons or online) who can provide support to them. In my role as Educational Technologist for the M.Sc. in BCSD I had first-hand experience in which, with just a few, simple, patient and kind words, a learner's online experience can change from a frustrating negative one to a positive one, thus making the role of support facilitator and provider a critical one in the online environment.

In the e-Learning environment lecturers or instructors are theoretically accessible 24/7, and as such students can potentially get assistance at any time. Some students may try to take advantage of this facility and the line must be drawn at times so that instructors are not overwhelmed with requests for assistance to the point of 'burn out'. This is especially true for instructors who may be teaching two or more courses online and may have several students to deal with, all of whom may have different degrees of technical ability. There is a direct positive correlation between student satisfaction and the provision of appropriate support to learners to successfully complete their tasks. Teo (2010) suggests that programme flexibility, ICT training and instructor support are significant contributors to a learner's satisfaction.

2.5.2 Social Presence

Social presence is the degree of awareness of others in an interaction. It is the extent to which the person is perceived as "real" in an environment where communication is not face-to-face (Walther, 1992; Gunawardena and Zittle, 1997; Yen and Tu, 2011). It is the degree to which persons feel that they are interacting with real people and especially as it relates to the online environment. Social presence positively influences online interaction while lack of it does the reverse. Social presence not only affects the level of student interaction but a student's learning (Gunawardena and Zittle, 1997), achievement (Mayer, 2005), satisfaction with the online environment (Gunawardena and Zittle, 1997), and their sense of community (Anderson, et al., 2001; Rovai, 2002). A lack of social presence may lead to a high level of frustration, negative attitudes toward the instructor and the teaching institution and a low level of effective learning. Online learners, especially those participating in online courses that do not require group work, e.g. pursuing doctoral programmes, are susceptible to a lack of social presence. Short, Williams and Christie (1976) proposed that the communication medium directly influences people's

sense of intimacy and immediacy. The definition of online social presence has changed as the technology has evolved. Sung and Mayer (2012) have defined online social presence as the subjective feeling of being connected and together with others during computer mediated communication. In the past "*others*" referred to real people but now, "*others*" can be real people, e.g. fellow students, instructors, or pedagogical agents generated by a computer (Blascovich and Ballenson, 2011).

There are two components of online social presence: intimacy and immediacy. Both are difficult to convey and measure. Intimacy depends on non-verbal factors such as physical distance, eye contact, facial expression and personal topic of conversation (Gunawardena and Zittle, 1997; Tu and McIssac, 2002). Immediacy refers to the psychological distance between a sender and the recipient of the communication. Immediacy is conveyed through verbal and non-verbal means. Online instructors with high degree of online social presence are viewed in a more positive manner by the students than those that are not since the former are also viewed as being more effective.

Tu and McIssac (2002) and Yen and Tu (2011) have outlined four dimensions of social presence, social context, online communication, interactivity and privacy. Social context is constructed from the computer mediated communication (CMC), learner characteristics and their perception of the CMC environment, e.g. psychological attitude towards technology. Online communication refers to the attributes, application and perception of the language used online, e.g. keyboard skills, uses of emoticons, language skills, characteristics of real time discussions, etc. Interactivity refers to the cooperative activities and communication styles used by CMC users, e.g. timely response, length of messages, size of group and communication strategies. Privacy refers to the sharing of personal information online. The onus is on the individual to decide what and how much they want to share.

Aragon (2003) has identified three categories of strategies that can be used to help establish and maintain social presence within the online environment:

1) Course design strategies
2) Participant strategies
3) Instructor strategies

Course design strategies refer to the online programme and its ability to facilitate social presence and social interaction. Participants are responsible for their own social presence and for creating a positive social environment for themselves and the persons with whom they

interact. Instructors play a significant role in social presence in the online environment and the instructor strategy refers to the specific ways in which the instructors can create social presence.

In the Systemic Cultural Model, social presence refers to the student's relationship with the instructor and by extension the institution which provides the course that the student is participating in. In the online environment, the student-institution relationship is even more important for students attending online programmes versus those enrolled in face-to-face programmes (Shin, 2003).

In the Community of Inquiry (CoI) model (Garrison, Anderson and Archer, 2000) educational communities online are both reflective and interactive. Individuals ought to have the ability to balance personal or private reflection with interactions in the online or public space. This is made possible through the communication network of the online educational community and through collaborative written communication which lead to concurrent critical reflection and discourse and by extension higher-order learning outcomes. There are three core elements of the CoI model, they are: social presence, cognitive presence and teacher presence. These are considered critical when developing an online course. When using the CoI framework, Swan, et al. (2008) have found that social presence precedes cognitive presence and directly impacts upon learning outcomes.

2.5.3 Learning Platform

The quality of e-learning software is directly related to the quality of the interface (Chu and Chan, 1998; Hinostroza and Mellar, 2001). The quality of the interface is also directly correlated to the learning outcome of the student (Gauss and Urbas, 2003; Jonassen and Wang, 1993). A poorly designed user interface impairs the students by frustrating and demotivating them and retards their learning performance. One of the most important concepts in interface design is interactivity (Cantoni, Cellario and Porta, 2004; Gauss and Urbas, 2003). Interactivity plays a core role in e-Learning systems and is critical for knowledge acquisition for e-Learning students (Cantoni, et al., 2004; Chou, 2003). Consistency, which refers to the interaction between user and the interface, is one of the components of interactivity and plays a critical role where it is found that by increasing the consistency of the interface results in a drop in the error rate in the computer and web-based tasks (Ozok and Salvendy, 2004). Consistency between design elements can provide additional transference of learned skills from a current object to a new one. This is because consistency helps the user predict system responses and interact with content (Brehmer, 1978; Rhee, Moon and Choe, 2006).

The user interface of the e-Learning system affects the efficient use of e-Learning content because it acts as an information channel between the user and the artefacts. "*Usability*" is the degree of ease with which the system can be used and with which it promotes learning. Good usability of a complex learning object and systems is vital for the acceptance of the system. The three major usability identifiers are ease of learning, ease of use and task match. Ease of learning refers to the effort required to understand and operate a new or unfamiliar system. Ease of use refers to efforts that are required to operate the system before it is understood or mastered by the user. Thirdly, task match refers to the extent to which the information and functions that a system provides matches the needs of the user (Elfaki, et al., 2013).

In the context of this research the learning platform refers primarily to the user interface of the online teaching platform as well as the resources available on the back end to both the instructor and the student.

There are several online learning environments and technologies designed to assist in the delivery, management and administration of e-Learning courses. An online Learning Management System (LMS) not only allows instructors to manage their courses in a virtual environment but has the advantage of allowing participants to access the course anytime and anywhere. There are a number LMSs – some are cloud based, for example, Administrate; others use a more traditional closed source software, e.g. Blackboard (Blackboard is a commercially available product); and others use open source software, for example, Moodle, which has been very successfully adapted at many different universities. For example, the UWI utilises a version of Moodle they have customised, as do Louisiana State University (USA) and Monash University (AUS) (MOODLE, 2016). Each of these systems has its advantages and disadvantages, e.g. the open source LMS Moodle requires a cadre of professionals with programming skills to customise the user interface while with the Blackboard LMS the level of customisation is very limited requiring a different skill set from the IT personnel to run it. Administrators of LMS need to be made aware of the needs of the students and lecturers as well as the parameters within which they need to operate for the university. Only then can they start to provide the type of LMS that the students and lecturers require.

2.5.4 Instruction

Instruction refers to the instructional approach or style of teaching that the instructors use in the e-Learning course. The instructor's knowledge of technology and teaching style dictates

how they relate with the learners, and has a significant impact learning outcomes especially in the e-Learning environment (Ozkan and Koseler, 2009).

E-Learning instructors are required to carry out a diverse set of important roles as identified in Hung and Chou (2015). They are:

1) To design and organise e-Learning courses
2) To facilitate discussions
3) To act as support for social interaction among students
4) To act as support and facilitator for the technology utilised in the e-Learning course
5) To design and oftentimes execute assessment for the e-Learning course

In designing and organising the e-Learning course the instructor needs to go through and integrate all the components of the course such as its structure, course content, the different technologies to be used, etc. Also in the design process, the instructor should establish clear guidelines for interaction among participants and should indicate to students what is expected of them during the course, course procedures and how they will be assessed (Anderson, et al., 2001; Bailey and Card, 2009; Eom, Wen and Ashill, 2006). Although it may all be prepared, the instructor may not want to make all the material available immediately on the first day of class since students may collect the material, not attend any sessions and only submit the required assignments and course work thereby reducing the student interaction. The students, however, now become more responsible for their own learning and can now engage other students using the course materials. By clearly structuring the content and outlining the course expectations, this in turn improves the quality of the given course and enhances the students' positive learning experience.

Online discussions can take many forms including text-based exchanges, answers to questions and so on. The instructor is expected to act in the role of facilitator to encourage instructor-student interaction and student-student interaction. Online discussion helps students reflect on their own perspectives and strengthens their critical thinking skills (MacKnight, 2000; Jeong, 2003). Student's comments in the discussion also need to be assessed and feedback given in a timely fashion. Instructors, especially those facilitating online discussions should encourage participants to share opinions, solicit options and differing points of view, encourage new thinking and concepts while keeping the conversation focused on the task at hand (Arbaugh, 2010; Dringus, Snyder and Terrell, 2010).

A learner's feeling of isolation has sometimes been attributed to the lack of interaction between the instructor and the learner (Yuan and Kim, 2014). Krejins, et al. (2007) define "*sociability*" in the online environment as the extent to which people perceive a computer-supported collaborative learning environment (CSCL). The CSCL should facilitate trust and belonging; a strong sense of community and good working relationships among its members to be considered a sound social space. According to Shea, Li and Pickett (2006) a strong learning community for a student is greatly impacted by instructor's communications especially if they reinforce student contributions.

The effective use of technology is critical for the successful and effective implementation of any e-Learning programme. Universities are notoriously slow to adapt and change especially when it comes to technology. As technology progresses, the responsibility is often placed on the instructor to find new and creative ways to integrate it into the e-Learning course. Many lecturers show little confidence in the technical aspects of using information and communication tools far less Web 2.0 tools for teaching (Condie and Livingston, 2007). The unwillingness of instructors to embrace new technologies suggest that they lack the support or the knowledge to take advantage of the benefits that these new technologies bring, and the possible positive effect they will have on the classroom. It is preferable that instructors have at least a working knowledge of the communication tools at their disposal. They need to be able to support students with technical resources, address technical concerns and diagnose any problems that they or the students may encounter.

In the traditional face-to-face environment, examinations are normally conducted in a controlled environment in a particular time and space. In the online environment, without any face-to-face contact, assessments and evaluations can be a completely different process. In the online environment evaluations need to be more rigorously controlled to prevent issues of identity theft and academic dishonesty. Students may not all be in the same time zone so the instructor needs to ensure that one student does not take the test before another and pass the information on especially if the questions on the test remain unchanged from student to student. Alternative assessment methods need to be employed as an alternate means of assessment and evaluation and it is up to the instructor to facilitate and deliver.

Each of these roles is important since instructors do not always know how learners react to material. The instructor must adapt his or her teaching style for the online space and be empathetic and provide motivational support (Moore and Kearsley, 2011). In a review of the

literature, Aubteen Darabi, Sikorski and Harvey, (2006) have found that some of the most frequently performed tasks are also some of the most important, including maintaining course accuracy, assessing learners' attainment of course objectives, and demonstrating expertise in the course material. There is a strong positive correlation between instruction and student satisfaction (Eon, Wen and Ashill, 2006).

2.5.5 Instructor Interaction

In the e-Learning environment the instructor's role is no longer simply being the '*guru*' in front of the classroom or '*sage on stage*' imparting knowledge. They are now required to provide more guidance and assistance to learners. Instructors are expected to be the authors of online learning content and to be the integrators of the online content. The instructors' role now also includes creating a high quality online learning environment and stimulating the students' learning. Instructor interaction is similar to what is referred to as 'teaching presence' in Garrison, et al.'s (2000) Community of Inquiry (CoI) framework. In the CoI framework teaching presence is defined as the design, facilitation and direction of cognitive processes to realise meaningful and worthwhile learning outcomes (Garrison, et al., 2000). In the framework, Garrison et al. consider the design of the educational experience and its facilitation the two general roles of the teaching presence. Garrison and Cleveland-Innes (2005) have indicated that teaching presence is critical to the adoption of a deep approach to student learning and Shea, et al. (2006) have indicated that an active teaching presence has a positive sense of learning community on the student.

Teaching online is different from teaching face-to-face. There is an increased need for instructors to partake in scaffolding (Cho and Cho, 2014) and they are no longer umpire, judge or dictator but serve the students in the capacity of councillor, mentor and coach (Knowlton, 2000). Wilson, et al. (2004) have outlined a number of tasks that instructors need to perform:

1) Provide an infrastructure that is learning oriented
2) Devise strategies to facilitate effective participation, collaboration, and learning
3) Assess and guide students' learning; providing feedback and communication where necessary
4) Troubleshoot and resolve, where possible, any issues related to instruction, technology, or interpersonal interaction
5) Create a learning community characterised by an atmosphere of trust and reciprocal concern

The time taken for an instructor to reply in an online conversation is directly related to a learner's satisfaction and learning. This is especially true when they have issues with the course or course material. If there is a significant lapse in the amount of time it takes for instructors to reply in the online conversation, or if they do not, there is a negative impact on students' satisfaction and knowledge acquisition (Eom, et al., 2006).

Instructor behaviour is an important factor in the enhancement of student learning outcomes (Arbaugh, 2010). Teaching presence is a positive indicator of how students perceive learning and the educational delivery system. Cho and Cho (2014) have also found that the instructor as the facilitator of online collaboration creates a positive online environment and this in turn promotes academic engagement among students.

2.5.6 Learner Interaction

In the e-Learning environment the importance of learner to learner interaction for creating a sense of community cannot be understated. In their examination of the literature, Shackelford and Maxwell (2012) identified several learner to learner interactions which highlighted their contribution to the sense of community. They included:

1) Students used learner to learner interactions to share information about themselves and to learn about others thereby establishing commonalities with their classmates and online peers.
2) The learner to learner interaction is a good way for students to introduce themselves and to share interests and experiences with other learners, thereby creating a common ground and a sense of belonging.
3) The use of online games as an ice-breaker, oftentimes facilitated by the instructor, to involve students forcing them to engage with one another.
4) Online discussions are facilitated by the instructor and while the whole-class discussion builds a sense of classroom community, a balance of the whole-class and the smaller groups is preferred (Rovai, 2004).
5) Asynchronous social discussion was often utilised by students to express support for one another, to encourage other students, share similarities and the challenges they faced.
6) The social discussion was a form of networking and was important for establishing social bonds as well as facilitating learning.

7) The learner to learner interaction also facilitated peer teaching where students would collectively prepare a presentation then teach their peers in a structured or unstructured forum. This increased the student's ability to work together and resolve conflict.

Ke (2010) found that without supervision the asynchronous discussion became a grade-driven one as opposed to an exercise in group knowledge construction.

The learner to learner environment allows students to share resources and to be more responsible for their learning. The lecturer is no longer the source of knowledge and a shared knowledge base is created by pooling together information, sources, techniques and tools among users. The learner to learner environment also facilitates the sharing of knowledge in specialised fields, e.g. medicine. Face-to-face meetings although rare are special occasions and an opportunity to bond (Haythornthwaite, el al., 2006). While the online collaborative learning environment reaped many benefits, it is not without its challenges. Roberts and McInnerney (2007) identified seven common problems in the learner to learner environment:

1) Student apathy towards group work
2) Selection of groups
3) Lack of essential group work skills
4) Free-rider
5) Possible inequality of student abilities
6) Withdrawal of group members
7) Assessment of individuals in the group

Similarly, Muuro, et al. (2014) have identified several obstacles for effective collaboration and have grouped them into three categories: poor motivation, lack of individual accountability and negative interdependence.

Wanstreet's (2007) review of the literature indicated a number of different definitions of "interaction", for example, it can be seen as a form of teaching/learning; as a form of communication using different types of technology; or as a social/psychological connection. All of them play a role in successful online learning. In this factor of Barbera & Linder-VanBerschot's (2011) systemic multicultural model, there are three main types of interaction. They are: learner and instructor; among learners as a group or individually; and between learners as a group and the instructor. Communication can be unidirectional or bidirectional and normally occurs with written texts, images and sometimes videos using the e-Learning platform or through a combination of the e-Learning platform and some other form of social

media such as Facebook. Users in the M.Sc. BCSD have for example created a closed group on FaceBook where they can freely converse with each other and exchange ideas, real-time Short Messaging System (SMS) messages, etc.

Levine (2005) recommends that the instructor supports and encourages learner to learner interaction and this positively contributes to a positive online learning experience. LaPointe and Gunawardena (2004) state that a high level of interaction among learners often led to a high level of satisfaction and show more cognitive development.

2.5.7 Learning Content

In e-Learning, just as in the face-to-face or the classroom environment, there must be an alignment between the instructional content and assessment procedures of a course with that of the learning outcomes of the course. This alignment is critical to successful learning outcomes and student satisfaction. Course objectives therefore should align with the delivery of the content and the manner in which the learning is assessed (Blumberg, 2009). Objectives are critical to any course as they detail what students should be proficient in at the end of the course and assessments are used to determine if students have met the course objectives. It is therefore critical that the objectives and the measures used for assessment are clearly communicated to all involved, and should guide the planning and teaching approach of the course.

Anderson and Krathwohl (2001) in their taxonomies of learning detail different levels and types of learning. Levels of learning include analysis, evaluation, creation, understanding and application. Types of learning include conceptual, procedural, factual and metacognitive. Courses may become misaligned when the course objectives do not match teaching, learning and/or assessment methods (Kauffman, 2015). Reeves (2006) has pointed out that assessment methods are the most misaligned component of courses and suggests that instructors structure assignments or tasks that can be measured and easily assessed. Blumburg (2009) recommends that instructors create objectives based on taxonomies of learning, and match teaching, learning and assessment with the course objectives to facilitate course alignment.

Different instructional designs may require different types of course content, e.g. if the course is strictly online or is blended learning, the content will vary. Similarly, different disciplines will require different types of knowledge, e.g. an online course for statisticians or nuclear scientists will have different content to those of pre-med dental students or art students.

Content must be relevant and enticing to the learners. The content must be accessible at all times regardless of limitations of bandwidth. According to Levine (2005, p.22) the content should "*empower*" students to express their interests and interpretations.

2.5.8 Course Design

There are a number of different aspects that must be considered when designing a course for e-Learning, some of these aspects include, but are not limited to context, learning styles and interactive design. Afifi and Alamri (2014) have outlined six of the most effective principles when designing courses for e-Learning:

1) Identifying learning outcomes
2) Identifying learning methods and strategies
3) Designing learning activities
4) Feedback
5) Stimulating the learner
6) Determining the context of learning

Once properly communicated, identifying the learning and performance outcomes outlines the objectives for the course and expectations from all the parties involved. It allows the students to focus on the course content and the desired outcomes. There are several different learning strategies that can be used, based on the type of knowledge to be acquired, e.g. learning outcomes may relate to acquiring new knowledge, learning basic or advanced skills or developing expertise and each of these requires a slightly different approach to disseminating the knowledge.

Afifi and Alamri (2014), based on their research of the literature, have outlined three teaching methods, that should be used when designing an effective e-Learning course. They are learner-based learning; scenario-based learning and problem-based learning. Learner-based learning focuses on the learners and requires "*scaffolding*" at the beginning of their educational journey (Pearson and Brew, 2002). The scaffolding acts as structural support for knowledge, but fades out as the learner acquires new knowledge and becomes comfortable with it. The support can take many forms via an instructor, technical support, etc. and it assists the learner in attaining a higher level of achievement. Course design based on scenarios focuses on learning experiences and dynamic interactivity that often consists of role playing or simulations that help the student conceptualise the content and understand it. Problem-based learning generates

for the learner real-world problems that they might face and requires that they find the necessary knowledge and apply it to solve problems.

When learners are more involved actively in the learning process it is more likely that they will achieve their learning objectives. Courses need to be designed to facilitate this interaction, e.g. using games, simulations and activities that require interaction, active learning and to provide opportunities to learn new skills.

The effectiveness of the e-Learning process increases if the course design has made provision for providing feedback in a timely manner to the learners. Feedback can be for a range of tasks such as response to questions, shared comments in chat rooms, responses via e-mail, etc. The course needs to be designed to enable the timely delivery of these types of responses. There are several variables that can be manipulated to stimulate the learner in a positive manner; these include making the course attractive to the student, providing content linked to the needs of the student, making the site user-friendly with easy access to help, etc.

The needs of the students, academic staff and institution all have to be taken into account when designing the course. Institutional goals, cultural sensitivities, and available bandwidth include some of the factors that should be considered when designing the course.

Ke and Xie (2009) examined how undergraduate and graduate students perceived course design as it relates to learning success and satisfaction. The ten courses analysed can be grouped into three course design models:

1) integrated – content was unstructured and adaptable; no formal text; online discussions and team projects facilitated by instructors;
2) content-support – highly structured; pre-recorded sessions; assignments and quizzes and limited interaction with other students;
3) wrap around – moderately structured; weekly virtual lectures and assignments; half or more of students' time is spent in discussion board/chat room.

Ke and Xie (2009) concluded that the integrated course design promotes the highest level of satisfaction while closed discussion had the opposite effect.

2.6 Outcome Factors

These output factors refer to the outputs of the learning/teaching experience. This dimension consists of three factors:

1) Learner Satisfaction
2) Knowledge Acquisition
3) Knowledge Transfer/Ability to Transfer

Learner Satisfaction is perhaps one of the most widely used parameters for determining the effectiveness of an e-Learning programme. It is often cited as an indicator of success in e-Learning. Levy (2007) has outlined the importance of measuring satisfaction in e-Learning as it plays a major role in the success or failure of an e-Learning programme. Student satisfaction along with locus of control, also has a significant impact on dropout rates and student retention in e-Learning programmes (Levy, 2007).

Building on Learner Satisfaction is Knowledge Acquisition. This refers to the knowledge that students gain on the course. Mayer ((2002) links this factor to two educational goals: retention and transfer. Retention refers to the learners' ability to reproduce the information they have learned in a manner that is similar to that in which they have received it. Part of Mayer's (2002) transfer goal takes the retention a step further where the users use the knowledge and create something new.

Knowledge Transfer or the Ability to Transfer refers to the learner ability to take the knowledge a step further and apply it to a future situation. It refers to the learner's ability to, for example, pass on the knowledge gained to another party, having acquired a thorough knowledge of the topic themselves. It also means that the learner can take the knowledge and apply it to new problems and find new solutions.

2.6.1 Learner Satisfaction

One of the main indicators of a successful e-Learning programme is undeniably student satisfaction. There are several different studies that outline the factors that lead to learner satisfaction. Sun, et al. (2008) in their review of the literature identified several factors that contributed to Learner's satisfaction. These factors were categorised into six dimensions:

1) Learner
2) Instructor
3) Course
4) Technology
5) Design
6) Environmental

These six dimensions were broken down into 13 separate factors which are outlined below:

1) Learner attitude towards computers
2) Learner computer literacy
3) Learner Internet self-efficacy
4) Instructor response timelines
5) Instructor attitude towards e-Learning
6) E-Learning course flexibility
7) E-Learning course quality
8) Technology quality
9) Internet quality
10) Perceived usefulness
11) Perceived ease of use
12) Diversity in assessment
13) Learner perceived interaction with others.

Each of these factors plays a role in contributing to the satisfaction of learners in the online learning environment.

Stein (2004) states that students require structure in course delivery for the student to feel satisfied in the online environment. Clearly defined objectives, assignments and deadlines must all be present for the student to feel satisfied. Drennan, Kennedy and Pisarski (2005) found that there is a positive correlation between perception towards technology and autonomous learning and student satisfaction. Personality traits such as locus of control also have a direct effect on satisfaction with the course. Watson and Rutledge (2005) have indicated that the convenience of the online course impacts student satisfaction. Student satisfaction is also heavily influenced by interactions (Carr, 2000; Jung Choi, et al., 2002) whether it be student to student or instructor to student or a combination of both.

Levy's (2007) research into e-Learning identifies locus of control and student satisfaction as the two major factors in determining the successful completion of online courses in both graduate and undergraduate online learners.

2.6.2 Knowledge Acquisition

Mayer (2002) has indicated that the two most important educational goals are retention and transfer. Retention refers to the ability to remember material at some later time in the way that

it was presented. Transfer refers to the ability to use what was learned to answer new questions or solve problems based on what was taught.

The challenge for many educators especially for those in the online environment is bridging the gap between constructing a course that facilitates retention and one that enables transfer. Mayer (2002) goes on to give an example of 3 different learning scenarios:

1) No learning
2) Rote learning
3) Meaningful learning

No learning, as the name implies, refers to the user not being able to reproduce, in any manner, the information that has been taught. Rote learning refers to the ability of the learner to reproduce the information as it was taught. Meaningful learning refers to the ability to take the information that was taught and create new knowledge or information from it.

Mayer (2002) also goes on to say that there are 6 cognitive process categories and 19 specific cognitive processes used in retention and transfer. In this research knowledge acquisition is aligned with the first of the cognitive categories, remember, which has two associated cognitive processes: recognising and recalling. Remember involves retrieving information from long-term memory in the same form within which it was taught. Remembering knowledge is essential for meaningful learning and problem solving when the knowledge is used for complex tasks. Remembering knowledge is the building block on which meaningful knowledge is built.

Remembering is associated with two cognitive processes – recognising (or identifying) and recalling (or retrieving). Recognising refers to locating knowledge in long-term memory that is related to the presented material. Recalling involves retrieving the relevant knowledge from long-term memory.

Gunawardena and Zittle's (1997) Interaction Analysis Model (IAM) proposed five phases for the construction of knowledge:

1) Sharing/comparing information
2) Exploration of dissonance
3) Negotiation of meaning and construction of knowledge
4) Testing and modification
5) Application of newly constructed meaning

Gunawardena and Zittle (1997) suggest that where resources are effectively used and where learner to learner interaction is prevalent, knowledge will be constructed in the online environment using these phases.

2.6.3 Knowledge Transfer

As outlined in the section above, Mayer (2002) has outlined 6 cognitive categories and 19 cognitive processes that can be used for retention and transfer. These categories are intended to be mutually exclusive, so while 'remembering' and its two associated processes of 'recognising' and 'recalling' are aligned with retention, the other 5 categories are associated with meaningful learning and they are:

1) Understand
2) Apply
3) Analyse
4) Evaluate
5) Create

and their related processes are aligned to transfer.

The category of Understand includes the processes of interpreting, exemplifying, classifying, summarising, inferring, comparing and explaining. Interpreting occurs when a learner can convert information from one form of representation to another. Exemplifying occurs when a learner can find a specific example in a general concept or principle or, for example, be able to make sense out of chaos. Classifying, as the name implies, occurs when the student can group or classify like things together, or they can determine certain items that belong in specific categories. Summarising is the ability to produce a short statement that condenses a general theme. Inferring refers to drawing a logical conclusion from presented information. Comparing involves detecting similarities or differences between objects, ideas, events, etc. Explaining occurs when the learner constructs and uses a cause and effect model and applies it to a system or series.

The processes of the Apply category are used for problem solving. The processes are Executing, and Implementing. Executing occurs when a student uses a familiar procedure for a familiar task. Implementing occurs when the learner applies one or more procedures to an unfamiliar task.

The Analyse category consists of the cognitive processes of differentiating, organising and arbitrating. Differentiating occurs when the learner separates important or relevant information from the unimportant or irrelevant information in what is presented. Organising involves determining how certain items fit or function within a structure. Arbitrating occurs when the learner is able to interpret points of view, biases, values or intent underlying the presented material.

The Evaluate dimension has three cognitive processes aligned with it: Evaluate, Checking and Critiquing. Evaluate refers to making judgements based on criteria and standards. Checking occurs when learners can detect patterns or inconsistencies within a process or product. Critiquing or judging occurs when a learner detects inconsistencies between a product or operation and some external criteria.

Finally, Create involves putting elements together to form a coherent or functional whole. The three cognitive processes involved in Create are generating, planning and producing. Generating involves inventing alternative hypotheses based on criteria. Planning involves devising some method to accomplish some task. Producing involves inventing a new product or the creation of a new idea.

Meaningful learning is an important educational goal. It requires that the information be presented in such a manner that it draws the learner out of simple rote learning to a more meaningful form of learning.

Knowledge transfer is the process in which the learner utilises the knowledge learned in the course in a new context. Knowledge transfer can be further broken down into two different types, the first is the transfer of learning. Transfer of learning occurs when previous learning impacts upon new learning. The second type of knowledge transfer is problem solving transfer and this occurs when previous learning impacts upon the user's ability to solve new problems (Mayer, 2002). This factor of Knowledge Transfer or the Ability to transfer in the systemic multicultural model refers to the latter while the Knowledge Acquisition factor refers to the former.

2.7 Hofstede's dimensions of national culture

In the 1970s, Hofstede (2001), by accident, gained access to over 100,000 pencil and paper surveys conducted within IBM which covered questions referring to values among its employees from over 50 countries. In the late 1990s and early 21st century he expanded his

work to include pilots, civil service managers, '*up-market*' consumers among others, from a variety of different countries not just those from the initial 50. Using statistical analysis on his results, Hofstede developed a model that identified six different dimensions to assist in differentiating culture. The six dimensions developed by Hofstede (Hofstede, et al., 2010) are:

1) Power Distance
2) Uncertainty Avoidance
3) Individualism
4) Masculinity versus Femininity
5) Long Term versus Short Term Orientation
6) Indulgence versus Restraint

From the first 4 dimensions (his initial set of data) 46 countries (and regions) were listed while in the second set (updated in 1991, 2001 and 2005) the analysis included 23 additional countries (Hofstede et al., 2010; Arenas-Gaitan, Ramírez-Correa and Rondán-Cataluña, 2011).

2.7.1 Power Distance

Power Distance is defined as "the extent to which the less powerful members of organisations and institutions (like the family) accept and expect that power is distributed unequally" (Hofstede, 2011). The inequality illustrated in Table 2.1 is defined from below, not from above, and suggests that the inequality is sanctioned by the followers as well as by the leaders. While all societies are unequal, some are more unequal than others and the Power Distance dimension seeks to rank these societies against each other.

Small Power Distance	Large Power Distance
Use of power should be legitimate and is subject to criteria of good and evil	Power is a basic fact of society antedating good or evil: its legitimacy is irrelevant
Parents treat children as equals	Parents teach children obedience
Older people are neither respected nor feared	Older people are both respected and feared
Student-centred education	Teacher-centred education
Hierarchy means inequality of roles, established for convenience	Hierarchy means existential inequality
Subordinates expect to be consulted	Subordinates expect to be told what to do
Pluralist governments based on majority vote and changed peacefully	Autocratic governments based on co-optation and changed by revolution
Corruption rare; scandals end political careers	Corruption frequent; scandals are covered up
Income distribution in society rather even	Income distribution in society very uneven
Religions stressing equality of believers	Religions with a hierarchy of priests

Table 2.1 10 Differences between small and large power distance societies (Hofstede et al., 2010, pp.53-88)

Based on Hofstede's research (Hofstede et al., 2010; Hofstede, 2011) Power Distance index scores tend to be higher for East European, Latin, Asian and African countries and lower for Germanic and English-speaking Western countries.

2.7.2 Individualism versus Collectivism

Individualism/Collectivism refers to the degree to which persons in a society are integrated into groups. In individualistic societies persons are expected to be responsible for themselves and their immediate families only, the ties between individuals are loose. In collectivist societies individuals from early on in their lives are integrated into strong cohesive in-groups, e.g. extended families that offer them protection in exchange for their loyalty. Individualism is higher in developed and Western countries while collectivism is higher in lesser developed countries and Eastern countries with Japan being in the middle.

Individualism	Collectivism
Everyone is supposed to take care of him- or herself and his or her immediate family only	People are born into extended families or clans which protect them in exchange for loyalty
"I" – consciousness	"We" – consciousness
Right of privacy	Stress on belonging
Speaking one's mind is healthy	Harmony should always be maintained
Others classified as individuals	Others classified as in-group or out-group
Personal opinion expected: one person one vote	Opinions and votes predetermined by in-group
Transgression of norms leads to guilt feelings	Transgression of norms leads to shame feelings
Languages in which the word "I" is indispensable	Languages in which the word "I" is avoided
Purpose of education is learning how to learn	Purpose of education is learning how to do
Task prevails over relationship	Relationship prevails over task

Table 2.2 10 Differences between individualistic and collectivistic societies (Hofstede et al., 2010, pp.89-134)

2.7.3 Masculinity versus femininity

Masculinity and its opposite, femininity, are societal and refer to the distribution of values between the two genders. This dimension consists of two opposing "*poles*"; the very assertive and competitive side is referred to as masculine while the modest and caring pole the feminine side. In feminist countries, the women and men have the same modest, caring values. In more masculine countries, the women still have modest, caring values but are more assertive and competitive although not as assertive or competitive as the men, so that these countries show a gap between the men's values and women's values. In masculine cultures, there is often a taboo around this dimension (Hofstede, 2011).

Femininity	Masculinity
Minimum emotional and social role differentiation between the genders	Maximum emotional and social role differentiation between the genders
Men and women should be modest and caring	Men should be and women may be assertive and ambitious
Balance between family and work	Work prevails over family
Sympathy for the weak	Admiration for the strong
Both fathers and mothers deal with facts and feelings	Fathers deal with facts, mothers with feelings
Both boys and girls may cry but neither should fight	Girls cry, boys don't; boys should fight back, girls shouldn't fight
Mothers decide on number of children	Fathers decide on family size
Many women in elected political positions	Few women in elected political position
Religion focuses on fellow human beings	Religion focuses on God or gods
Matter-of-fact attitudes about sexuality; sex is a way of relating	Moralistic attitudes about sexuality; sex is a way of performing

Table 2.3 10 Differences between feminine and masculine societies (Hofstede et al,, 2010, pp.135-86)

In Hofstede et al. (2010) Masculinity is high in German speaking countries, as well as in some Latin American countries, e.g. Mexico and in Japan. It is moderately high in English speaking Western countries and low in Nordic countries and in the Netherlands. It is moderately low in some Latin American and Asian countries, e.g. Chile, Portugal, Korea and Thailand.

2.7.4 Uncertainty avoidance

Uncertainty avoidance is not the same as risk avoidance. It refers to a society's tolerance for ambiguity. It refers to a culture that makes its members feel either comfortable or uncomfortable in unstructured situations. Unstructured situations are novel, unknown, surprising and different from 'the norm'. Uncertainty avoiding cultures try to minimise the possibility of such situations by having strict behavioural codes, laws and rules. They tend to disapprove of deviant behaviours or options and often believe in an '*absolute Truth'*. According to Hofstede "*people in uncertainty avoiding countries are also more emotional and motivated by inner nervous energy*" (Hofstede 2011). Conversely people in uncertainty accepting countries are more unemotional and contemplative and are less likely to show outward emotion.

Weak Uncertainty Avoidance	Strong Uncertainty Avoidance
The uncertainty inherent in life is accepted and each day is taken as it comes	The uncertainty inherent in life is felt as a continuous threat that must be fought
Ease, lower stress, self-control, low anxiety	Higher stress, emotionality, anxiety, neuroticism
Higher scores on subjective health and wellbeing	Lower scores on subjective health and well-being
Tolerance of deviant persons and ideas: what is different is curious	Intolerance of deviant persons and ideas: what is different is dangerous
Comfortable with ambiguity and chaos	Need for clarity and structure

Teachers may say 'I don't know'	Teachers supposed to have all the answers
Changing jobs no problem	Staying in jobs even if disliked
Dislike of rules - written or unwritten	Emotional need for rules – even if not obeyed
In politics, citizens feel and are seen as competent towards authorities	In politics, citizens feel and are seen as incompetent towards authorities
In religion, philosophy and science: relativism and empiricism	In religion, philosophy and science: belief in ultimate truths and grand theories

Table 2.4 10 Differences between weak and strong uncertainty avoidance societies (Hofstede et al., 2010, pp.187-234)

Countries with a high Uncertainty Avoidance index include East and Central European countries, Latin American countries, Japan and in German speaking countries. Countries with lower Uncertainty Avoidance index scores include English speaking, Nordic and Chinese culture countries.

2.7.5 Long versus short term orientation

This work was initially done by Michael Harris Bond (Bond et al., 2004) and entitled Confucian Work Dynamism. In it, students from 23 countries were surveyed and countries with a tendency towards "*hard work*" (Confucianism) were placed close to one pole. Characteristics that were typical of this Long-Term Orientation or Confucian-like pole include perseverance, thrift, having a sense of shame and ordering relationships by status; values at the opposite pole were reciprocating social obligations, respect for tradition, protecting 'ones' face and personal steadiness and stability.

Short-Term Orientation	**Long-Term Orientation**
Most important events in life occurred in the past or take place now	Most important events in life will occur in the future
Personal steadiness and stability: a good person is always the same	A good person adapts to the circumstances
There are universal guidelines about what is good and evil	What is good and evil depends upon the circumstances
Traditions are sacrosanct	Traditions are adaptable to changed circumstances
Family life guided by imperatives	Family life guided by shared tasks
Supposed to be proud of one's country	Trying to learn from other countries
Service to others is an important goal	Thrift and perseverance are important goals
Social spending and consumption	Large savings quota, funds available for investment
Students attribute success and failure to luck	Students attribute success to effort and failure to lack of effort

Slow or no economic growth of poor countries	Fast economic growth of countries up till a level of prosperity

Table 2.5 10 Differences between short and long term oriented societies (Hofstede et al., 2010 pp. 235-76)

Long-term oriented countries include East Asian countries followed by Eastern and Central Europe. Medium-term orientation countries can be found in South and Northern Europe and South Asia. Typical short-term oriented countries include: USA, Australia, Latin American countries, African countries and Muslim countries.

2.7.6 Indulgence versus restraint

Indulgence versus Restraint is the newest dimension and compliments the Long versus Short-term orientation dimension so much so that it is weakly negatively correlated with it. It is based on work done by Minkov and presented in a book co-authored with Hofstede and his son Gert Jan Hofstede (Hofstede et al., 2010). According to the authors indulgence refers to a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun. Alternatively, Restraint refers to a society that controls gratification of needs and regulates it by means of strict social norms.

Indulgence	**Restrained**
Higher percentage of people declaring themselves very happy	Fewer very happy people
A perception of personal life control	A perception of helplessness: what happens to me is not my own doing
Freedom of speech seen as important	Freedom of speech is not a primary concern
Higher importance of leisure	Lower importance of leisure
More likely to remember positive emotions	Less likely to remember positive emotions
In countries with educated populations, higher birth-rates	In countries with educated populations, lower birth-rates
More people actively involved in sports	Fewer people actively involved in sports
In countries with enough food, higher percentages of obese people	In countries with enough food, fewer obese people
In wealthy countries, lenient sexual norms	In wealthy countries, stricter sexual norms
Maintaining order in the nation is not given a high priority	Higher number of police officers per 100,000 population

Table 2.6 Differences between indulgence and restrained societie (Hofstede et al., 2010; pp.277-300)

Indulgence is highest in South and North America, Western Europe and in parts of Sub-Sahara Africa. Restraint prevails in Eastern Europe, Asia, and Muslim countries.

2.8 Relevance of Barbera and Linder-VanBerschot and Hofstede's work to my study

The Caribbean is a multinational, multicultural group of countries that feels the impact of globalisation. The influence of the Internet has promoted relationships among the countries as never before, building a new integrated Caribbean society and fostering learning online. The Systemic Multicultural Model by Barbera and Linder-VanBerschot (2011) uses the inputs, processes and outputs in Caribbean based e-Learning programmes to identify the factors that influence the learning of the Caribbean online student. By combining the systemic multicultural model with Hofstede's (2001) cultural dimensions framework the differences between the students and their peers in universities in China, Mexico, USA and Spain, from a cultural perspective, are explained.

Hofstede's (2001) work has often been criticised as being too basic or generic and does not deal with the internal cultural differences within a country itself (Jabri, 2005; Shattuck, 2005; Graen, 2006). However, others have used Hofstede's (2001) work quite extensively to investigate cultural differences in education (Wang, 2007) as well as many other forms of cultural relations (Sánchez-Franco, Martínez-López and Martín-Velicia, 2009). In this study, Hofstede's (Hofstede et al., 2010) work is used to examine the cultural make-up of the Caribbean and the Trinidadian e-Learning students and compares them to the countries outlined above.

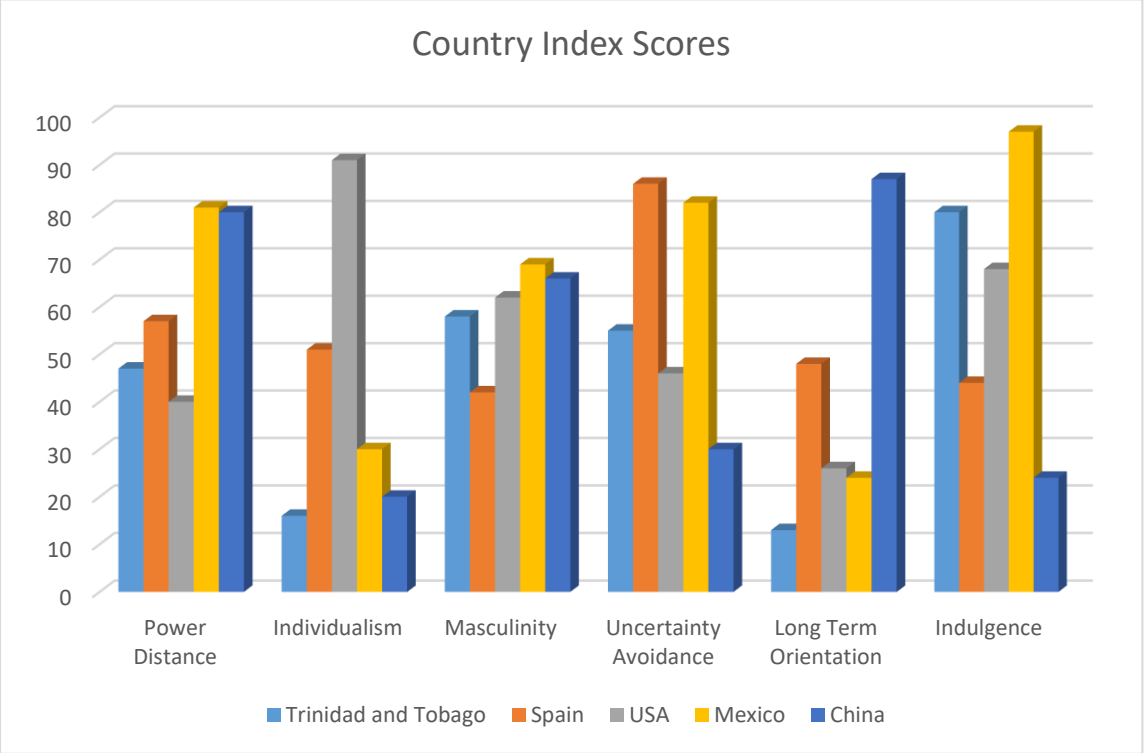

Figure 2.3 Country index scores for Hofstede's cultural dimensions – (Hofstede et al., 2010)

While there are no dimensions for the Caribbean region the study seeks to classify the Caribbean region based on the results of the survey. The survey also has enough responses from Trinbagonian students to draw reference to their results and compare them to those expected from Hofstede et al.'s (2010) classifications.

2.9 Internet access in the Caribbean

In examining the socio-economic impact of broadband in Latin American and the Caribbean Zaballos and Lopez-Rivas (2012) report that on average a 10% increase in broadband penetration is associated with 3.19% higher GDP, 2.61 % higher productivity and 67,016 new jobs.

There is inequity with respect to the cost of accessing the required bandwidth among countries in the Caribbean. Table 2.7 compares rates for Internet bandwidth to the home for countries in the Caribbean in 2013 when the two courses (M.Sc. in BCSD and B.Ed. Early Childhood and Family Planning) utilised in this study were started.

Country	Lowest d/l speed		Highest d/l speed	
	Speed/bps	Price/USD	Speed/bps	Price/USD
Anguilla	1 M	$ 51.16	8 M	$ 147.23
Antigua & Barbuda	1 M	$ 54.60	2 M	$ 71.53
Bahamas	1 M	$ 29.99	50 M	$ 90.50
Barbados	2 M	$ 30.00	100 M	$ 100.00
Belize	128 k	$ 12.38	8 M	$ 346.57
BVI	1 M	$ 64.00	8 M	$ 148.00
Cayman Is.	1 M	$ 65.85	8 M	$ 158.54
Dominica	256 k	$10.58	8 M	$ 72.72
Grenada	2 M	$ 29.21	12 M	$ 84.65
Guyana	256 k	$ 20.00	1 M	$39.92
Jamaica	1 M	$ 25.33	100 M	$ 129.55
St. Kitts & Nevis	2 MB	$ 36.44	8 M	$ 113.73
St. Lucia	1.1 M	$ 33.44	8.8 M	$ 211.21
St Vincent & Grenadines	1 M	$ 41.90	4.4 M	$ 126.98
Trinidad & Tobago	256 k	$ 12.48	100 M	$ 124.61
Turks & Caicos Is.	512 k	$ 43.00	8 M	$ 146.00

Table 2.7 Lowest and highest advertised download speeds and the corresponding best rates in select English speaking Caribbean countries as at May 2013 (ICT-Pulse, 2013)

Excluded from Table 2.7 above is Suriname with rates at the low end of 2MB download for US $34.24 and 6 MB at the higher end for US $91.96 per month, (TELESUR, 2014). Table 2.8 below shows a comparison among the primary countries involved in the M.Sc. Programme.

Country	**Speed/Cost per Month (1 MB)**	**Speed/Cost per Month (2 MB)**	**Speed/Cost per month (4-5 MB)**
Suriname	N/A	2 MB / $34.24	4 MB / $61.06
Belize	1 MB / $70.00	2 MB/ $120.00	4 MB / $195.00
Guyana	1 MB / $39.92	N/A	N/A
Trinidad	1 MB / $23.10 (TSTT)	2 MB / $35.50 (TSTT)	5 MB / $30.85 (FLOW)

Table 2.8 Download Rate Comparison - Costs are in US Dollars

In 2013 in Belize (Telemedia Limited (BTL)) as in Suriname (Telesur) there was one ISP that offered speeds faster than dial-up services.

In Trinidad and Tobago users could have gotten speeds of 5 MB for US $30.85 per month (the lowest package from Columbus Communication) and 1 MB for US $12.48 per month from TSTT. Comparing rates side by side in Table 2.8, using the best rates possible for a particular download speed, the disparity becomes even clearer. These differences in rates for Internet access make it prohibitive for some users to access some of the benefits in the courses that are being delivered via streaming online.

Table 2.9 compares the percentage of monthly income (average) consumed by an Internet plan with an advertised download speed of 2MB between 2013 and 2015 for some Caribbean countries. Table 2.10 shows the current rates. While in some countries such as Barbados and Belize the upper bandwidth limit has changed, for the most part the rates have remained relatively the same differing by only a few dollars or, in some cases, cents over the course of two years.

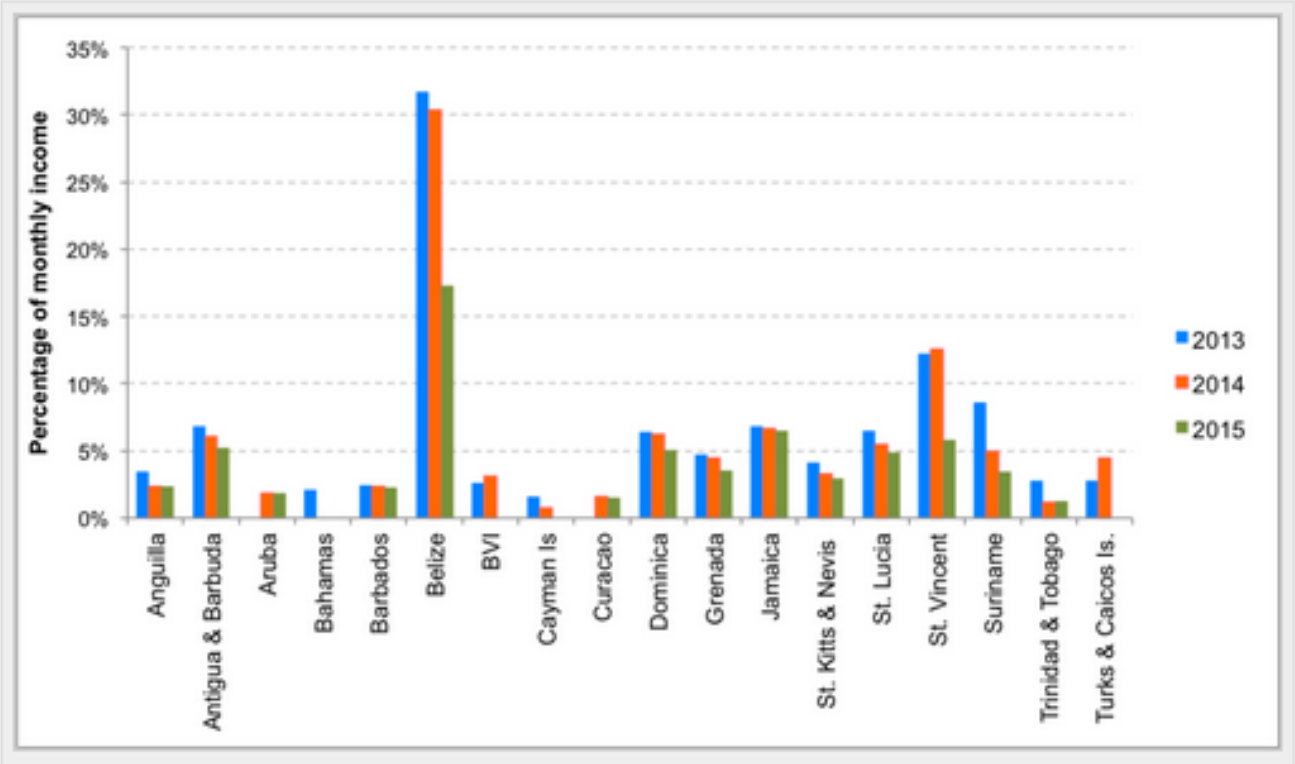

Table 2.9. Comparison of percentage of monthly income consumed by 2 MB Internet plan 2013 -2015 (ICT-Pulse, 2015a)

Country	Lowest d/l speed		Highest d/l speed	
	Speed/bps	Price/USD	Speed/bps	Price/USD
Anguilla	2 M	$ 39.98	48 M	$ 128.82
Antigua & Barbuda	1 M	$ 47.48	2 M	$ 62.20
Aruba	256 k	$ 27.37	24 M	$ 167.04
Bahamas	8 M	$ 29.99	50 M	$ 71.99
Barbados	2 M	$ 30.00	320 M	$ 100.00
Belize	256 k	$ 12.41	16 M	$ 347.47
BVI	6 M	$ 64.99	48 M	$ 199.00
Cayman Is.	10 M	$ 96.11	300 M	$ 302.94
Curacao	2 M	$ 24.55	100 M	$ 179.91
Dominica	2 M	$ 31.65	8 M	$ 109.63
Grenada	2 M	$ 24.48	100 M	$ 128.46
Guyana	256 k	$ 29.18	10 M	$ 72.86
Jamaica	1 M	$ 23.78	100 M	$ 111.25
St. Kitts & Nevis	2 MB	$ 36.44	3 M	$ 54.84
St. Lucia	2 M	$ 33.49	100 M	$ 126.98
St Vincent & Grenadines	2 M	$ 33.44	100 M	$ 126.98
Suriname	2 M	$ 28.91	6 M	$ 78.46
Trinidad & Tobago	1 M	$ 20.50	100 M	$ 102.84
Turks & Caicos Is.	6 M	$ 69.00	48 M	$ 194.99

Table 2.10 Lowest and highest advertised download speeds and the corresponding best rates in select English speaking Caribbean countries as at June 2015 (ICT-Pule, 2015b)

While the cost of fixed broadband is indeed coming down in many places it requires an individual to pay over 5% of their monthly income for 2 MB (advertised) download connection in some countries. The 2 MB speed which is not guaranteed from the Internet Service Provider (ISP) (since it is not a dedicated circuit), and fluctuates based on the number of users of the circuit. This cost is prohibitive and is oftentimes inadequate especially for applications that may require the streaming of video or even voice.

2.10 Digital divide

Many small island states have 100% cell phone penetration which implies that everyone in the population has at least one cell phone; examples in the Caribbean include Trinidad and Tobago, Grenada and Dominica. Even though many countries have nearly 100% cell phone coverage, not everyone has access to the Internet. Ramlal and Watson (2014) highlight the fact that economics play a great role in a household's ability to access the Internet, especially via broadband to the home.

2.11 English as the primary teaching language

Olaniran (2007) when examining some of the challenges to implementing e-Learning in lesser developed countries, identified values, technology and language as the three main contributing factors that differentiate the e-Learning culture of lesser developed countries from their more developed counterparts. This is consistent with other researchers who contest that English (specifically American English) is the predominant language of online education delivery and is not "*neutral*" but carries ideologies and cultural influences that can be seen by lesser developed countries as a continuation of the previous colonial system (Bates, 2011; Pincas, 2001; Gunawardena et al., 2003).

English is the official language in the majority of the Caribbean islands including Trinidad and Tobago, Jamaica, the Cayman Islands, Barbados, the Bahamas, just to name a few. In most of these islands there is a language continuum with Standard English on the one end and English-based creole on the other (except for St. Lucia, Dominica and Grenada where the creole is French-based). Locally the spoken creole is referred to as Patois. Each of the Caribbean islands has different settlement histories and this has affected the language situation. For example, the first colonisers in Trinidad were Spaniards, then the French and then with the abolition of slavery and the movement of settlers from Barbados, English. The "*lateness*" of English

settlers to the island as well as the influence of other immigrant groups from Asia, Portugal and India and its adoption into the education system by Canadian missionaries led to it being more standardised than say in the Jamaican context where Jamaican Patwa is spoken by all and Standard or Jamaican English spoken by the minority (often associated with Jamaican "*high"* society) (Melchers and Shaw, 2013).

In countries where there is a strong oral tradition of information, especially cultural information, transfer, e.g. in Trinidad and Tobago, interpersonal interactions might be more successful than the independent self-paced independent focus that is at the core of many e-Learning programmes. Teachers no longer "*teach by telling"* but the focus is now on the student making it problematic for countries with high power distance (Olaniran, 2007).

Because of the differences among the countries in the Caribbean that directly influence e-Learning I have sought to create additional factors to interrogate the culture of the learners and teachers in the Caribbean. To do this, I utilised the systematic multicultural model, which was designed specifically to examine the factors that influence a successful online programme using learner and teacher perspectives (Barbera and Linder-VanBerschot, 2011). I modified it to include the additional Institutional factor of English as the primary teaching language so as to get a better picture of the influence of language on students involved in e-Learning in the Caribbean.

Fluency refers to the ease with which information can be processed or decoded. The '*patwa'* spoken by Jamaicans is significantly different to that which is spoken in Trinidad and Tobago. Very often, for example, in my conversations with my colleagues in Jamaica we have to agree to speak standard English while communicating on the telephone so that we can easily understand each other and work together in a professional environment; if not done, conversations take twice as long (having to stop, repeat and explain oneself, sometimes more than once) and may lead to miscommunication between parties.

2.12 Summary

In this chapter I introduced briefly the constructive approach to learning. I then explained in some detail about the systemic multicultural model from Barbera and Linder-VanBerschot (2011), explained in detail about the three dimensions of Learner Factors, Institutional Factors and Outcome Factors and the factors associated with them. I next explained Hofstede's Cultural Dimensions (Hofstede et al., 2010), explained the dimensions of Power Distance,

Masculinity versus Femininity, Individualism versus Collectivism, Uncertainty Avoidance Index, Long-Term Orientation versus Short-Term Orientation and Indulgence verses Restraint. Finally, I looked at Bandwidth and Internet access in the Caribbean and this was followed by the use of English as a teaching language in the Caribbean.

Chapter 3 Methodology

3.1 Introduction

As indicated in Chapter 1, the purpose of this research is to determine the critical success factors for the Caribbean e-Learning student. These factors were determined by utilising the theoretical constructs of the reviewed literature with a focus on culture and its influence on the Caribbean e-Learning student. Using the Systemic Multicultural Model developed by Barbera and Linder-VanBerschot (2011) and the Cultural Dimensions developed by Geert Hofstede (2011) to guide the study. My research examined the student's perception and lecturer's perception of the factors that influence a successful online programme. More specifically the research looked at:

1) **Learner factors**

(General Self-Efficacy, Self-Efficacy Online, Motivation, Prior Knowledge and Course Expectation)

2) **Institutional factors**

(Learner Support; Social Presence; Direct Instruction; Learning Platform; Instructor Interaction; Learner Interaction; Learning Content; and Course Design)

and how these factors are relevant to the:

3) Outcome or **Success factors**

(Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer).

These factors were determined by Barbera and Linder-VanBerschot (2011) with the addition of two Institutional factors pertinent specifically to my research question and design:

1) Bandwidth
2) English as Primary teaching language

both of which were introduced by the researcher.

The analysis of the questionnaire showed which of the Learner and Institutional factors had the greatest influence on the Outcome factors. The results of the questionnaire were then compared to those from universities in Spain, Mexico, USA and China, using Hofstede's (2011) Cultural Dimensions as a base.

This chapter describes the methods and procedures used, including, but not limited to, the research questions, research design and sample population. I will also look at the conceptual framework, instrumentation and the data collection procedures. Finally, the chapter takes a brief look at the procedures involved in analysing the data used in this study.

To reiterate, this thesis addresses four research questions which are outlined below:

1. What are the most significant Learner factors and Institutional factors in predicting Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student?
2. How does the ability to access the Internet affect outcome variables (Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer) for the Caribbean e-Learning student?
3. How does English as the primary teaching language affect the outcome variables (Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer) for the Caribbean e-Learning student?
4. What predictor variables are different and similar when comparing five universities from China, Mexico, Spain, USA and the Caribbean from the learners' perspective?

The research questions were addressed directly by the data collected in the modified questionnaires from Barbera and Linder-VanBerschot (2011) and Ordóñez [1](2014). The survey collected Learner factor data from lecturer and student perceptions from the M.Sc. in BCSD programme from the Faculty of Life Sciences at The University of the West Indies and from a B.Ed. programme in Early Childhood and Family Studies at the University's Open Campus. The survey also collected Institutional factor data and Outcome factor data from student perceptions.

3.2 The epistemology and ontology underpinning the study

As an Educational Technologist employed on a part-time basis by The University of the West Indies I am responsible for the management and administering of the technical back end of the M.Sc./Diploma programme.

After graduating with my B.Ed. in Engineering I started my M.B.A. using an e-Learning approach at Herriot-Watt University in the early 2000s, I subsequently studied at Herriot-Watt,

[1] Armando Cortes and Armando Cortes-Ordóñez refer to the same person

the University of Sheffield, Coursera (among others) and through them I have had exposure to the process of online course delivery via e-Learning. I subscribe to the philosophy that humans construct or generate learning from their experiences and this perception changes as more knowledge is acquired and interpreted. One of the founders of constructivism Jean Piaget (1970) speaks about schema, which he considers the central building blocks to new knowledge. The development of a new schema in the online environment takes place through the interaction of two forces, "*assimilation and accommodation*". According to Piaget (1970), through assimilation, learners incorporate new knowledge into previous knowledge to make the unfamiliar familiar. Learners refer to the perception of new knowledge or events in terms of existing experiences and attempt to make sense of it by relating it to existing information, a process referred to as accommodation. Accommodation takes place when learners align their new experiences to their previous knowledge or experiences.

Epistemology questions the nature, scope and sources of knowledge (DeRose, 2005). My own position is that our experiences, our cultural heritage, culture and social context affect knowledge.

From an ontological point of view my position is that reality is not fixed, but provides a different way of viewing the same reality – a reality which is based on the meanings we attach to what is being observed. The axiological position is that no research can be value free; personal values, cultural norms and social and political beliefs affect the aesthetics and ethics of a situation (Holten, Dreiling and Becker, 2005; Liebling, 2001).

To summarise, I take an epistemological position of constructivism. Seeing knowledge residing in the individual influenced by socio-cultural experiences and contexts which, in this case, are derived, not only from an individual country or society of origin, but also from the online environment. In the context of this research, knowledge also comes from the community of practitioners in the field of biodiversity conservation and sustainable development. My ontological position is of a reality not fixed but rather a meaning derived from the individual's points of view.

3.3 Nature of the Study

This research is an evaluative study which, as Cohen, Manion and Morrison (2011) describe, is one that utilises the research tools of the social sciences to provide answers in the effectiveness and effects of programmes. In this research, I gather information from two

programmes at the UWI, the M.Sc. in Biodiversity Conservation and Sustainable Development in the Faculty of Life Sciences and the B.Sc. in Early Childhood Development and Family Studies from the UWIOC and then do a comparative study element with existing findings based on Hofstede's Cultural Dimensions framework.

3.4 Research Design

The research was conducted using a survey design that utilised a 4 point Likert scale. The initial questions in the survey were designed by Barbera and Linder-VanBerschot (2011). I introduced further Institutional factors to investigate the influence of bandwidth and English as a primary teaching language on the Outcome factors. The methodology adopted is a quantitative descriptive-correlational research design which enabled a statistical analysis of the data. The data collected by the survey sought to identify the features and variables involved in the performance of Caribbean e-Learning students (Barbera and Linder-VanBerschot, 2011).

The original questionnaire designed by Barbera and Linder-VanBerschot consisted of 15 Learner variables, 24 Institutional variables and 15 Outcome variables. The questionnaire was initially modified by Ordóñez (2014) to include a time variable and then by myself to include the variables of bandwidth and the use of English as the primary teaching language. I did not, however, use the time variable in my analysis.

Several different statistical techniques were applied to the data including reliability analysis, two-way ANOVA and non-parametric multiple linear regression. The reports from the findings were presented in tables and diagrams in Chapter 4.

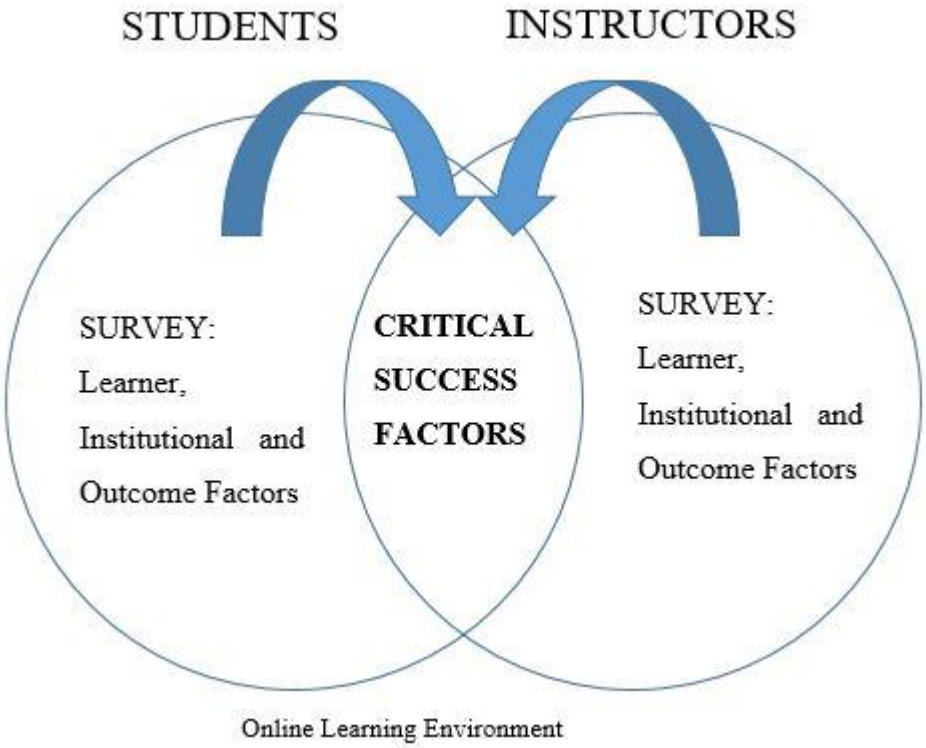

Figure 3.1 Research Design

Evalutation of the questions forming the body of the survey, particularly the new ones proposed by the researcher, resulted in a number of iterations before a final set of questions was produced which formed the basis of the questionnaires used in the research. The evaluation was conducted by the researcher with the assistance of the course co-ordinator and two lecturers from the M.Sc. in BCSD.

3.4 Context of the study

The study took place using a form that was developed in Google Docs with questions that were closely mapped to those utilised by Barbera and Linder-VanBerschot (2011) and Cortes (2014) (permission was sought from and granted via e-mail on 15th October 2014 from Elena Barbera Gregori to use their modified questionnaire, see Appendix G). The study utilised students from the M.Sc. in BCSD from the Faculty of Life Sciences at The University of the West Indies and students from the B.Ed. in Early Childhood Development and Family Studies from the UWIOC.

The responses from the questionnaires were from the students and lecturers involved in the M.Sc. and B.Ed. programmes. The responses were analysed and results compared to those from U.P.A.E.P. (Mexico), (Cortes 2014); University of New Mexcio (U.S.A.); the University of Peking (China); and the Open University of Catalonia (Spain) (Barbera and Linder-VanBerschot, 2011) published results.

3.5 Sample

I sent survey invitations in my capacity as Educational Technologist invovled in the programme, to students of the M.Sc. in BCSD to participate in the survey. The programme manager of the B.Ed. in Early Childhood Development and Family studies made a similar request on my behalf to the students on that programme. In total 120 favourable individual student responses together with 32 individual lecturer responses were returned.

The student responses comprised 34 M.Sc. students and 86 B.Ed. students. Students from the B.Ed. were from the 2014-2015 cohort, while students from the M.Sc. were from students on their programme of study ranging from 2013 to 2015. Overall the students represented 15 different Caribbean islands together with one from the South Pacific. The number of lecturers taking part in the survey were 32 from 8 different Caribbean territories. Specific demographic information about the students and lecturers is presented in detail in Chapter 4.

The study took place online and targeted students and lecturers were invovled in online courses delivered by the UWI for the following reasons:

1) The UWI is the largest Caribbean-based tertiary education institution
2) The UWI has a history of Bachelor of Science and Master of Science Programmes
3) The researcher's ability to access online students and lecturers from UWI
4) The researcher's familiarity with the online systems operating at the university

Further information about the UWI and the UWIOC has been discussed in Chapter 1.

3.6 Ethical Considerations

I applied to the University of Sheffield for ethical clearance to conduct the online survey since it involved human participants. The application was reviewed and approval granted. At the start of each survey were four introductory paragraphs. The first paragraph was an invitation to take part in the survey; the second stated what the survey was about and the third the nature and purpose behind the questions leading to the participant's identification code used in the

survey. The fourth paragraph explained to the participants that their participation was voluntary and that their identity would remain anonymous and all information submitted would remain confidential (See Appendix A). I did not have access to the biographical data of the students involved in either programme so the only way to identify participants was through the identification code which they would have created using the day of the month they were born, the last number of the year they were born and the last letter of their first name.

3.7 Instruments

Building upon the survey designed by Barbera and Linder-VanBerschot (2011) the thesis survey instrument explored the Learner and Institutional factors that influenced success of an online learning programme, as defined by the satisfaction of the student, the knowledge acquired by the student, and the students' ability to utilise the knowledge transferred to them.

The survey consisted of two pairs of questionnaires, one for the students and one for the lecturers. The first part of the questionnaire for the students consisted of the following sections:

Section	Number of Questions
Identification Code	4
Demographic	8
Technical	3
Time	3
Learner factors/Variables (Likert Scale - 4 point)	1
Total	19

Table 3.1 Learner factor questionnaire for students

The identification code consisted of 4 questions:

a) the day of the month the respondent was born;

b) the last digit of the year they were born;

c) the last letter of their first name;

d) the programme under review.

Similar information was requested of the respondent in the second questionnaire and the information used to tie the two responses together. Since I did not have access to the biographical data of the students in either the M.Sc. in BCSD or the B.Ed. in Early Childhood

Development this form of combining two responses sought to take into account the confidentiality and privacy of both the data and the participants involved in the surveys.

The second section dealt with the demographic data of the student respondent. This consisted of questions that focused on the variables of gender, age, reason for enrolling in the course, the course code, nationality, the country from which the student is accessing the programme, and the student's employment status, i.e. unemployed, full-time, part-time.

The technical questions focused on the students' perception of their own technical competence; the bandwidth with which they access the online programme; and the number of years that they have been users of the internet. The time variables looked at the number of hours the students dedicate to the course, the number of hours dedicated to social media and the time of day they generally focus on the course.

The 4-point Likert scales consist of the following questions:

Variable	Total Number of Items
General self–efficacy	3
Online self-efficacy	3
Motivation	3
Prior knowledge	3
Course expectation	3
Total	15

Table 3.2 Number of learner factor questions in student questionnaire

Respondents answered the Likert-based questions using the following 4-point scale: Strongly Disagree, Disagree, Agree and Strongly Agree.

The first questionnaire for lecturers followed a similar pattern. The first part of the questionnaire for the lecturers consisted of the following sections:

Section	Number of Questions
Identification Code	3
Demographic	6
Technical	4
Time	3
Learner factors/Variables (Likert Scale - 4 point)	15
Total	31

Table 3.3 Learner factor questionnaire for lecturers

The identification code consisted of 3 questions:

a) the day of the month the respondent was born;

b) the last digit of the year they were born;

c) the last letter of their first name.

Similar information was requested of the respondent in the second questionnaire and the information used to tie the two responses together. This form of combining the two responses sought to take into account the confidentiality of the data and the anonymity of the participants. The second section dealt with the demographic data of the lecturer. This consisted of questions that focused on the variables of gender, age, the course code, nationality, the country in which the lecturer was located to access the programme, and the number of semesters the lecturer had been delivering courses online.

The technical questions focused on the lecturers' perception of their own technical competence, the bandwidth available to access the online programme, the number of years they had been users of the Internet, and the number of hours per day that they were connected to the Internet. The time variables looked at the number of hours the lecturer would dedicate to the course, the number of hours they dedicate to social media and the time of day when they focus on the course.

The 4-point Likert scales consist of the following questions:

Variable	**Total Number of Items**
General self–efficacy	3
Online self-efficacy	3
Motivation	3
Prior knowledge	3
Course expectation	3
Total	15

Table 3.4 Number of learner factor questions in lecturer questionnaire

The first questionnaire for students is in Appendix B and the first online questionnaire for the lecturers can be found in Appendix D.

The second questionnaire for students (Appendix C) contains 12 questions with the following sections:

Section	Number of Questions
Identification Code	4
Demographic	1
Institutional and Outcome factors/Variables (Likert Scale - 4-point)	39
Bandwidth	4
Face-to-Face Teaching	5
English	5
Communication	3
Time	12
Total	73

Table 3.5 Institutional and outcome factors questionnaire for students

The identification code consisted of 4 questions:

a) the day of the month the subject/respondent was born;

b) the last digit of the year they were born;

c) the last letter of their first name;

d) the programme under review.

These responses were matched with responses from the first part of the survey to link the two questionnaires together. The only demographic data collected in the second part of the survey was the student's age and the course that the response was referring to.

The bandwidth questions focused on the student's perception of whether the bandwidth they had was sufficient for their live participation in the course. The face-to-face questions asked the students if the sessions were better live or if the recorded sessions were just as good and if the online environment was better than the face-to-face environment. The English section asked the students if the lecturer's ability to speak English impacted on their ability to grasp the subject and if the lecturer was clear and easy to understand. The communication section asked if the lecturer was easy to contact and was accessible. The time questions referred to patterns of use with respect to time during the course, e.g. time spent devoted to the course, time spent online using social media, etc.

The 4-point Likert scales for the Institutional variable consist of the following questions:

Variable	Total Number of Items
Learning support	3
Social presence	3
Course design	3
Instruction	3
Learning platform	3
Instructor interaction	3
Learner interaction	3
Learning content	3
Total (Institutional Variables)	24

Table 3.6 Institutional factor variables in questionnaire for students

Variable	Total number of Items
Learner Satisfaction	5
Knowledge Acquisition	5
Knowledge Transfer	5
Total (Outcome Factors)	15

Table 3.7 Outcome factor variables in questionnaire for students

The second questionnaire for lecturers (Appendix E) consists of 12 questions with the following sections:

Section	Number of Questions
Identification Code	4
Demographic	1
Institutional and Outcome factors / Variables (Likert Scale - 4-point)	39
Bandwidth	4
Face-to-Face	5
English	5
Communication	3
Technology	4
Total	65

Table 3.8 Institutional and outcome factor questionnaire for lecturers

The identification code consisted of 4 questions:

a) the day of the month the respondent was born;

b) the last digit of the year they were born;

c) the last letter of their first name;

d) the programme under review.

These responses were matched with responses from the first part of the survey to identify the corresponding respondents. The only demographic data collected in the second part of the survey were the lecturer's age and the course to which the response referred.

The bandwidth questions focused on the students' perception of whether the bandwidth they had was sufficient for their live participation on the course as well as whether students had trouble hearing them or had difficulty attending the live sessions. The face-to-face questions asked the lecturers' perception of the students whether the sessions were better live or if the recorded sessions were just as good, and if the online environment was better than the face-to-face environment. The English section asked if the lecturer had to speak slowly to be clearer or if the lecturer had to speak 'clearer' English for the students to understand. The communication section asked if the lecturers found that they were more accessible to the students in the online environment and were able to deliver feedback in a timelier manner. The technology section asked if the lecturers thought that the learning platform met their needs and the needs of the students.

The 4-point Likert scales for the Institutional variable consist of the following questions:

Variable	Total Number of Items
Learning Support	3
Social Presence	3
Course Design	3
Instruction	3
Learning Platform	3
Instructor Interaction	3
Learner Interaction	3
Learning Content	3
Total (Institutional Variables)	24

Table 3.9 Institutional factor variables in questionnaire for lecturers

Variable	Total Number of Items
Learner Satisfaction	5

Knowledge Acquisition	5
Knowledge Transfer	5
Total Outcome Factors)	15

Table 3.10 Institutional and outcome factor questionnaire for lecturers

The second online questionnaires for the students and lecturers can be found in Appendix C and E respectively.

Before further analysis was conducted, recoding was applied to three of the bandwidth related questions; one of the English as the primary teaching language related questions and one of the face-to-face questions. This was done to reverse the responses from the questions that were negatively worded. In the recoding process the value for "*Strongly Disagree*" (value =1) was replaced by "*Strongly Agree*" (value =4) and vice versa. Similarly, the value for "*Disagree*" (value=3) was replaced with "*Agree*" (value=2) and vice versa.

3.8 Selection of data analysis methods

The data were analysed using two separate methods in SPSS version 22, Multiple Linear Regression and Two-way ANOVA. The Multiple Linear Regression was used to determine which factors played the greatest role in predicting the Outcome factors and the ANOVA was used to find out if the new Institutional factors of bandwidth and English as the primary teaching language made any contribution to the Outcome factors. The selection process was aided by using the Statistical Test Selector from Laerd Statistics (Laerd, 2016). Outlined below are the steps that were used for selecting the two methods.

3.8.1 Multiple Regression

Step 1 – Choose Study Design

The first step in deciding which analytical tool to use required that I answer one of the five following questions:

1) Do you want to explore possible associations or correlations between variables?
2) Do you want to predict a score or membership of a group?
3) Do you want to find out the differences between groups or conditions/treatments?
4) Do you want to assess reliability?
5) Do you have a single sample only?

In my analysis, I wanted to examine how the Learner and Institutional factors would predict the outcomes so I chose the answer to question 2 which referred to Predictions and Relationships.

Step 2 – Dependent Variables

Step 2 required that I identify the type of dependent variables. The options were:

1) Continuous;
2) Ordinal;
3) Dichotomous;
4) Multinomial.

The dependent variables in the questionnaire contained Likert Scare responses. The Likert questions are not stand alone, many are to be combined to measure a particular trait in the respondent. For this reason, the data is treated as continuous (Likert Scale data) as opposed to ordinal (Likert-type data) (Boone and Boone, 2012).

Step 3 Independent Variables

The independent variables were similar to the dependent variables and the options were:

1) One;
2) More than one.

In this research design there are several independent variables being considered.

The appropriate statistical test, according to Laerd (2016), based on the above selection, is a Multiple Linear Regression.

Multiple Linear Regression is used to predict the outcome of a continuous dependent variable from two or more independent variables. Just as importantly the multiple linear regression can be used to determine how much impact a particular independent variable has on the dependent variable. There are, however, several assumptions associated with the multiple linear regression and these are outlined below (Laerd, 2016; Pallant, 2013).

Multiple Linear Regression Assumptions

Multiple Linear Regression is an extension of linear regression. Linear regression models a linear relationship between a dependent variable and an independent variable where the

independent variable is used to predict the dependent variable. The linear regression model is represented in the equation below:

$$A_{pred} = C_0 + C_1B + e$$

In the equation above C_0 is the sample intercept (also known as the constant), C_1 is the slope of the sample, B the independent variable and e represents errors or residuals in the sample.

By extension the multiple linear regression model uses multiple independent variables to predict the single dependent variable. For example, if there are three independent variables then the formula for determining the independent variable is as follows:

$$A = C_0 + C_1B_1 + C_2B_2 + C_3B_3 + e$$

Where C_0 is the intercept or constant, C_1 is the slope of parameter B_1, C_2 is the sample slope for B_2 and so on and e represents the errors or residuals.

The assumptions associated with multiple linear regression are:

1) There is one dependent variable that is continuous
2) There are two or more independent variables that are either continuous or nominal in nature
3) There is independence of observations
4) There is a linear relationship between (a) the dependent variable and each of the independent variables and (b) the dependent variables and the independent variables collectively
5) The data needs to show homoscedasticity of residuals
6) The data must not show multicollinearity
7) There should be no significant outliers
8) The residuals are approximately normally distributed

Having examined the data and ensured that they met the first two assumptions, the next step comes after the SPSS Statistics output has been generated. To satisfy assumption number 3 the independence of observations, the Model Summary table that is generated was examined to ensure that the Durbin-Watson statistic is approximately 2. This statistic indicates that there is no correlation between residuals. The next two assumptions are determined by scatterplots which are not included in the results but were generated and verified.

The next assumption was the check for multicollinearity. This occurs when there are two or more independent variables that are highly correlated with one another. There are two stages in the check for multicollinearity, the first is inspecting the correlation coefficients generated in the Correlations table in the SPSS output generated and the second is the Tolerance/Variance Inflation Factor (VIF) values that are generated in the Coefficients table in the SPSS output. It is preferable that none of the independent variables have correlation values greater than 0.7. The Tolerance value is just the reciprocal of the VIF value so only one of these needs to be consulted. If the Tolerance value is less than 0.1 or the VIF value is greater than 10 then there may be a collinearity problem.

When the analysis was generated the option of highlighting values that were less than or greater than three standard deviations was selected and the results, if any, were placed in the Casewise Diagnostics table. In the table, the values/readings that fell outside of the 3 standard deviations were removed from the questionnaire and the analysis re-run. Lastly a histogram plotting frequency against the dependent variable was generated to ensure that the residuals were approximately normally distributed.

Having met the required assumptions what was left was the interpretation of the results. This was done using two steps:

1) Determine whether the multiple regression model is a good fit;
2) Examine the coefficients of the regression model.

To determine how well the model fits required that the ANOVA table that was generated as part of the SPSS output was examined. In the table the multiple correlation coefficient "R" is the Pearson correlation coefficient between the values predicted by the regression model and the actual value of the dependent variable. Values range from 0 to 1, where 0 indicates no linear association and 1 a perfect association; the closer the value is to 1 the stronger the level of association. The multiple correlation coefficient "R" is not, however, the common measure for goodness of fit, the value "R^2" or "R Squared" is what is commonly used.

R^2 is the coefficient of determination and is the proportion of the variance in the dependent variable that is explained by the independent variable. If for example the R^2 value is .6 this would mean that the addition of all the independent variables in the regression model explain 60% of the variability in the dependent variable. R^2 is sometimes considered to have a positive bias depending on the size of the population. To correct for this the Adjusted R^2 value is calculated and this is what is commonly used to report on the proportion of variance. The

Adjusted R^2 is also a measure of the effect size, values of .6 and above are considered a large effect size.

The statistical significance of the overall model is presented in the "Sig" column in the ANOVA table. A value of .000 actually means that p<.0005 (where p denotes the value of Sig). If p <.05 then the results are statistically significant if p>.05 then the results are not statistically significant.

Next we look at the coefficients table.

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.		
	B	Std. Error	Beta		Tolerance	VIF
(Constant)	2.674	1.943		.171		
Gen_Self_Eff_sum	.009	.079	.007	.914	.637	1.570
Self_Eff_Online_Sum	.027	.094	.019	.776	.557	1.794

Figure 3.2 Headers of Coefficients table

Although one of the goals of this research is not to generate the complete linear regression formula for each of the Outcome factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer we can use the results of the multiple linear regression to tell at a glance which of the independent variables plays a statistically significant role in the outcome. This is done by looking at the Sig column in the Coefficients table in the SPSS-generated output (see Figure 3.2 above). Once the value of Sig is less than .05 (i.e. p<.05) then the independent variable plays a statistically significant role in the determination of the dependent variable.

3.8.2 Two-way ANOVA

The Two-way ANOVA refers to a two-way between groups analysis of variance. This form of analysis looks at the individual and joint effect of two or more independent variables on one dependent variable. In the case of this research it was utilised for only one dependent variable and one independent variable. Ordinarily a One-way ANOVA would be utilised for the analysis, but the Two-way, which is just an extension of the One-way ANOVA, was used instead for the convenience of calculating the eta-squared value. As a check the results contained in the Descriptive Test for Homogeneity of Variances, ANOVA and Multiple Comparisons tables for both One-way and Two-way ANOVA for the sample were compared

and they were the same. Outlined below is the process for the selection of the One-way ANOVA; the calculations for which are similar to the Two-way ANOVA.

Step 1

Similar to the multiple regression, the process begins with the answering of one of the five questions below:

1) Do you want to explore possible associations or correlations between variables?
2) Do you want to predict a score or membership of a group?
3) Do you want to find out the differences between groups or conditions/treatments?
4) Do you want to assess reliability?
5) Do you have a single sample only?

In this case I am examining the differences between groups.

Step 2

This requires the identification of the type of study design used, whether it is:

1) Between subjects design;
2) Within subjects design;
3) Mixed design.

In the research design adopted it is "*Between subjects*" design.

Step 3 and 4

Step 3 and Step 4 ask how many independent variables I have and the number of groups the independent variables have. The answer is 1 and more than 3 respectively.

Step 5

Step 5 inquires as to what type of variable is my dependent variable and in this case, it is a Continuous variable.

Step 6

Step 6 inquires as to whether a covariate exists, the answer to which is No.

Step 7

Finally Step 7 seeks a decision on the number of dependent variables held jointly or not, for which the response is also None.

Given the above parameters the most appropriate statistical test to analyse the given data is the One-way ANOVA.

Like the multiple regression, several basic assumptions must be considered for the One-Way ANOVA. They include:

1) There is one dependent variable that is continuous
2) There is one independent variable that consists of two or more categorical groups
3) There should be independence of observations
4) There should be no significant outliers in the groups
5) There is homogeneity of variances

The ANOVA analysis was utilised twice: 1) to compare the bandwidth accessible by the students and the independent variables of Knowledge Acquisition, Knowledge Transfer, Learner Satisfaction and Total Success and 2) to compare the nationality of the lecturer in the Biodiversity Conservation and Sustainable Development programme and the Outcome factors of Knowledge Acquisition, Knowledge Transfer, Learner Satisfaction and Total Success.

3.9 Bandwidth

Bandwidth ranges in the initial questionnaire are presented in the table below:

Internet Speed
less than 1 MB
1-5 MB
10-15 MB
15-20 MB
20-25 MB
25-30 MB
over 30 MB

3.11 Internet ranges used in questionnaire

They were re-categorised based on the number of responses in each category, to the following:

New Ranges - Between-Subjects Factors		
		Value Label
New_Internet_Speed_ 051525	1.00	less than 5
	2.00	5-15

	3.00	15-25
	4.00	over 25

Table 3.12 New Internet ranges

Once the data met the first three assumptions the analysis was done testing for homogeneity of variances and interaction effects. The test for outliers was done by simply generating boxplots and there were no outliers for values greater than 1 box length from the edge of the box for any of the Outcome factors. The Levene's Test of Equality of Error Variances was utilised to test the homogeneity of variances requiring that the Sig value be greater than .05 so that there is no significance. Next the Test-Between Subject Effects table is examined and the Sig column is checked for values below .05. Values below .05 indicate that that independent variable has a significant effect on the dependent variable. The effect size was determined by the Partial Eta Squared Value in the table. The results can be found in Chapter 4 (p.114-115).

3.10 English as primary teaching language

Similar to the procedure followed in the bandwidth section above, the Two-way ANOVA was run using the nationality of the lecturers in the M.Sc. in BCSD and the outcome variables of Learner Satisfaction, Knowledge Transfer, Knowledge Acquisition and Total Success. The results from the box plots were the same. The Levene's Test of Equality of Error Variances was also utilised to test the homogeneity of variances requiring that the Sig value be greater than .05 to indicate that there is no significance. The Sig column in the Test-Between Subject Effects was also examined for values below .05. Values below .05 indicated that that independent variable has a significant effect on the dependent variable. The effect size was also determined by the Partial Eta Squared Value in the table. The results can be found in Chapter 4 (p.116-117) as well.

3.11 Data collection/procedure and timeline

The data collection for the study was conducted at 4 separate times. The first set of questionnaires were sent to students and lecturers within three weeks of the start of the first semester of 2014 (September 2014) to both students and lecturers associated with the M.Sc. BCSD and the B.Ed. Early Childhood and Family Studies. The second questionnaire was sent out at the end of the first semester 2014, 3 weeks before the semester ended in December. The next set of questionnaires were sent out at the beginning of the second semester for the M.Sc.

students alongside the B.Ed. students and lecturers. The second part of the survey was sent out at the end of the second semester.

An email explaining the purpose of the study was sent to the students on the M.Sc. programme. For the B.Ed. students, the email came from the programme manager.

There was a total of 226 responses from the students for the first part of the survey (Learner factors), 129 from the B.Ed. students and 97 from the M.Sc. students. In the second part of the survey (Institutional and Outcome variables) 162 responses were received but only 152 responses could be matched back to the first half of the survey.

Survey	Time frame	B.Sc. student responses	M.Sc. student responses	B.Sc. lecturer responses	M.Sc. lecturer responses
Part 1	Sept 2014 and Jan 2015	129	97	24	8
Part 2	Dec 2014 and Mar 2015	86	76	1	1

Table 3.13 Survey responses

The second part of the questionnaire was administered 2–3 weeks before the end of the first semester. The second part of the questionnaire interrogated the students and lecturers about the Institutional factors and the Outcome factors and their overall online learning experience. There were some open questions and users were asked to provide their Skype identification for follow up calls if necessary.

3.12 Data analysis/instrumentation

The results of the questionnaires were analysed to determine which of the Learner and Institutional factors/variables had the greatest impact on the Outcome factors. An analysis was also conducted to see if the new factors/variables of bandwidth and English as the primary teaching language had any significant impact on the outcome variables. The analysis, using SPSS version 22, followed the procedures outlined below:

1) A descriptive analysis of the sample was carried out: Percentage of women and men, age ranges, reason for enrolling, nationality, Internet experience, technical skill levels and bandwidth speeds for both students and lecturers. The results can be found in Tables 4.1–4.8 in Chapter 4.
2) The reliability of the sample was tested using the Cronbach's alpha. The items were grouped according to the factors/variables.

3) Multiple Regression Analysis was used to find the prediction indices of the variables with the most significant impact (correlation).
4) Univariate analysis was used to determine impact, if any, of the individual factors of bandwidth and English as the primary teaching language on the Outcome factors.

A level of $p<0.05$ was considered significant for all tests. This implies that results of this nature will occur by chance less than 5 times in one hundred cases.

3.13 Summary

This chapter describes the procedures employed to determine which factors had the greatest impact on the outcome variables of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer.

The research problem, research design, research sample, conceptual framework and instrumentation were presented along with the data collection process and the analysis used on the information obtained.

The results of the analysis will be presented in Chapter 4.

Chapter 4 Results and Discussion

4.1 Introduction

In this chapter I examine the results of the surveys conducted and discuss their relationship to the research questions forming the objectives of this thesis outlined in Chapter 1. Section 4.1 gives the demographic breakdown of the students and lecturers involved in the study. Section 4.2 shows the reliability of the students' responses with respect to the Learner factors, Institutional factors and Outcome factors. In the subsequent section (4.3) are the results of the correlation analysis between the Learner factors, Institutional factors and the Outcome factors. Section 4.4 shows something similar in that it shows the results of the regression analysis between the Learner factors and the Institutional factors with the Outcome factors.

Section 4.5 answers the first sub-question of the research:

> "What are the most significant Learner factors and Institutional factors in predicting Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student?"

Section 4.6 presents the results from the two-way ANOVA analysis between students' Internet access and each of the Outcome factors. In section 4.7 I present results from the two-way ANOVA analysis between the students from the Masters programme in BCSD and the nationality of the lecturers for the relevant courses.

Section 4.8 compares the results of the questionnaire with the results of universities based in Spain, China, Mexico and the USA. Section 4.10 describes how I collected the data and section 4.11 describes the gap between what I planned to collect and analyse and what I did.

4.2 Demographics

In this study, I received responses from 120 different students. Out of the 120 students, 34 were Masters students taking part in the M.Sc. in BCSD while the other 86 students were studying for their B.Ed. in Early Childhood Development and Family Studies. Students from the B.Ed. in Early Childhood Development and Family studies who took part in the survey were from the 2014-2015 cohort while the students from the M.Sc. in BCSD were from different cohorts, some from as early as 2012 but who had not yet completed their studies.

There was more than one response from some students in the M.Sc. in BCSD. Different courses had different lecturers with different nationalities who were delivering courses from different countries. I thought it relevant to include these responses in the analysis since the students' learning experience would differ depending on the lecturer and the lecturer's nationality.

A total of 226 student responses was collected in the first questionnaire; however, only 152 of the 226 respondents provided data for the second questionnaire.

There were 32 responses from lecturers in the first questionnaire, but only 2 for the second. For this reason, I was not able to do a comparison between lecturers and students for the Institutional factors of the analysis.

For the cross-cultural comparison between learners and instructors there were 226 responses from students and 32 from lecturers to compare with the learners and instructors from China, Mexico, Spain, and the USA. For the institutional data only the 153 responses from the students were used. Similarly, to look at the Outcome factors only the 153 responses from the students were considered. The data used in the comparison were taken from a study conducted by Barbera and Linder-VanBerschot (2011) at the University of New Mexico (UNM) (USA), the University of Peking (PKU) (China) and the Open University of Catalonia (UOC) (Spain) and a subsequent study by Ordóñez (2014) at the Popular Autonomous University of the State of Puebla (UPEAP) Mexico).

4.2.1 Learners Demographic Profile

Table 4.1 shows the distribution of gender among the students, their cumulative ages and their overall reason for enrolling in the course.

Gender, Age and Reason for Enrolling			
		Frequency	Percent
Gender	Male	12	10.0
	Female	108	90.0
	Total	120	100.0
Age	18-25	29	24.2
	26-35	57	47.5
	36-45	28	23.3
	46-55	5	4.2
	55 and over	1	.8

Reason	Personal goal/interest	31	25.8
	Degree/Certification requirement	74	61.7
	Improve job performance	12	10.0
	Promotion (potential)	1	.8
	Suggestion from lecturer	1	.8
	Become a teacher	1	.8

Table 4.1 Caribbean students' gender, age and reason for enrolling

It is interesting here to note that 90% of the students that responded were female. In the responses from the UWIOC only 2 males responded, the other 84 were female. Table 4.2 below gives a breakdown of the nationality of the students involved in the 2 programmes.

Nationality

	Frequency	Percent	Valid Percent
Trinbagonian	66	55	55
Jamaican	12	10	10
Grenadian	9	7.5	7.5
Vincentian	8	6.7	6.7
Guyanese	5	4.2	4.2
Surinamese	4	3.3	3.3
Barbadian	3	2.5	2.5
Belizean	3	2.5	2.5
St. Lucian	3	2.5	2.5
Antillean	1	0.8	0.8
Bahamian	1	0.8	0.8
British/Dutch	1	0.8	0.8
Canadian	1	0.8	0.8
Dominican	1	0.8	0.8
Fijian	1	0.8	0.8
Spanish	1	0.8	0.8
Total	120	100	100

Table 4.2 Nationality of Caribbean students

It is also interesting to note that the majority of the students (61.7%) were taking the course for the purpose of completing a degree or certification. Only 25.8% were doing it to fulfil a personal goal or out of interest and only 10% were doing it to improve job performance.

Table 4.3 below shows their experience using the Internet and their perceived technical level while Table 4.4 shows with which bandwidth they access the Internet.

Internet Experience and Technical Skill Level

		Frequency	Percent
No. of years using the Internet	10 and over	72	60
	7	12	10
	3	10	8.3
	6	7	5.8
	8	7	5.8
	5	4	3.3
	4	3	2.5
	2	2	1.7
	9	2	1.7
	1	1	0.8
	Total	120	100.0
Tech Skill Level	Beginner	9	7.5
	Intermediate	73	60.8
	Advanced	38	31.7
	Total	120	100.0

Table 4.3 Student Internet experience and technical skill level

Internet Speed

		Frequency	Percent	Valid Percent	Cumulative Percent
	less than 1 MB	3	2.5	2.5	2.5
	1-5 MB	28	23.3	23.3	25.8
	5-10 MB	22	18.3	18.3	44.2
	10-15 MB	3	2.5	2.5	46.7
	15-20 MB	17	14.2	14.2	60.8
	20-25 MB	7	5.8	5.8	66.7
	25-30 MB	13	10.8	10.8	77.5
	over 30 MB	27	22.5	22.5	100.0
	Total	120	100.0	100.0	

Table 4.4 Internet access speeds for students

In the tables above the majority of the users (77.5%) have been using the Internet for more than 7 years, while approximately half (46.6%) connect at a maximum speed of 15 MB or lower. The speeds quoted are the maximum possible value; the actual speed depends on a number of factors including: the number of people on the network, strength of wireless signal where appropriate, etc.

4.2.2 Lecturers Demographic Data

Table 4.5 shows the distribution of gender among the lecturers, their cumulative ages and the number of semesters that they have taught online:

Gender, Age and Number of Semesters teaching online			
		Frequency	Percent
Gender	Male	6	18.8
	Female	26	81.3
	Total	32	100.0
Age	18-25	1	3.1
	26-35	1	3.1
	36-45	10	31.3
	46-55	12	37.5
	55 and over	8	25.0
	Total	32	100.0
Semesters Teaching	1-3	16	50.0
	4-6	10	31.3
	7-9	4	12.5
	10 or greater	2	6.3
	Total	32	100.0

Table 4.5 Lecturers gender, age and number of semesters teaching online

The majority of the lecturers who responded to the questionnaire were female (81.3%) and the majority were 36 years and over (93.8%). Fifty percent of the lecturers have only taught three online courses or less at the time of the questionnaire.

Table 4.6 shows the nationality of the lecturers involved in the programmes:

		Frequency	Percent	Valid Percent	Cumulative Percent
	Trinbagonian	11	34.4	34.4	34.4
	Jamaican	8	25.0	25.0	59.4
	Guyanese	3	9.4	9.4	68.8
	British/Dutch	3	9.4	9.4	78.1
	Barbadian	3	9.4	9.4	87.5
	Grenadian	2	6.3	6.3	93.8
	Dominican	1	3.1	3.1	96.9

	St. Lucian	1	3.1	3.1	100.0
	Total	32	100.0	100.0	

Table 4.6 Nationality of lecturers involved in Caribbean programme

Table 4.7 shows the Internet experience and perceived technical skill level of the lecturers involved in the Caribbean programmes:

Internet Experience and Technical Skill Level

		Frequency	Percent
No. of years using the Internet	5	1	3.1
	7	1	3.1
	8	1	3.1
	10 and over	29	90.6
	Total	32	100.0
Tech Skill Level			
	Beginner	1	3.1
	Intermediate	10	31.3
	Advanced	21	65.6
	Total	32	100.0

Table 4.7 Lecturer Internet experience and technical skill level

The majority of the lecturers were Trinbagonian (34.4%) followed closely by their Jamaican counterparts; 90.6% of the lecturers had over 10 years' experience in using the Internet and the majority (96.7%) rated themselves as being an intermediate or advanced level user of Information and Communication Technology (ICT).

Table 4.8 shows the speed with which the lecturers connect to the Internet:

Internet Speed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 MB	1	3.1	3.1	3.1
	1-5 MB	2	6.3	6.3	9.4
	5-10 MB	5	15.6	15.6	25.0
	10-15 MB	2	6.3	6.3	31.3
	15-20 MB	5	15.6	15.6	46.9
	20-25 MB	6	18.8	18.8	65.6
	25-30 MB	3	9.4	9.4	75.0
	over 30 MB	8	25.0	25.0	100.0

	Total	32	100.0	100.0	

Table 4.8 Lecturer Internet speed

About half of the lecturers (53.2%) connected at 20 MB or above while the remainder (46.8%) connected at below 20 MB. Again, it is important to note here that the speeds quoted are the maximum possible speeds for the connection quoted. Speeds would most likely be less at any given time.

4.3 Measure of reliability of the sample

Table 4.9 below shows the reliability information of each scale based on the student sample collected.

Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
Learner Factors	.767	.785	15
Institutional Factors	.945	.948	24
Institutional Factors including Bandwidth, English Language, Technology and Face-to-Face Questions	.935	.937	46
Outcome Factors	.926	.929	15

Table 4.9 Students' reliability information

Unfortunately, no Institutional factor or Outcome factor survey responses were collected from lecturers. Therefore, the only reliability data that could be calculated were for Learner factors which are displayed in Table 4.10 below

	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
Learner Factors	.870	.885	15

Table 4.10 Lecturers' reliability information

The Cronbach's Alpha measures the internal consistency of the data. Internal consistency refers to the extent to which all items in a test measure the same idea or construct. Cronbach's Alpha provides an indication of the average correlation among all the items that make up the scale. Values of .7 and above indicate an acceptable level of reliability or random error.

4.4 Correlation between Learner, Institutional and Outcome factors

A correlation analysis was conducted to look at the relationship between variables.

The sample size for analyses consisted of 152 students who completed the 2 questionnaires. Initially there were 233 responses for the students but only 152 responded to the second questionnaire. There were 32 responses by lecturers but only 2 responded to the second questionnaire therefore no correlation analysis could be run on the lecturers' responses.

4.4.1 Correlation analysis from student perceptions.

Quite interestingly none of the Learner factors was significantly correlated to any of the Outcome factors. All eight of the Institutional factors, however, were significantly correlated to the Outcome factors. Each of the Institutional factors/predictors has a positive relationship with each Outcome factor including the newly created one of "*Total Success*". This implies that as each Institutional factor increases so does Learner Satisfaction, Knowledge Transfer, Knowledge Acquisition and Total Overall Success.

Course design ($r=.715$, $p < .05$), learning content ($r=.651$, $p < .05$) and social presence ($r=.648$, $p<.05$) showed the strongest relationship with learner satisfaction while learner interaction ($r=.332$, $p<.05$) showed the weakest relationship.

Learning content ($r=.733$, $p<.01$) and course design ($r=.668$, $p<.05$) showed strongest relationship to Knowledge Acquisition while learner interaction ($r=.370$, $p<.05$) showed the weakest correlation with Knowledge Acquisition.

Learning content ($r = .765$, $p < .05$), course design ($r = .677$, $p < .05$) and social presence ($r=.673$, $p<.05$) showed the strongest relationship with Knowledge Transfer while learner interaction ($r = .365$, $p < .01$) instructor interaction ($r = .478$, $p < .05$) showed the weakest correlation with Knowledge Transfer.

In the cumulative total success factor learning content ($r=787$, $p < .05$) course design ($r=.754$, $p<$) and social presence ($r=.706$, $p <$) all showed high correlation while learner interaction ($r=.432$, $p < .05$) showed the lowest correlation.

Table 4.11 shows the correlation analysis between the Learner factors and Outcome factors for students and Table 4.12 shows the correlation between Institutional factors and Outcome factors. Like Table 4.12, the numbers in the column headers (top row) in Table 4.11 correspond the row headers (e.g. Column "1" corresponds to row "1. Gen_Self_Eff_sum", column "2" to row "2. Self_Eff_Online_Sum" and so on) in the table.

	1	2	3	4	5	6	7	8
1. Gen_Self_Eff_sum	1	.489**	.316**	.065	.443**	.080	.075	-.016
2. Self_Eff_Online_Sum	.489**	1	.388**	.145	.516**	.148	.115	.057
3. Motivation_Sum	.316**	.388**	1	.261**	.176*	-.004	.010	-.020
4. Prior_Know_Sum	.065	.145	.261**	1	.205*	.131	-.019	-.003
5. Course_Exp_Sum	.443**	.516**	.176*	.205*	1	.040	.001	-.059
6. Learner_Sat_Sum	.080	.148	-.004	.131	.040	1	.740**	.708**
7. Know_Acq_Sum	.075	.115	.010	-.019	.001	.740**	1	.780**
8. Know_Trans_Sum	-.016	.057	-.020	-.003	-.059	.708**	.780**	1

Note: *p<.05 and **p<.01

Table 4.11 Results of the correlation analysis between Learner factors and Outcome factors.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Learner_Sat_Sum	1	.740**	.708**	.894**	.466**	.648**	.549**	.504**	.555**	.332**	.651**	.715**
2. Know_Acq_Sum	.740**	1	.780**	.926**	.498**	.610**	.586**	.495**	.531**	.370**	.733**	.668**
3. Know_Trans_Sum	.708**	.780**	1	.910**	.514**	.673**	.657**	.600**	.545**	.478**	.765**	.677**
4. Total_Success	.894**	.926**	.910**	1	.542**	.706**	.656**	.585**	.596**	.432**	.787**	.754**
5. Learning_Support_Sum	.466**	.498**	.514**	.542**	1	.735**	.672**	.638**	.624**	.470**	.593**	.565**
6. Social_Pres_Sum	.648**	.610**	.673**	.706**	.735**	1	.792**	.732**	.656**	.636**	.743**	.645**
7. Direct_Inst_Sum	.549**	.586**	.657**	.656**	.672**	.792**	1	.705**	.691**	.657**	.719**	.618**
8. Learning_Play_Sum	.504**	.495**	.600**	.585**	.638**	.732**	.705**	1	.633**	.645**	.685**	.625**
9. Instructor_Intera_Sum	.555**	.531**	.545**	.596**	.624**	.656**	.691**	.633**	1	.462**	.663**	.635**

10. Learner_Intera_Sum	.332**	.370**	.478**	.432**	.470**	.636**	.657**	.645**	.462**	1	.558**	.423**
11. Learning_Cont_Sum	.651**	.733**	.765**	.787**	.593**	.743**	.719**	.685**	.663**	.558**	1	.692**
12.Course_Design_Sum	.715**	.668**	.677**	.754**	.565**	.645**	.618**	.625**	.635**	.423**	.692**	1

Note: *p<.05 and **p<.01

Table 4.12 Correlation analysis between institutional factors and outcome factors from learners' perspective.

4.5 Predicting Outcome factors from learners' perceptions

To predict the Outcome Factors, a standard multiple linear regression analysis was applied to the independent variables (Learner and Institutional factors) to see what effect they had, if any.

To carry out the regression each of the outcome variables was used as the dependent variable while the Learner and Institutional factors were used as the independent variables. Survey responses outside of 3 standard deviations were to be highlighted and a normal probability plot was also generated to provide a visual representation.

4.5.1 Results of regression from Learners' perceptions

Regression analysis was used to determine the factors that played the greatest role in predicting Learner Satisfaction. The first step was to determine how well the model fitted. In table 4.13 below the Pearson co-efficient R is 0.828 which indicates a moderate to strong level of association. Any value above 0.7 is considered an appropriate fit. The next value for consideration is R Square which in this case is equal to 0.686. This means that our independent variables account for 68.6% of the variability in Learner Satisfaction. The R Square value may at times contain a positive bias and the Adjusted R Square corrects for this and this is what is commonly used when reporting proportional variance. In the case of Learner Satisfaction, the Adjusted R Square is 64.4 %.

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.828[a]	.686	.644	1.43332	1.905

Table 4.13 Model Summary of Standard regression for Learner Satisfaction

The next test is to look at the statistical significance of the model. In Table 4.14 below the ANOVA table shows the significance (p) to be 0.000. Therefore, the result is significant.

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	596.975	18	33.165	16.144	.000[b]
	Residual	273.235	133	2.054		
	Total	870.211	151			

Table 4.14 ANOVA test for learner satisfaction

In this case, the Learner factors and Institutional factors (including those of bandwidth, technology, English, communication and face-to-face conversion) statistically predicted Learner Satisfaction $F(18,133)=16.144$, $p<0.0005$.

The next step in our analysis is looking at the Coefficients table. We start by looking at the Sig column to find the factors where $p<0.05$.

Coefficients						
Model	Unstandardised Coefficients		Standardised Coefficients	Sig.		
	B	Std. Error	Beta		Tolerance	VIF
(Constant)	2.674	1.943		.171		
Gen_Self_Eff_sum	.009	.079	.007	.914	.637	1.570
Self_Eff_Online_Sum	.027	.094	.019	.776	.557	1.794
Motivation_Sum	.038	.097	.024	.698	.633	1.579
Prior_Know_Sum	.091	.079	.063	.247	.811	1.233
Course_Exp_Sum	.077	.085	.057	.369	.589	1.697
Learning_Support_Sum	.001	.119	.000	.995	.331	3.024
Social_Pres_Sum	.309	.136	.244	.025	.204	4.908
Direct_Inst_Sum	.079	.131	.059	.549	.241	4.154
Learning_Play_Sum	-.002	.151	-.001	.988	.305	3.275
Instructor_Intera_Sum	-.014	.090	-.013	.877	.322	3.104
Learner_Intera_Sum	-.190	.098	-.142	.053	.448	2.234
Learning_Cont_Sum	.568	.141	.367	.000	.285	3.511
Course_Design_Sum	.574	.117	.383	.000	.388	2.580
Tech_SW_Sum	-.021	.071	-.020	.762	.529	1.891
BW_NEW_Sum	-.085	.104	-.049	.417	.652	1.533
F2F_New_Sum	.008	.077	.006	.921	.756	1.322
Com_Sum	.132	.114	.117	.251	.228	4.389
Eng_and_Com_Sum	-.089	.064	-.134	.167	.253	3.950
Dependent Variable: Learner Satisfaction						

Table 4.15 Coefficients table for learner satisfaction

In the case of Learner Satisfaction three variables Social Presence, Learning Content and Course design played the most significant role in the variance of Learner Satisfaction. It is

important to note here that a plot for the normal distribution was also done in the analysis and one record with values outside of 3 standard deviations had to be deleted. The resulting histogram can be found in Figure 4.1 below.

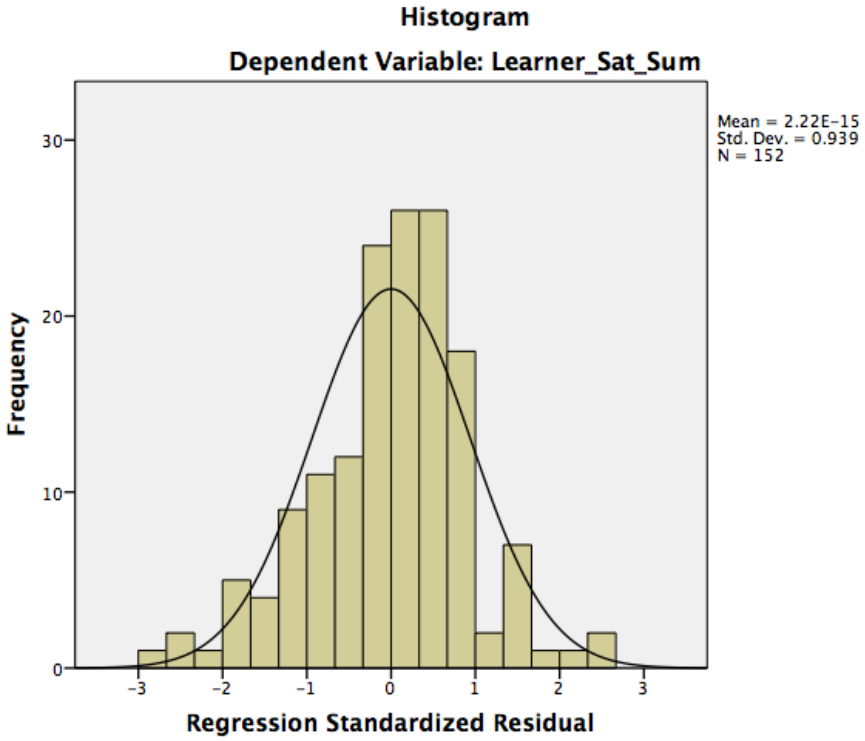

Figure 4.1. Normal distribution histogram for Learner Satisfaction

4.5.2 Regression Analysis to predict Knowledge Acquisition

Regression analysis was used to determine the factors that played the greatest role in predicting Knowledge Acquisition. Upon running the analysis for the first time it was discovered that there were four survey responses that were outside of the three required standard deviations; these responses were removed and the analysis conducted on the 148 responses.

The model was then checked for fit, the results of which can be found in Table 4.16 below. Table 4.16 shows the model summary and the Pearson co-efficient, R, which has a value of 0.867 and the R Square value of .752. The Adjusted R Squared 0.718 or 71.8%, means that the independent factors account for 71.8% of the variance in Knowledge Acquisition of the student.

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.867[a]	.752	.718	1.33207	1.958

Table 4.16 Model Summary of standard regression for Knowledge Acquisition

In the ANOVA table (Table 4.18 below) p< 0.0005 which indicates that our predictor variables statistically predicted Knowledge Acquisition F(18,130)=21,952, p< 0.005

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	701.139	18	38.952	21.952	.000[b]
	Residual	230.673	130	1.774		
	Total	931.812	148			

Table 4.17 ANOVA test for knowledge acquisition

In the case of Knowledge Acquisition six variables – social presence, instructor interaction, learning content, course design, English as the teaching language and transitioning from face-to-face to the online environment – all played significant roles in the variance of Knowledge Acquisition.

Model	Unstandardised Coefficients		Standardised Coefficients	Sig.	Collinearity Statistics	
	B	Std. Error	Beta		Tolerance	VIF
(Constant)	.715	1.823		.696		
Gen_Self_Eff_sum	.082	.078	.061	.295	.569	1.756
Self_Eff_Online_Sum	.014	.088	.009	.875	.550	1.818
Motivation_Sum	.077	.092	.046	.406	.619	1.615
Prior_Know_Sum	.019	.075	.012	.803	.791	1.264
Course_Exp_Sum	-.078	.082	-.055	.346	.557	1.795
Learning_Support_Sum	.144	.109	.097	.190	.354	2.826
Social_Pres_Sum	.490	.129	.365	.000	.206	4.847
Direct_Inst_Sum	.092	.122	.066	.451	.249	4.016
Learning_Play_Sum	-.046	.144	-.025	.752	.302	3.314
Instructor_Intera_Sum	-.177	.086	-.160	.041	.314	3.187
Learner_Intera_Sum	-.152	.091	-.107	.099	.459	2.180
Learning_Cont_Sum	.670	.131	.409	.000	.296	3.383
Course_Design_Sum	.418	.112	.267	.000	.370	2.701
Tech_SW_Sum	.111	.066	.101	.096	.520	1.923
BW_NEW_Sum	-.163	.103	-.085	.117	.651	1.535
F2F_New_Sum	.203	.073	.138	.006	.763	1.311
Com_Sum	.098	.103	.085	.340	.243	4.110
Eng_and_Com_Sum	-.163	.059	-.235	.007	.261	3.839
Dependent Variable: Knowledge Acquisition						

4.18 Coefficients Table for knowledge acquisition

A normal distribution histogram showing the results of the regression analysis for Knowledge Acquisition is seen in Figure 4.2 below.

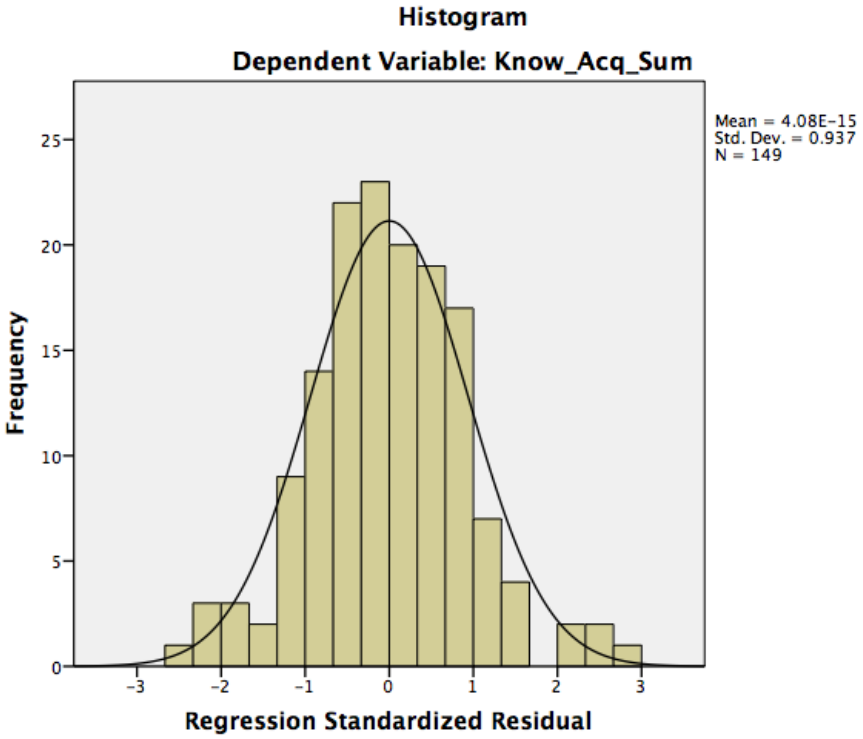

Figure 4.2. Normal Distribution Histogram for Knowledge Acquisition

4.5.3 Regression Analysis to predict Knowledge Transfer

Regression analysis was used to determine the factors that played the greatest role in predicting Knowledge Transfer. Upon running the analysis for the first time it was discovered that there was one survey response that was outside of the 3 required standard deviations and this was removed and the final plot can be found in Figure 4.3 below.

After the correction, the model was then checked for fit. Table 4.14 below shows the model summary and the Pearson co-efficient, R, which has a value of 0.842 and the R Square value of 0.709. The Adjusted R Squared 0.670 or 67%. This means that the independent factors account for 67% of the variance in Knowledge Transfer of the student.

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.842[a]	.709	.670	1.52098	1.754

Table 4.19 Model Summary of standard regression for Knowledge Transfer

In the ANOVA table (Table 4.21 below) p<0.0005 which indicates that our predictor variables statistically predicted Knowledge Transfer F(18,133) = 18.003, p<0.005

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	749.662	18	41.648	18.003	.000[b]
	Residual	307.680	133	2.313		
	Total	1057.342	151			

Table 4.20 ANOVA test for knowledge transfer

In the case of Knowledge Transfer three variables social presence, learning content and course design played significant roles in the variance of Knowledge Transfer.

Model	Unstandardised Coefficients		Standardised Coefficients	Sig.	Collinearity Statistics	
	B	Std. Error	Beta		Tolerance	VIF
(Constant)	2.261	2.061		.275		
Gen_Self_Eff_sum	-.155	.084	-.108	.067	.637	1.571
Self_Eff_Online_Sum	-.046	.099	-.029	.645	.557	1.795
Motivation_Sum	.163	.104	.093	.118	.628	1.593
Prior_Know_Sum	-.082	.084	-.051	.327	.802	1.247
Course_Exp_Sum	.094	.090	.063	.295	.599	1.669
Learning_Support_Sum	.050	.123	.032	.684	.351	2.852
Social_Pres_Sum	.292	.142	.209	.042	.211	4.742
Direct_Inst_Sum	.271	.140	.186	.054	.239	4.192
Learning_Play_Sum	-.124	.161	-.065	.445	.303	3.304
INstructor_Intera_Sum	-.031	.096	-.026	.748	.324	3.086
Learner_Intera_Sum	-.026	.103	-.018	.801	.448	2.231
Learning_Cont_Sum	.769	.149	.451	.000	.287	3.486
Course_Design_Sum	.570	.124	.345	.000	.390	2.564
Tech_SW_Sum	-.056	.076	-.048	.459	.525	1.904
BW_NEW_Sum	-.057	.110	-.030	.608	.649	1.540
F2F_New_Sum	.057	.081	.038	.485	.752	1.329
Com_Sum	-.031	.117	-.026	.787	.242	4.124
Eng_and_Com_Sum	-.115	.067	-.157	.090	.260	3.843
Dependent Variable: Knowledge Transfer						

Table 4.21 Coefficients table for Knowledge Transfer

A normal distribution histogram showing the results of the regression analysis for Knowledge Transfer in seen in Figure 4.3 below.

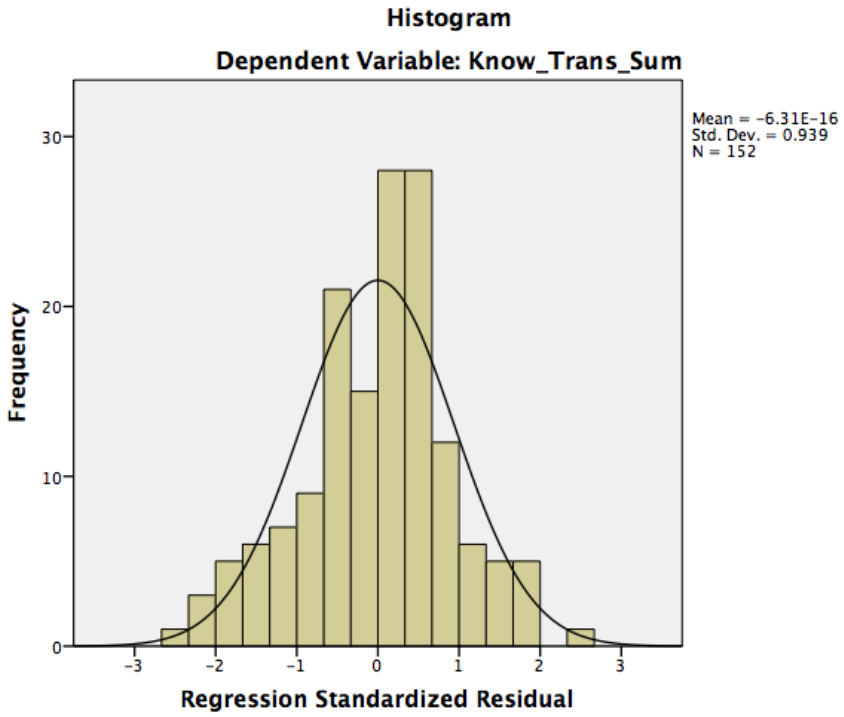

Figure 4.3. Normal Distribution Histogram for Knowledge Transfer

4.6. Regression Analysis to Total Success

To get an overall picture of the success of the programme an additional value called "*Total Success*" was calculated. Total Success was the summation of all the values in the questionnaires for the three Outcome factors making the highest possible score that of 60. Regression analysis was used to determine which of the Learner and Institutional factors played the greatest role in predicting this Total Success factor. Upon running the analysis for the first time it was discovered that there was 1 questionnaire response that was outside of the required three standard deviations and this response was deleted and the analysis was run on the remaining responses.

After the correction, the model was then checked for fit. Table 4.14 below shows the model summary and the Pearson co-efficient, R, which has a value of 0.880 and the R Square value of 0.774. The Adjusted R Squared 0.743 or 74.3%, means that the independent factors account for 74.3% of the variance in Knowledge Transfer of the student.

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.880[a]	.774	.743	3.77025	1.628

Table 4.22 Model of standard regression summary of Total Success

In the ANOVA table (Table 4.24 below) p<0.0005 which indicates that our predictor variables statistically predicted the Total Success F(18,133)=25.245, p<0.005

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6459.298	18	358.850	25.245	.000[b]
	Residual	1890.571	133	14.215		
	Total	8349.868	151			

4.23 ANOVA test for Total Success

Four variables learning support, learning content, course design and English as the teaching language played significant roles in the variance of "Total Success" of the programme.

Coefficients						
	Unstandardised Coefficients		Standardised Coefficients		Collinearity Statistics	
Model	B	Std. Error	Beta	Sig.	Tolerance	VIF
1	3.675	5.109		.473		
(Constant)	-.073	.208	-.018	.726	.637	1.571
Gen_Self_Eff_sum	-.024	.246	-.005	.924	.557	1.795
Self_Eff_Online_Sum	.414	.257	.084	.109	.628	1.593
Motivation_Sum	-.102	.207	-.023	.623	.802	1.247
Prior_Know_Sum	.193	.223	.046	.389	.599	1.669
Course_Exp_Sum	-.011	.306	-.003	.971	.351	2.852
Learning_Support_Su	.964	.352	.246	.007	.211	4.742
m	.318	.346	.078	.360	.239	4.192
Social_Pres_Sum	-.673	.400	-.126	.095	.303	3.304
Direct_Inst_Sum	-.046	.237	-.014	.848	.324	3.086
Learning_Play_Sum	-.448	.256	-.108	.083	.448	2.231
INstructor_Intera_Sum	1.841	.369	.384	.000	.287	3.486
Learner_Intera_Sum	2.086	.307	.449	.000	.390	2.564
Learning_Cont_Sum	.121	.187	.037	.520	.525	1.904
Course_Design_Sum	-.090	.274	-.017	.744	.649	1.540
Tech_SW_Sum	.251	.202	.059	.215	.752	1.329
BW_NEW_Sum	.554	.289	.161	.057	.242	4.124
F2F_New_Sum Com_Sum Eng_and_Com_Sum	-.397	.167	-.192	.019	.260	3.843
a. Dependent Variable: Total Success						

4.24 Coefficient table for Total Success

A normal distribution histogram showing the results of the regression analysis for the Total Success factor is seen in Figure 4.4 below.

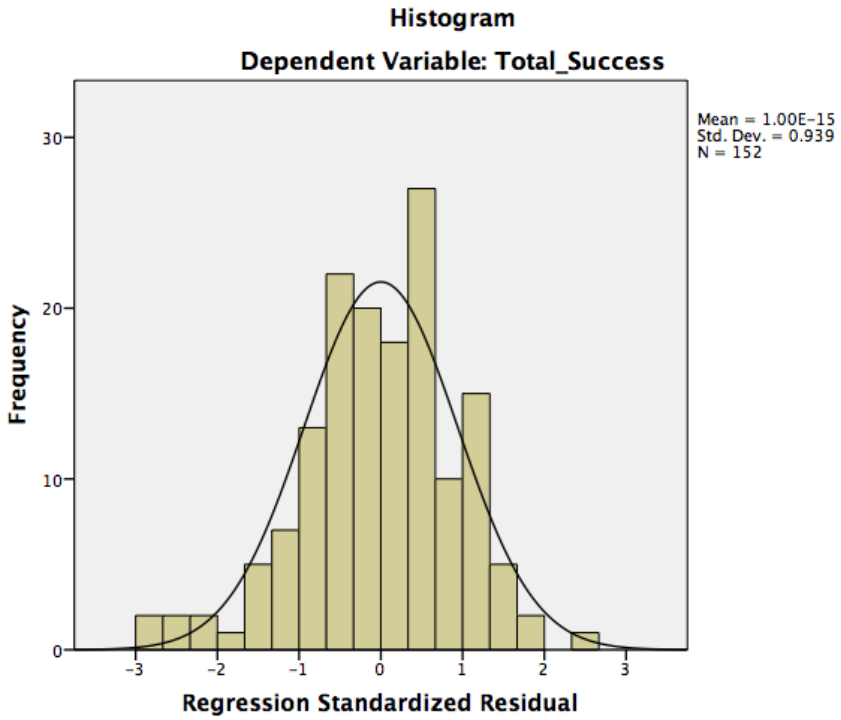

Figure 4.4. Normal Distribution Histogram for Total Success

4.7 Discussion about Learners' perceptions

This section is a summary of the findings and is a discussion about the research questions presented at the start of this study.

The correlation analysis and multiple regression analysis were used to answer the first research question:

"*What are the most significant Learner factors and Institutional factors in predicting Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student?"*

In tackling this question, a correlation analysis was carried out between 1) the Learner factors and the Outcome factors and 2) the Institutional factors and the Outcome factors. The most glaring point coming out of the data is the weak relationship between any of the Learner factors and the Outcome factors.

Significant correlation was found between the Institutional factors of learning content, course design and social presence.

There was one Institutional factor that showed a strong correlation among all Outcome factors and this was learning content. The second most common factors were learning content and

social presence which both showed a strong correlation with Knowledge Transfer, Learner Satisfaction and overall Total Success. There was also a strong correlation between direct instruction and Knowledge Transfer.

Perhaps not so surprisingly, based on the correlation analysis above, none of the Learner factors appeared to have any significant effect in predicting Learner Satisfaction, Knowledge Transfer or Knowledge Acquisition. This is something that requires further investigation, especially in the Caribbean context.

Conversely, of the Institutional factors that were examined, social presence, learning content and course design played a significant role in all the Outcome factors.

Out of all the Outcome factors, Knowledge Acquisition was affected by the largest number of Institutional factors: learning content, course design, social presence, transitioning from face-to-face and communication skills of the lecturer. Of the Institutional factors only learning content, course design and social presence had any significant effect on Knowledge Transfer and Learner Satisfaction. Also, quite surprisingly along with learning content, course design, learner support and communication skills of the lecturer all played a significant role in determining total success but not social presence.

When looking at the data analysis holistically, course design, social presence and learning content really stand out as the factors that are most important to students in providing an effective online classroom environment. These factors made the most statistically significant contribution to the Outcome factors and had the highest Beta scores in the three Outcome factors of Learner Satisfaction, Knowledge Transfer and Knowledge Acquisition. Looking at the newly created Total Success, factor learning content and course design also had the highest score along with learner support and the communication skills of the lecturer both in language and feedback.

4.8 Internet variable

This section looks at the second research question which asks, “how does the ability to access the Internet affect the outcome variables of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student”. This section therefore examines how the speed or bandwidth with which the students access the Internet affects the Outcome factors. When the questionnaire was done, each student was asked to state what bandwidth

they used to access the Internet. Table 4.26 provides the ranges that were available in the questionnaire:

Internet Speed
less than 1 MBps
1-5 MBps
5-10 MBps
10-15 MBps
15-20 MBps
20-25 MBps
25-30 MBps
over 30 MBps

4.25 Internet ranges used in questionnaire

If the student had access to a 5 MBps internet package they were asked to choose the 1-5 MBps option rather than the 5-10MBps since the 5 MBps speed was the "best case" scenario. Similarly, if they had a 10 MBps package they were asked to choose the 5-10 MBps option; if they had the 15 MBps package, the 10-15 MBps option and so on. For the analysis, the categories of less than 1 MB and 1-5 MB were grouped together to form a new category "*less than 5 MB*". Ranges 5-10 MB and 10-15 MB were grouped together to form a 5-15 MB category. Likewise, 15-20 MB and 20-25 MB were grouped together to form a 15-25 MB category. The 25-30 MB and the over 30 categories were grouped together to form a new "*over 25 MB"* category. This became necessary since the values for N in the older categorisation were in some cases too small to be utilised in any meaningful statistical analysis.

New Ranges - Between-Subjects Factors			
		Value Label	N
New_Internet_Speed _051525	1.00	less than 5	37
	2.00	5-15	32
	3.00	15-25	27
	4.00	over 25	57

Table 4.26 New Internet Ranges

The Internet speeds were then compared to each individual Outcome factor using a two-way ANOVA to see if it significantly affected the outcome or not. This was done in three steps. First was the Levene's test which is used to determine if the variance across the dependent variable was equal. Here values less than .05 indicate a problem. The next step is to examine the values in the Sig column (p) to see if the Internet speed had any statistically significant role

in determining the outcome of the dependent factor of either Learner Satisfaction, Knowledge Acquisition, Knowledge Transfer or Total Success.

In the last step of my analysis I look at the Partial ETA Squared and this determines, according to Cohen (1998), the effect size or strength of association that the proportion of variance the independent variable has on the dependent variable.

4.8.1 Levene's Test

This test provides a test for one of the main assumptions underlying the analysis of variance. It is done to determine if the variance across your dependent variable is equal. Values less than the significance value of 0.05 indicate that there is a problem. In our study the Sig value for Learner Satisfaction (.210), Knowledge Transfer (.348) and Total Success (.085) are all above the desired value of .05 and the main effects and interaction effects can therefore be considered significant. The Sig value for Knowledge Acquisition is 0.005 and the effects of Internet Speed on this Factor can be considered not significant.

Levene's Test of Equality of Error Variances

Dependent Variable	F	df1	df2	Sig.(p)
Learner Satisfaction	1.528	3	149	.210
Knowledge Acquisition	4.497	3	149	.005
Knowledge Transfer	1.107	3	149	.348
Total Success	2.313	3	63	.085

Independent Variable: New Internet Speed Categories

4.27 Levene's test on outcome factors

4.8.2 Main Effects of Internet Access on Outcome factors

The values in the Sig column (Table 4.29) play a twofold role. If the Sig values are more than 0.05 then there is significant interaction effect, and no significant main effect between the independent and dependent variables. In analysing the effect on Internet access on the Outcome factors we see that the Sig value for Learner Satisfaction is .040, for Knowledge Transfer .027 and for Total Success .034 which all imply that Internet access influences these factors whereas it does not play a significant role in Knowledge Acquisition (Sig=.175).

Tests of Between-Subjects Effects

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	R Squared	Adjusted R Squared
Learner Satisfaction	58.098	3	19.366	2.839	.040	.054	.054	.035
Knowledge Acquisition	40.117	3	13.372	1.674	.175	.033	.033	.013
Knowledge Transfer	65.193	3	21.731	3.152	.027	.060	.060	.041
Total Success	474.689	3	158.230	2.959	.034	.056	.056	.037
a. R Squared = .054 (Adjusted R Squared = .035)								

Table 4.28 Partial ETA Squared – Test between Internet speed and outcome factors

The Partial Eta Squared value for Learner Satisfaction (.054), Knowledge Transfer (.060) and Total Success (.056) according to Cohen (1988) gives the effect size (or strength of association) indicating the proportion of variance of the dependent variable that is explained by the independent variable. In this case, the effect of the independent variable can be considered medium on the dependent variable.

4.9 English as the primary teaching language

This section examines how the use of English as the primary language for teaching affects the Outcome factors of Learner Satisfaction, Knowledge Acquisition, Knowledge Transfer and Total Success for students in the M.Sc. in BCSD programme. These students were chosen specifically because I had access to information about the specific courses that the students were taking and the lecturers that were giving the courses.

For each questionnaire issued (per course), the lecturer's nationality and primary language were noted. The frequency table shows the languages used by the lecturers in the programme.

Lecturer Languages Frequency			
		Value Label	N
Lang_of_Lecturer_New	1.00	Trinidadian	35
	2.00	Dutch	10
	3.00	Belizian	17
	4.00	Other	5

Table 4.29 Breakdown of primary language of lecturers

In our study the Sig value for Knowledge Acquisition (.266), Knowledge Transfer (0.452) and Total Success (.085) are all above the desired value of .05. The main effects and interaction effects can therefore be considered significant. The Sig value for Learner Satisfaction is 0.013

which implies that there is no statistical significance between Learner satisfaction and the use of English as the primary teaching language in the BCSD course.

4.9.1 Levene's Test

Levene's Test of Equality of Error Variances[a]				
	Dependent Variable:			
	F	df1	df2	Sig.
Learner_Sat_Sum	3.910	3	63	.013
Knowledge Acquisition	1.350	3	63	.266
Knowledge Transfer	.888	3	63	.452
Total Success	2.313	3	63	.085

Table 4.30 Levene's test–language of lecturer vs.outcome variables

4.9.2 Main Effects of English as the primary teaching language on Outcome factors

The values in the Sig. column (4.32) play a twofold role. If the Sig values are MORE than 0.05 then there is significant interaction effect and no significant main effect between the independent variable and the dependent variable. Analysing the effect of the lecturers in the BCSD programme on the Outcome factors suggests that the Sig value for Learner Satisfaction is p<.005, for Knowledge Acquisition p<.005, for Knowledge Transfer p=.007 and for Total Success p<.005. While these seem to imply that they are all significantly affected by the use of English language by the course lecturers only the factors of Knowledge Acquisition, Knowledge Transfer and the Total Success are statistically significant.

The Partial Eta Squared values for all factors are over .1 which implies, according to Cohen (1988) that the use of English has a large effect on the factors of Knowledge Acquisition, Knowledge Transfer and overall Success for the courses in the programme.

Tests of Between-Subjects Effects								
Lang_of_Lecturer_New								
Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	R Squared	Adjusted R Squared
Learner_Sat_Sum	145.663	3	48.554	7.875	.000	.273	.273	.238
Know_Acq_Sum	199.815	3	66.605	8.886	.000	.297	.297	.264
Know_Trans_Sum	109.309	3	36.436	4.430	.007	.174	.174	.135
Total_Success	1337.060	3	445.687	7.591	.000	.266	.266	.231

Table 4.31 Partial ETA Squared–Test between language of lecturer and outcome factors

4.10 Cross sectional comparison using Learner factors, Institutional factors and Outcome factors

In the next two sections, we will examine the fourth research question which asks:

"What predictor variables are different and similar when comparing five universities from China, Mexico, Spain, the USA and the Caribbean from the learners' perspective?"

In this section I will do a comparison of the Caribbean-based students at the UWI and those based in the universities of the USA (UNM), China (PKU), Spain (OUC) (Barbera and Linder-Vanbershot, 2011) and Mexico (UPEAP) (Ordóñez, 2014) using the Learner and Institutional factors/predictors and the Outcome factors.

The data from this study utilises responses from the UWI that is a Caribbean-based university whose primary market are Caribbean students. Thirty-four percent of the responses from the questionnaire conducted on the Caribbean students were from Trinidad and Tobago and the Trinbagonian students represented the largest single group, numbering 76 in all. Trinidad and Tobago is one of the few countries represented in Hofstede et al.'s (2010) analysis of cultures and as such was analysed as a group along with the entire Caribbean student base.

Results are presented from the perspective of learners and instructors in four sections. Section 4.9.1 presents the comparison between five universities using Learner factors. There were sufficient responses from lecturers for the analysis to be broken up into two separate parts, student perspectives and lecturer perspectives. Section 4.9.2 presents a comparison between the five universities using the eight Institutional factors. However, there were not enough responses from lecturers so only student responses were utilised for this part of the analysis. Section 4.9.3 presents a comparison between three Outcome factors among the universities, while section 4.10 presents a discussion about the cultural differences in the four countries.

4.10.1 Learner factors

Table 4.33 shows the mean and standard deviation for each Learner factor from the student perspective. The means are placed side by side with the results from the universities of Spain, Mexico, USA and China along with the results from the questionnaire showing the Learner factors from Caribbean students and a subset showing Trinidad and Tobago students. There were significant differences between all five Learner factors according to the university students.

Table 4.33 shows that general self-efficacy, online self-efficacy and motivation all had a great impact on the success of e-Learning in these countries/regions. Contrastingly prior knowledge seems to play an important role in third world countries such as Mexico and the Caribbean compared to their first world counterparts of the USA, Spain and China.

For the Trinbagonian student, as well as the Caribbean student, overall online self-efficacy was the most important factor. Similarly, this was also true for students in Spain and China. Students in the USA ranked motivation as the most important factor, while students in Mexico considered general efficacy the most important factor.

General Self-Efficacy, Online Efficacy and Motivation all ranked highly among all students. Prior knowledge ranked moderately high among students from the Caribbean and the USA, but was not considered that important to students in Spain, China, Mexico and Trinidad and Tobago. Course Expectation was considered moderately high to students in the USA and Mexico, but less so to the other students in Spain, China, the Caribbean and Trinidad and Tobago.

	UOC N=687		UNM N=57		PKU N=177		UPEAP N=198		UWI N=226		TT N=76	
Learner Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
General Self Efficacy	3.01	0.46	3.25	0.57	3.03	0.67	3.31	0.57	3.07	0.59	3.11	0.61
Online Self-Efficacy	3.24	0.5	3.33	0.6	3.23	0.63	3.2	0.61	3.36	0.62	3.29	0.73
Motivation	3.28	0.64	3.46	0.66	2.97	0.96	3.14	0.6	3.2	0.47	3.1	0.46
Prior Knowledge	2.74	0.51	3.06	0.51	2.81	0.71	2.9	0.64	3.01	0.56	2.98	0.5
Couse Expectation	2.79	0.57	3.02	0.64	2.82	0.87	3.1	0.57	2.92	0.61	2.88	0.65

Table 4.32 Mean and standard deviation for each Learner factor from learner's perspective: country comparison

From a lecturer's perspective, the factor that all students bring to bear the most to the online learning experience is online self-efficacy. It is the factor that all lecturers in each university rank the highest. In every university (except the University in Mexico in which it ranked third) the next most highly rated factor is that of motivation. This implies that instructors felt that students were generally highly motivated to learn from the course (course expectation is the next most highly rated factor for students in the Mexican University as opposed to motivation). Lecturers in the Caribbean ranked online-efficacy, motivation and prior knowledge very highly (higher than their counterparts) and second highest in the areas of general efficacy and course expectation. In general, terms the Caribbean lecturers feel that the Caribbean online student is

adequately prepared for the online learning environment compared to some of their first and third world counterparts.

	UOC N=105		UNM N=16		PKU N=7		UPEAP N=40		UWI N=32	
Learner Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
General Self Efficacy	2.74	0.75	2.65	1.08	2.83	0.84	2.84	0.56	2.74	0.69
Online Self-Efficacy	3.24	0.57	3.31	0.79	3.19	0.87	3.3	0.5	3.55	0.43
Motivation	2.95	0.83	2.71	0.99	3.07	0.51	2.88	0.62	3.38	0.48
Prior Knowledge	2.82	0.75	2.69	1.04	3.16	0.4	2.85	0.44	3.3	0.54
Couse Expectation	2.74	0.86	2.71	0.92	2.84	0.88	2.98	0.42	†2.91	0.9

Table 4.33 Mean and standard deviation for each learner factor from lecturer's perspective: country comparison

Students from the Caribbean as a whole and Trinidad and Tobago scored higher than any of the other countries in the Online Efficacy. An individual's self-efficacy abilities have been found to be directly related to their level of individualism (Kumar and Maehr, 2010). Countries like the United States (91) have a high index of individualism and rank third after the Caribbean and Trinidad and Tobago in the questionnaire. Spain has an index of 51, while México has an index of 30 and China an index of 20.

The UPAEP students have indicated that course expectation is a very important factor. The Caribbean students and Trinbagonian students scored relatively low on the course expectation. Trinidad and Tobago with its relatively low PDI score implies that students feel that they are independent; hierarchy is for convenience only; students and lecturer have equal rights and are on a level playing field; superiors are supposed to be accessible and lecturers are supposed to facilitate and empower.

From the results of the questionnaires, the culture of the Caribbean student is a collectivist society with high masculinity. This implies that there are many students competing to graduate at the top of the class for the few job spaces available in their respective fields, which would explain the motivation scores for the Caribbean and Trinidad and Tobago students similar to that of the USA (Hofstede et al., 2010).

4.10.2 Institutional factors

Table 4.35 shows that students from the Caribbean and Trinidad and Tobago have the lowest composite scores in all eight Institutional factors, while American students have the highest. All seven Institutional factors differed significantly according to students.

From the perspective of American students, the Caribbean students and the Trinidad and Tobago students, Instruction received the highest score. For Mexican and Spanish students, Learner Support received the highest score and for the Chinese students, Social Presence.

There were six factors that got a score of 3.0 or above by the American, Mexican, Chinese and Spanish students (Learner Support, Social Presence, Learning Platform, Learner Interaction, Learning Content and Course Design). However, none of the eight Institutional factors were ranked 3 or above by any of the Caribbean or Trinbagonian students.

In the Instruction factor, students from the University of New Mexico had a high score of 3.59 while Spanish and Mexican students gave a score of 3.09 and 3.08 respectively. Chinese students reported a score 2.92 followed by the Caribbean students with 2.90 and Trinidadian students at 2.84.

Differences were even more striking when looking at Instructor Interaction. The University of New Mexico recorded a rank of 3.19 followed by the Spanish university at 3.05, the Mexican University at 2.99 and the Chinese University at 2.93. Then there was a significant drop off with the Caribbean students ranking the Caribbean-based university at 2.45 and the Trinidad and Tobago students at the same university giving a ranking of 2.44.

In terms of ranking, the Caribbean students ranked the following factors from highest to lowest: instruction, learning content, course design, learning platform, social presence, learner interaction, learner support and instructor interaction the lowest. For the Trinbagonian student the rankings were slightly different, from highest to lowest, they were instruction, course design, learning content, learning platform, social presence, learner support, learner interaction and instructor interaction. The American students from the University of New Mexico rated instruction at the top of their list (3.5) but this is also tied with learning content and is followed by learner support, social presence, course design, learner interaction, and learning platform. Like their Caribbean counter-parts instructor interaction brings up the rear.

These results contrast sharply with Spanish and Mexican universities which both rank Learner Support as the number one factor, Learner Interaction second and Learning Content and course design tied for third. At the Mexican university, Instruction comes next followed by the Learning Platform then Social Presence and finally Instructor Interaction. Interestingly enough, the Chinese university ranks Social Presence as the number one factor, but that is followed by Learner Interaction and then there is a tie (similar to the Spanish and Mexican universities) for

Learning Content and Course Design for third. This is then followed by the Learning Platform, Learner Support, Instructor Interaction and finally Instruction.

	UOC N=380		UNM N=42		PKU N=87		UPEAP N=198		UWI N=153		TT N=76	
Institutional Factors	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Learner Support	3.21	0.62	3.58	0.59	3	1	3.19	0.47	2.69	0.48	2.67	0.5
Social Presence	3.05	0.75	3.55	0.62	3.16	0.88	3.01	0.64	2.76	0.55	2.70	0.54
Instruction	3.09	0.73	3.59	0.69	2.92	1	3.08	0.64	2.90	0.6	2.84	0.61
Learning Platform	3.06	0.66	3.32	0.72	3.01	0.87	3.06	0.46	2.77	0.46	2.71	0.43
Instructor Interaction	3.05	0.78	3.19	0.96	2.93	1	2.99	0.7	2.45	0.76	2.44	0.72
Learner Interaction	3.15	0.66	3.38	0.72	3.15	0.86	3.16	0.53	2.73	0.59	2.63	0.55
Learning Content	3.09	0.07	3.59	0.26	3.02	0.96	3.1	0.59	2.88	0.52	2.8	0.48
Course Design	3.09	0.14	3.52	.71	3.02	0.95	3.1	0.55	2.86	0.53	2.83	0.52

Table 4.34 Mean and standard deviation for each institutional factor from a learner's perspective: comparative results by country.

The Caribbean and Trinidad and Tobago students scored low on the Learner support factors which seems to indicate that they did not have enough access to information or training to become independent while using the platform. Trinidad and Tobago has a moderate or intermediate score of 55 when it comes to uncertainty avoidance. UNM however scored Learner factors very highly which indicates that they feel that they had received enough training on the e-Learning platform and had adequate resources to be independent while using the platform. Countries like the USA (46) with low uncertainty avoidance scores are comfortable when they are independent when using the Learning Platform.

Like the USA, Trinidad and Tobago has a low PDI score. The highest scores for the Caribbean and Trinidad and Tobago were that of the Instruction factor. This is similar to what we find in Hofstede's (2001) explanation of low PDI societies where in teachers and students are considered equals (p. 107).

The second and third highest scores for the Caribbean and Trinidad and Tobago were that of Learning Content and Course Design. Coming out of the low PDI scores, students prefer to be independent and courses in the e-Learning system need to support their independence. From the perception of the learner, for the course to be considered successful, it is critical that course content be relevant and the course material clear and easily located and the method of assessment well defined.

4.10.3 Outcome factors

Caribbean and Trinbagonian students scored the second and third highest respectively in the Knowledge Acquisition factor after the USA but were fifth and sixth in Learner Satisfaction surpassing only the Chinese university. In Knowledge Transfer the Caribbean and Trinbagonian students were once again second and third behind the American students.

	UOC N=308		UNM N=42		PKU N=87		UPEAP N=198		UWI N=153		TT N=76	
Outcome Factors	Mean	Sd	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Learner Satisfaction	3.23	0.67	3.46	0.47	2.80	1.10	3.30	0.57	3.07	0.59	3.11	0.61
Knowledge Acquisition	3.11	0.68	3.42	0.7	2.92	1.03	3.10	0.57	3.36	0.62	3.29	0.73
Knowledge Transfer	3.00	0.70	3.44	0.72	2.97	1.08	3.10	0.58	3.2	0.47	3.1	0.46

Table 4.35 Mean and standard deviation for each Outcome factor from learner's perspective: comparative results by country

4.12 Activity gap

Unfortunately, I was unable to get enough responses from lecturers to participate in the second part of the survey. I sought the assistance of the M.Sc. in BCSD course coordinator, and even the Dean of the Faculty to assist but to no avail. Similarly, I sought the help of the programme manager of the B.Ed. Early Childhood Development and Family Studies programme but to no avail.

4.13 Summary

In this chapter I gave a breakdown of the demographic data of the respondents to the questionnaire. I then calculated the reliability of student response with respect to the Outcome factors. In section 4.4 I gave the results of the correlation analysis between all the factors. In the next section I showed the results of the regression analysis between the Learner and Institutional factors and each of the Outcome factors including "*Total Success*". Using the regression analysis, I answered the first sub-question in the research:

"What are the most significant Learner factors and Institutional factors in predicting Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer for the Caribbean e-Learning student?"

The next two sections were the results from the two two-way ANOVAs. The first was between bandwidth and each of the Outcome factors and the next was between the nationality of the lecturers in the BCSD and the Outcome factors. In the next section (4.10) I did a comparison between the results coming out of the questionnaire for the Caribbean students and those of a similar questionnaire for universities in Mexico, Spain, China and USA. In the last two sections of the chapter I stated how I collected the data and the gap between what I could have collected and what I collected.

CHAPTER 5 Discussion

5.1 Introduction

In this chapter I will provide a brief synopsis of the ANOVA analysis from Chapter 4 and identify which factors/variables play the greatest role determining the success of an online programme for Caribbean students. Next I will use the results of the ANOVA and the means generated from each of the factors for the universities involved in the questionnaires (USA, China, Spain and Mexico) and compare them to the means generated by the students from the university in the Caribbean (UWI) and a subset from the Trinbagonian students. These results will then be aligned with Hofstede's Dimensions of National Culture (Hofstede et al., 2010) to see how they match up and see if any generalisations can be identified. Specific focus was placed on the students from Trinidad and Tobago for two main reasons:

1) Trinidad and Tobago is one of the few Caribbean countries measured in Hofstede's Dimensions for National Culture (Hofstede et al., 2010) and one of the few utilising all 6 dimensions;

2) Trinidad and Tobago students make up the largest proportion of the students in the survey (34.4%).

The following section examines the use of English as the primary teaching language and the role of fluency in delivering an online course.

I then examine bandwidth and Internet coverage in the Caribbean and in Trinidad and Tobago specifically to see how the digital divide influences e-Learning.

The final 2 sections in this chapter identify the limitations to this study and some of the implications that emerge from the study.

5.2 Learner and Institutional factors that influence the successful Outcome factors for Caribbean students

The findings suggest that there are three main factors that contribute to the successful outcomes of Learning Satisfaction, Knowledge Acquisition and Knowledge Transfer. The three factors are:

1) social presence
2) learning content
3) course design

The three factors above were the only ones that made any statistically significant contribution to Learner Satisfaction and Knowledge Transfer. There were additional factors that contributed to Knowledge Acquisition other than social presence, learning content and course design and they were:

1) English as the primary teaching language
2) Transitioning from face-to-face to the online environment
3) Instructor interaction

The influence of the course design cannot be understated. Most students prefer courses that have clear guidelines together with well-structured and clear procedures (Jung et al., 2002). Similarly, learning content refers to the relevance of the material in the course especially as it is related to stated objectives of the course. This is especially relevant to students who are professionals in their field. Most of the students in the survey come from a culture where traditionally most classes were taught in a face-to-face context, with some interaction both between the lecturer and with the institution. Oftentimes classes will be held at the institution itself or a satellite location affiliated with the institution. The institution therefore plays a perceived role in the student's level of success. In cases where the interaction with instructors is limited, the institution sometimes becomes the primary source of information for the student.

In the specific case of Knowledge Acquisition, the role of the instructor understandably is an important one as is the ability to properly deliver the course material. Again, historically coming from a face-to-face context, the change to an online environment with its different tools and modes of delivery, plays an important part in the learners' knowledge acquisition.

Interestingly when the "Total Success" data were considered, and the ANOVA analysis re-run, the three most influential factors were:

1. learner support
2. learning content
3. English as the primary teaching language

Learning support and learning content had a direct positive correlation but the three factors combined seem to imply that the online programme would be successful once the content is

deemed relevant and proper instructor delivery is coupled with adequate support for the student.

5.3 Cultural cross sectional comparison

This section of the chapter looks at the comparison among the means of individual Learner, Institutional and Outcome factors for the countries involved in the survey from the learner and instructor perspective. This means that for each university in Spain, China, Mexico and the USA, a comparison was made to those from the UWI.

The results of this study revealed significant differences among all the learners for the 16 factors under consideration. In general, among the Learner factors, the most highly rated was online self-efficacy while the lowest rated was prior knowledge. Among the Institutional factors the highest rated was learning content followed closely by course design and instruction, while the lowest rated was instructor interaction. The highest rated Outcome factor was Knowledge Acquisition and the lowest rated Knowledge Transfer.

It is important to note that while the Caribbean and Trinbagonian students' scores were in the same range as their counterparts for the Learner factors, there was no correlation between any of the Learner factors and the Outcome factors. It was little surprise therefore that during the ANOVA analysis, Learner factors played a minimal role in determining the Outcome factors of Caribbean students. On the other hand, while the scores for the Institutional factors were all low for the Caribbean and Trinbagonian students, there was indeed a high correlation between all of them and the Outcome factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer and the cumulative Total Success score.

In general terms, the findings found that in the Learner factors, students' scores were significantly higher than instructors in the factors of motivation and general self–efficacy. The learners' scores were however lower in the areas of online self-efficacy, prior knowledge and course expectation.

For the Caribbean student, there was a notable difference between the student's perception of their general self-efficacy and their lecturer's opinion of their general self-efficacy. The student's perception was significantly higher (a score of 3.07 compared to their lecturer's score of 2.74). Similarly, for the Trinbagonian students, the general efficacy was even higher at 3.11. While the students in general have a high sense of motivation it is not necessarily a sentiment

shared by their instructors. In the Caribbean and Trinbagonian case lecturers score motivation at 3.38 while the UWI students ranked it at 3.2 and the Trinbagonian students rank it 3.1.

The overall score of Online self-efficacy for lecturers is relatively high (similar to that of the students) with the lecturers in the Caribbean giving the score of 3.55 while the students in the Caribbean and Trinidad and Tobago gave a score of 3.36 and 3.29 respectively. This implies that both lecturers and students believe that students are comfortable in the online environment. Similarly, for prior knowledge lecturers in the Caribbean gave prior knowledge a score of 3.3 while the students in the Caribbean and Trinidad and Tobago gave a score of 3.01 and 2.98 respectively. This implies that both students and lecturers believe that they are equipped with the required background knowledge to be successful in the online course. The ranking for course expectation is probably the closest, with the lecturers giving it a score of 2.92 and students in the Caribbean and Trinidad and Tobago giving it a score of 2.92 and 2.88 respectively.

In the Hofstede (2011) context, using Trinidad and Tobago as the example, students tend to treat the lecturers as their equals (low Power Distance) and are highly competitive and result oriented (High Masculinity). However, many of the lecturers have come from the face-to-face environment where the lecturer is perceived as the 'guru in the classroom' and is used to there being distance (power) between themselves and the students. This is what probably accounts for the differences in perception as to their role in the online environment (Hofstede et al., 2010).

What do these results infer? Students in the Caribbean believe that they are capable of successfully completing an online programme (online self-efficacy) and are motivated to do so and the lecturers tend to concur with this view. Lecturers have similar expectations of the courses provided and they agree that the students have the required prior knowledge and have the ability in the online environment to be successful in the online course. However, lecturers appear to be hesitant when it comes to the students' motivation and determination to pass the online course.

The findings suggest that the Institutional factors play a more significant role in determining the Outcome factors for students in the Caribbean (Warrican et al., 2014). They are more highly correlated than the Learner factors. As seen in section 4.3 above, they do indeed have varying amounts of influence on the learner satisfaction, knowledge acquisition and ability to apply the knowledge they have acquired.

The mean values of the Caribbean and by extension the Trinbagonian students were all lower than their counterparts in every single aspect of the Institutional factors. The lowest scores for the Caribbean and Trinbagonian students were instructor interaction while the highest were in learning content and course design.

The instructor interaction component of the survey relates directly to the method of teaching and presentation of content by the instructor and the questions posed to the student in the questionnaire for this factor were:

i. The instructor used effective teaching strategies
ii. The instructor encouraged a variety of perspectives
iii. The teacher was knowledgeable about his/her field

The resulting low scores of 2.45 (Caribbean) and 2.44 (Trinidad and Tobago - TT) seem to indicate that students were not pleased with the lecturer's delivery of the material in the course. Instructor interaction plays a critical role in determining learning outcomes. The importance of the role of instructor interaction on Learner Satisfaction is reported in Artino (2007); Eom et al. (2006); Selim (2007), for Knowledge Acquisition in Mayer (2005), and for Knowledge Transfer in Yamnill and McLean (2001); Holton (2005).

According to Barbera and Linder-VanBerschot (2011):

> *"Whereas instruction describes the method of teaching and presenting content, instructor interaction responds to the instructor's role in the online environment in which interaction is a central component"* (Barbera and Linder-VanBerschot, 2011).

The speed at which the students and lecturer connect also plays an important role. For example, if students and instructors experience lag time between posting a question and receiving a response, this may increase the transactional distance felt in the classroom (Moore and Kearsley, 2002; Steinman, 2007, cited in Barbera and Linder-VanBerschot, 2011).

Conversely the highest scores for the Caribbean students were in learning content (Caribbean 2.88 and TT 2.8) and course design (Caribbean 2.86 and TT 2.83). The questions from the survey posed for learning content were as follows:

1) Content was presented at an appropriate level for me;
2) Content was relevant to the objectives of the course;
3) Content was stimulating to me as a learner.

And for course design:

1) The objectives of this course were evident in the learning activities;
2) The course material was presented in ways that suggested future application;
3) My grades have been directly related to learning objectives, activities and application of materials.

The results of the survey for the Caribbean and Trinbagonian students seem to indicate that although the lecturer's delivery may not have been satisfactory, they were more pleased with the content of the course itself and its relevance.

This is consistent with cultures that are more collectivistic than individualistic. In cultures that have low individualism the purpose of education is "*about learning how to do*" as opposed to "*how to learn*" (Hofstede, et al., 2010). Also, in collectivist cultures there is a strong association with customs and traditional methods; change especially in education is not easy (Trinidad and Tobago has a low Long Term Orientation index which also implies that tradition plays an important role in society). Also in collectivist cultures, occupational mobility is low but education is seen as an upward-means by encouraging social mobility and networking within society. High collectivist cultures like China prefer face-to-face interaction with the instructor as does México and the Caribbean. Individualistic cultures are more adaptable to change and are normally more comfortable with the online learning environment. In the universities' studies, the American university and the Spanish university scored high for both individualism and Learner Satisfaction (Barbera and Linder-VanBerschot, 2011; Ordóñez, 2014).

The Caribbean and Trinbagonian students have an intermediate score with respect to the dimension of uncertainty avoidance. This implies that the student does not always expect the lecturer to always have the answer, and can operate in an unstructured learning situation with open answers to questions (Hofstede, et al., 2011). Countries that have a high uncertainty avoidance index require a high form of communication for satisfaction between parties to be high. In our example, it is no surprise that China has the lowest uncertainty avoidance score and the only factor that scores below 3 for the non-Caribbean universities is that of instructor interaction for China.

The Caribbean and Trinbagonian students also have a low Power Distance Index and this implies that students treat lecturers more like equals than gurus and the quality of learning is

heavily dependent on two-way communication between the lecturer and the student. Communication is therefore critical for the Caribbean student.

In societies with a high masculinity Index score, the Internet is used more for information gathering than socialising which may contribute to the low social presence and low learner interaction score.

In the Outcome factors, all the students except the Chinese scored above 3 in Learner Satisfaction. The UOC had a score of 3.23, UNM a score of 3.46, and UPAEP a score of 3.3. The UWI had a score of 3.07 while the Trinbagonian students alone had a score of 3.11. The Chinese students had a score of 2.8. Students from the USA scored highest in all the Outcome factors, while the Chinese students scored the lowest. For the Knowledge Acquisition factor, the American university again scored the highest with 3.42 followed by the Caribbean students (3.36) and the Trinbagonian students with 3.29. These were followed by the Spanish (3.11), Mexican (3.1) and then the Chinese (2.92). For the Knowledge Transfer factor, the Americans lead the way with a score of 3.44 followed by the Caribbean students (3.2) and Trinbagonian students with 3.1 then the Mexican (3.1), Spanish (3.0) and finally the Chinese (2.97).

The results in the Outcome factors indicate that Chinese students were least satisfied with the online learning process than the students in the other countries. In terms of knowledge retention, the American students scored the highest, followed by those in the Caribbean and Trinidad and Tobago. Similarly, American students led the way in their ability to transfer the knowledge gained followed by the Caribbean students and the Trinbagonian students. The e-Learning programmes in the Caribbean can therefore be considered a success with the Institutional factors playing a more important role than Learner factors in determining a programme's success.

Results from the study show that there is a link between the factors of the systemic multidimensional model, from the learners' perspective, and Hofstede's (2001) cultural dimensional framework. This relationship cannot, of course, be taken in isolation for there are many other issues that need to be taken into consideration in the overall educational environment:

- Hofstede approaches culture from a macro or national level generalising the culture of a country whereas at the meso (group) and micro (individual) levels many subcultures may exist that may differ from the overall national culture

- the factors that the Caribbean student deem the most important in establishing an effective online e-Learning environment are social presence, learning content and course design.

- Learners in the online environment may be different from a typical non-online learner in the same country.

- The majority of the students taking the survey were female.

5.4 Bandwidth and the digital divide

Developing countries like those of the Caribbean face many challenges in their efforts to provide universal education to all (Roofe, 2014; Knight, 2014). Every year the outpouring of students from the secondary schools, some who would have been granted laptops at the start of their secondary education by the government, are digital citizens. In Trinidad and Tobago, for example, education is free up to tertiary level and will remain so up until the end of the 2016 academic year. At the start of the 2017 academic year, students will have to pay 25% of their tuition costs for tertiary education. In Trinidad and Tobago, the criteria for institutions to become eligible for this government subsidy of 75% of the student's tuition have become a lot more stringent due to the economic downturn both locally and globally. Students are exploring different schools from where they can source their tertiary degrees. Most of these universities are not based in Trinidad and Tobago. The question of where is not so much the issue as is the question of how. How accessible is it? How much will it cost?

Local institutions have to compete with foreign-based universities. They are under considerable pressure to attract students with their limited resources. The drive for e-Learning is the development of a knowledge-based economy that was not necessary in an industrial society where sharing of knowledge was not as prevalent. Knowledge workers need to process and access large volumes of data via the collective knowledge that exists within their organisation but is available also across the Internet.

It is much easier to install technology than to change human processes and social structures. Such is the case of Internet access. One can argue that it is a case of 'build it and they will come'. The technology needs to be in place before people see how useful it can be. As bandwidth increases so does its use for more bandwidth intensive applications such as video on demand, online gaming and IPTV (Internet Protocol Television) which all rely on availability of downstream bandwidth, while information appliances such as IP (Internet Protocol) security cameras that stream video about your home via the web also require an

always-on service. These are just some of the more commonplace applications in use today and the more bandwidth available the more use will be found for it. With the proliferation of broadband access and the proliferation of 2G, 3G and 4G mobile data services we have moved from an age of information to one of connectivity so much so that what is learned as well as the process of learning or re-skilling is changing (Redecker et al, 2011; Wang, 2012; Czaja et al., 2015). For example, learning to learn with e-Learning skills has become necessary for employment; as is the ability to mine data even from something as simple as a Google search along with the ability to work in teams via the Internet. Updating oneself professionally is no longer solely about acquiring qualifications on paper but also requires individuals being able to communicate online in teams or individually, accessing and handling large amounts of data and being able to adapt and utilise new technologies. This all has profound implications for educational institutions.

As mentioned before, constructivist theorists advocate that the use of collaboration tools such as forums and online group chats (commonly used in e-Learning) support the argument that cognitive development is a result of social interaction (Vygotsy, 1978). Educational institutions need to adapt so that their students can reap the benefits of e-Learning which include:

1) flexibility in terms of time and location not just in the classroom
2) learners act as organisers, instructors are facilitators and distributors of educational content
3) learning is informal/non-formal as well as formal and can be from many sources such as through the Internet, chats and forums, etc. and is no longer centred on teachers and institutions
4) engagement with a community of fellow learners and tutors to prepare the students for the workplace of today

Students who try to access webpages, multimedia materials, chat rooms and forums on a low-speed or unreliable network are therefore at significant disadvantage in the e-Learning environment than those who do not.

Qureshi and Najjar (2013) believe that certain types of ICT usage, such as mobile telephones, lead to an increase in incomes. Several small island states have 100% cellphone penetration where there are multiple cellphones per citizen (Qureshi and Najjir, 2013; Ramlal and Watson, 2014). Examples in the Caribbean include Trinidad and Tobago, Dominica, St. Kitts and Nevis

and Grenada. Many countries in the Caribbean have over 70% broadband Internet penetration – (Barbados (71%), St. Kitts and Nevis (75.5%)) – but have declining Internet subscription rates. In Trinidad and Tobago, the fixed line penetration rate is at 53.6% but is on the decline (5% per population; 4% per household) (TATT, 2016). The Trinidad and Tobago market is interesting because within the last 2 years two more ISPs have entered the broadband market both offering IPTV, landline and broadband services. But year-to-year subscription rates are dropping. One of the new ISPs, Massy Technologies, believes that there is room in the market for good products at competitive prices and the users would switch based on those two factors (Worrell, 2016).

The Internet has opened new doors for social interaction especially with the collaborative tools in Web 2.0 but there are a number of challenges due to the considerable diversity in infrastructure support for Internet access, and by extension, e-Learning especially in the Caribbean. The shift to Web 2.0 has been a move from a stagnant web to a more user-driven, collaborative, participatory and personalised one (Lwoga, 2014). The focus is now on communication instead of just information; interactivity instead of passive engagement, and from individual learners to a more socially interactive environment for learning. Media creation and sharing, e.g. YouTube (expressive), blogging and social networking (reflective) social bookmarking and syndication (exploratory), Facebook (social technologies) and games and virtual worlds (playful) are all Web 2.0 services that are common to many students and are well suited to instructional learning. Generally, the implementation of Web 2.0 in developed countries is still fragmented due to the lack of available expertise, facilities and the absence of a reliable and stable Internet infrastructure. The use of these technologies are often driven from an individual level and not an institutional one thereby limiting its utilisation and support in learning and teaching (Lwoga, 2014).

The International Telecommunication Union (ITU) (2007) has proposed two tools for the assessment of the digital divide within a country. The two tools are the Digital Opportunity Index (DOI) and the Digital Access Index (DAI). The DOI is the more recent and preferred tool (ITU, 2007). The DOI groups 11 indicators into three categories: Opportunity, Infrastructure and Utilisation (ITU, 2007). Mobile and wireless communication play an important role in an information society and contribute significantly to the DOI index. This lends to a separate classification between fixed and mobile access in the DOI and allows for the examination of each and their relative importance to a country. Ramlal and Watson (2014) combined Geographic Information Systems Technology with the DOI tool to do an analysis of

households in Trinidad and Tobago. The sample of 585 communities for Trinidad and Tobago generated a DOI of .6315. However, when broken down a DIA of .66698 by community showed some interesting results. The Opportunity index (OPP) shows that over 97% of the country has a score of over .87 which indicates that the majority of the population collectively has access to ICT services which include 100% mobile coverage. Infrastructure, however, paints a different picture: 61% are below the 50 % infrastructure coverage mark and 81% below the 60% infrastructure coverage mark. The average is less than 40%. This implies that most households do not have computers and Internet access at home and while many own cell phones access to the Internet by this means is not widespread. Scores in the NAI indicate something similar. Ramlal and Watson (2014) go on to say that there is a direct correlation between the scores and household income: the poorer communities score lowest and the richest score highest.

The relatively high DOI Opportunity index for almost all communities shows that accessibility to and affordability of the Internet is generally not an issue throughout Trinidad but the low Infrastructure and Utilisation indices in most communities seem to suggest that the service being provided is not adequate for widespread Internet consumption.

Like other Caribbean islands where there is more than 1 cell phone per person on the island and over 70% mobile coverage, the challenge for Trinidad and Tobago is not coverage but the cost of the bandwidth available to households, especially with a pipe that is big enough to support the tools that are necessary for proper e-Learning, e.g. steaming of multimedia content. Bandwidth therefore plays a critical role in the delivery of e-Learning material to users in the Caribbean. The onus is not just on the ISPs but the content/e-Learning provider to find creative ways of delivering content that can be delivered over a mobile data connection.

5.5 English as the primary teaching language

The benefits of e-Learning have often been touted and as stated in section 5.3.2 range from anytime-anywhere access to an equivalent or *"no significant difference*" (Bernard et al., 2009) learning experience compared to the face-to-face classroom. The online environment is not perfect by any means; for example, students often complain about feeling isolated or find that the environment is too impersonal. From a learning point of view, however, there does not seem to be a consistent observable negative consequence (Sanchez and Khan, 2016). For the two courses examined under this study the content was delivered using asynchronous audio

with a slide presentation (usually in Microsoft PowerPoint format) narrated by the presenter/lecturer or a recording of the session made available for future playback. There is often little or no visual reference to the lecturer/presenter themselves. This mode of delivery has to do with the available bandwidth on one or both sides of the presentation. Most of the time the bandwidth does not support video streaming and in some extreme cases audio is poor and students have to resort to the recorded session to get proper delivery of the material especially when the audio is supplemented by visuals and graphics.

It is important to note here that there is a parallel between the narrated class and the traditional face-to-face classroom. For some students, the narrated online session is the strongest connection that the student may have to their lecturer. Using the recorded session there is even less of an opportunity for the e-Learning student to take advantage of some of the stated benefits of e-Learning (e.g. social interaction with peers which has been stated as being critical for building knowledge especially if the student utilises the recorded session more than participating in the live ones). Simple changes in narration can have significant impact on learner attitudes and overall success and this is due in large part to fluency.

The term 'fluency' refers to the ease at which information can be processed or decoded. Serra and Magreehan (2016) state that the quality of a presentation is rated higher if it is presented in a fluent way as opposed to a disfluent way, even if the content is the same. Students also tend to associate fluency with accurate performance, i.e. the easier it is to acquire the information. The more fluent the information the more the students feel they have actually learned. For example, if the font on text materials was changed from *Times New Roman* to a less perceptually fluent font (e.g. Mistral) while keeping the content the same, students respond negatively to the disfluent presentation. If students based their self-evaluations on how well or much they learn, or on how easily they process material based on fluency, then their self-assessments will be inaccurate because the material is the same although more tedious to process. Therefore, a negative self-appraisal also affects the attitude towards the negatively presented information. This phenomenon is not exclusive to text alone but has been observed in other media and suggests that any manipulation of fluency also affects attitudes towards the information presented as well as the presenter of the information (Loeb, Soland and Fox, 2014; Sanchez and Khan, 2016; Serra and Magreehan, 2016).

Several tests have been conducted (Mayer et al., 2003; Carpenter, et al., 2013; Serra and Magreehan, 2016) to examine the relationship between students and the fluency of their

instructors. Results from the tests show that while the less fluent presentations do not reduce learning they do however cause the learners to be more negative about their own understanding and learning experience as well as their lecturers. This supports the results found in the survey. Students in the Caribbean tend to agree with this premise. Findings from the survey suggest that the use of the English language does indeed have a role to play in the student's attitude towards the course. The ability of the lecturer to communicate clearly using a universal "*standard*" English plays a role in fluency and the delivery of the material which greatly influences the 'perceived learning' of the student in the course. By extension this applies to their level of satisfaction, knowledge acquisition and their ability to transfer the knowledge they have gained.

This is also consistent with other results from the survey whereby Course Design, Learning Content and Social Presence are the major contributing factors to students' success compared to other Institutional factors such as Instruction, Instructor Interaction, Learner Interaction, etc. Students consider the fluency of the material, its relevance to their profession and passing of the course as important to their success in the course while the interaction with their lecturers and peers are seen as less important.

5.6 Limitations of the study

Although the research produced valuable information and findings that can be used for future research into e-Learning especially in the Caribbean context, there were some limitations that must be considered. The first of which is the sample used. The M.Sc. in BCSD was at the time unique and provided a small pool of a limited number of students and lecturers from which to choose. Although invitations were sent out to all current students in the M.Sc., there was a limit of only 98 possible different students that could have responded and the maximum number of responses from each student would have been 8. There were 12 different lecturers for the M.Sc. some teaching more than one course and some teaching half courses. Only 6 responded in the first part of the survey while only 2 responded to the second even though there were numerous e-mails from the course coordinator and the Dean of the Faculty. For the B.Ed. Early Childhood and Family Studies there were 200 plus students enrolled in the 2014 cohort and 30 lecturers. We received 128 responses from the students for the first questionnaire and 68 in the second while for the lecturers we received 124 in the first but only 1 in the second. Given enough time and resources I believe the survey could have been expanded to include students and lecturers from other programmes.

The survey itself was very long. There were a number of questions (47) that were proposed by Barbera and Linder-VanBerschot (2011) and Ordóñez (2014) that had to be included in the questionnaires. In addition to the questions mentioned above additional questions interrogating demographic data had to be asked along with other questions specific to bandwidth, English, etc. These additional questions had to be included for the purpose of this specific research making the total number of questions 140 in all.

5.7 Implications

The relatively high value of the DOI Opportunity index for the majority of the communities in Trinidad and Tobago implies that accessibility and affordability to ICT services are generally not a major issue. Is it the same for the other Caribbean islands? That remains a question for future research. In countries that bear a similar DOI Opportunity index where coverage is almost at 100% and nearly everyone has one or more cell phones the question is not ***if*** it is possible but ***how*** can communities access the Internet so that they can take advantage of e-Learning. In Trinidad and Tobago, the relatively low infrastructure and utilisation indices are a cause for concern. It means that homes, especially those in the poorer communities, do not use the Internet even with mobile access available. Users in these communities do not access the Internet using any device be it telephone, tablet or laptop (Ramlal and Watson, 2014; Briggs and Blair, 2016). Communities, and by extension the government, need to not only find ways to bring affordable Internet to all persons but it has to be with enough bandwidth to take advantage of the e-Learning tools. The government also needs to make education affordable for these low-income earners since it is in these communities that the infrastructure is poorest.

For the last 5 years, students entering secondary school have received laptops from the government to take home for educational purposes thereby reducing the burden on many parents and adding to the Infrastructure index. As governments change so do policies towards education and computers. The new People's National Movement (PNM) government that replaced the People's Partnership (PP) government in Trinidad and Tobago has implemented new policies with respect to computers and education, e.g. computer related items that were imported under the previous political regime were not taxed but now they are; students will have to now pay 25% of their tuition cost for tertiary education whereas in the recent past (up to one year ago) they paid none. From a country-wide perspective Internet access and use needs to be encouraged for utilisation to improve.

With proliferation of mobile devices (cell phones, tablets, iPads, etc.) and the high DOI Opportunity but poor Infrastructure in the poorer areas, the onus is therefore on the e-Learning institutions to provide e-Learning courses and services that are more in tune with a low-bandwidth mobile market. Courses and course materials need to be presented in such a way that it is accessible and user-friendly for those accessing it via a mobile device using a 4G, 3G or even a 2G network.

Lecturers may struggle to understand students and vice versa if one party does not speak the primary language of the other. From the lecturer's perspective delivering courses in a second language takes time. The lecturer may have to think of what they want to say in their first language and then translate albeit slowly, in their second or think in their second language and speak more slowly. If one party speaks too quickly it may be difficult for the other party to understand and this also takes time and may lead to frustration (there are only so many times you can ask to '*please repeat'*) especially in a group setting. Most of the students in the Caribbean have been taught 'proper' English in primary and secondary schools. This is out of necessity since the common primary school leaving examinations are based on the use of proper English similar to the examinations for leaving secondary school. It is the common denominator for language in the anglophone Caribbean and is what is utilised as the primary teaching language at the UWI.

Cultural differences in communication can be challenging especially if one party (usually the students) resorts to slang that the lecturer or even other students might not understand. Expressing complex topics becomes more challenging for non-native speakers especially if they do not have the required vocabulary in their second language to properly express the topics.

Lecturers need to be more cognisant of their role, especially how their language and fluency affect students. Lecturers may lose their sense of humour or may not be as expressive as they would like to be when speaking in a foreign language class.

Based on the cultural analysis most students are more concerned about passing the online course (and the relevance of the material presented) than benefitting from some of the advantages of e-Learning such as interacting with peers. This may be as a result of time restrictions, the students' dislike of their lecturer, or any number of other factors that may not have been explicitly measured in the survey. The lecturers need to look at the structure of the

course and see how best it can be redesigned for the students to take better advantage of the e-Learning tools.

5.8 Summary

In this chapter I looked at the Learner and Institutional factors that contributed to the Outcome factors for Caribbean students. The most common factors among all three Outcome factors were:

1) course design
2) learning content
3) social presence

Knowledge Acquisition had additional contributing factors which were:

1) instructor interaction
2) English as the primary teaching language
3) transitioning from face-to-face to the online environment.

Next I examined the results of the analysis that compared the students from Spain, Mexico, USA and China to those in the Caribbean and Trinidad and Tobago and using the students from Trinidad and Tobago sought to align them to Hofstede's Dimensions of National Culture. In the next section I looked at bandwidth and its impact on e-Learning and the digital divide in the Caribbean and specifically in Trinidad and Tobago. The penultimate section examined the use of English as the primary teaching language and the effect of fluency on the e-Learning students. The final two sections looked at some of the limitations of the study and the implications of the study.

Chapter 6 Conclusions and Recommendations

6.1 Introduction

The purpose of this research was to determine the critical success factors for the Caribbean e-Learning student. The study drew on the experience of students and lecturers from the M.Sc. in Biodiversity Conservation and Sustainable Development at the Faculty of Life Sciences at The University of the West Indies (UWI) and from students in the B.Ed. Early Childhood Development and Family Studies from UWI's Open Campus. The research consisted of a two-part questionnaire. The first part of the questionnaire was administered 3 weeks after the start of the first semester of 2014 and the second part administered 3 weeks before the end of the same semester. The questionnaire was presented a second time at the start of the second semester and again at the end, to capture all of the required courses for the programme for that year. The questionnaires were conducted online and statistical analysis carried out on the results.

The findings suggest that, for the Caribbean student, the Institutional factors played a more important role than that of Learner factors in determining a successful outcome. The impact of social presence, learning content and course design all played major roles in the three Outcome factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer.

For Knowledge Acquisition, instructor interaction, the use of English as the primary teaching language along with the transition from face-to-face to the online teaching environment also played an important role.

Two additional Institutional factors were considered. The first was bandwidth. Bandwidth was added to the questionnaire originally developed by Barbera and Linder-VanBerschot (2011) and analysis showed that it played a key role in the Outcome factors of Knowledge Transfer and Learner Satisfaction but not for Knowledge Acquisition. The second factor added was the use of English as the primary teaching language. The findings show that this too had a significant influence on Knowledge Transfer and Knowledge Acquisition along with the overall "*Total Success*" of the programme. However, it had a limited influence on Learner Satisfaction.

The results for each of the Learner, Institutional and Outcome factors for the Caribbean and Trinidad and Tobago students were then placed side-by-side along with results from the same questionnaire that was conducted at four other universities:

1) University of New Mexico (UNM), (USA);
2) University of Peking (PKU), (China);
3) Open University of Catalonia. (UOC), (Spain);
4) Popular Autonomous University of the State of Puebla (UPEAP) (Mexico).

The comparison sought to give some insight as to the culture of the Caribbean e-Learning student and how they compare to students from the other countries. The students' responses matched those found in the country profile of Trinidad and Tobago in Hofstede's Dimensions of National Culture (Hofstede et al., 2010).

6.2 Contribution of the research to the current body of knowledge

Institutional factors have the greatest impact on Caribbean e-Learning students. Social presence, learning content and course design are the three factors that most affect the Outcome factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer. While Caribbean students seem to possess the same amount of efficacy (self and online), motivation, prior knowledge and have the same level of course expectation as their peers in universities in Mexico, Spain, China and the USA, these factors do not make any statistically significant contribution to the success of the Caribbean online student. All the factors of Learner Satisfaction, Knowledge Acquisition and Knowledge Transfer are affected by social presence, course design and learning content. Knowledge acquisition, which refers specifically to the ability to receive and retain information as well as applying it to different scenarios, is also affected by instructor interaction, English as the primary teaching language and transitioning from face-to-face to the online environment.

The students were also asked in the survey to give a reason why they were pursuing the online course; 61.7% stated that it was because it was a requirement to complete their degree or certificate. Only 10% stated that it was for job improvement and 25.8% stated that it was out of interest. The motivation for most of the students is to pass the course so that they could get their degree or certification. It is important to remember here that when the survey was conducted almost all the students were new students. Of the 120 students who responded only

3 could have possibly been returning part time students (2.5%) but all were pursuing new courses for the first time.

The next contribution is the nature of the Caribbean student with respect to Hofstede's Dimensions of National Culture (Hofstede et al., 2010). Many of the characteristics of the Caribbean student were aligned closely to that of the Trinidad and Tobago student. That may have come about because of a number of possible factors:

1) where the M.Sc. in BCSD was traditionally delivered – at the Trinidad and Tobago campus of the UWI;
2) where the Programme is being administered – at the Trinidad and Tobago campus of UWI;
3) the nationality of the majority of the lecturers in the programme.

Perhaps if the programme was headquartered in another Caribbean island, e.g. at the Mona campus of the UWI in Jamaica, the nationalities of the participants at the meso (group) and micro (individual) levels taking the course may turn out to be different. That said, based on the research, the Caribbean student:

1) shows low Power Distance
2) shows moderate to High Masculinity
3) is moderately Collectivistic
4) is moderately Uncertainty Adverse

Hofstede's (2011) classifications are very general and look at culture at the macro-level and do not take into consideration the many sub-cultures that may exist as it certainly does in the Caribbean.

There is growing need especially in developing countries for LMS systems, and the content that is placed there, to be more mobile friendly. The course coordinators for e-Learning programmes need to be aware that there is a large proportion of the population which has free access (or relatively cheap access) to tertiary education, but have limited access to the Internet. Course content and learning content play a critical role in the success of the Caribbean online student. Therefore, courses must be designed to take advantage of this untapped market that has access to limited bandwidth, yet still be able to provide a quality product.

6.3 Recommendations

The problem of infrastructure needs to be resolved. The drive to get hard-wired Internet infrastructure into communities is normally individually driven. Some Caribbean islands have embarked on projects to make Internet access free to all persons on the island, e.g. Barbados, and is often a popular item on many political platforms especially around election time but unfortunately it rarely comes to pass. Priority should be given to make broadband services affordable through fixed-line and mobile services and accessible to all. There needs to be a way to get computers into the poorer communities. The free laptop was a good initiative but there is no evidence to show that it was effective in reducing the Infrastructure index. Computers and tablets need to become more cost effective for persons to access the resources such as e-Learning on the Internet. The use of the Internet needs to be encouraged even with the given infrastructure at home, at school and other places.

The modules for the e-Learning courses need to be more mobile friendly. The shells that are designed by the lecturer should not be video laden without the option of audio only or even text to supplement the video. The UWI Open Campus for example uses a mix of Moodle for their e-Learning course delivery platform but uses Blackboard Collaborate for their online sessions with little restrictions on the size or type of instructional material that the instructor can place there. Even if there is a large bandwidth pipe coming into the Open Campus where the sessions are taking place if the user is only accessing it via their mobile telephone using mobile data then the option of getting proper video is slim at best. Courses need to be designed with the mobile user in mind for the e-Learning course to be truly anywhere anytime.

The next recommendation would be to move from an instructor-centric form of course design to one that is more outcomes-based and student-centric. In section 6.3.2 below I will recommend an m-Learning approach for the Caribbean student.

There are a couple of different approaches that lecturers can use to reduce the impact of a foreign accent. The first is not to focus so much on language but to focus more on the actual course content by using visuals to complement the oral part of the lecture. The second is to utilise the different forms of communication to establish a rapport with the students, e.g. share with students humorous anecdotes about oneself and ask students to help with words that may be missing or not easily translated. The third is to know the course material well to ensure the students' respect and do not be afraid to admit mistakes and use difference as an advantage. Lecturers should get to know the culture of the students that they are teaching and be prepared to take English classes where necessary.

6.3.1 m-Learning

Mobile telephones play an important part in our day-to-day lives and m-Learning is not just a subset of e-Learning but a new pedagogy utilising Web 2.0 tools to enable the connected user/learner almost anywhere. Initially the focus in m-Learning was specifically on the use of mobile devices, porting e-Learning interface to telephones, tablets, etc. and utilising these for the users to learn on the move. M-Learning, therefore, is any sort of learning that takes advantages of opportunities offered by mobile technologies. Many of the issues and challenges faced by the students and lecturers, especially those coming out of the digital divide, can be addressed by moving to m-Learning.

Much of the work pre-2005 focuses almost exclusively on the mobile devices and how they can be used for communication, information retrieval or teacher-generated content. Most of the m-Learning research was based on short-term projects that mainly examined m-Learning in an informal setting with little focus on sustainable integration into formal educational contexts (Cochrane, 2014). The focus has changed quite a bit from this device-centric view to the mobility of the user and the seamless access to learning support.

As stated before, social constructivism implies that the most effective learning occurs when we are involved in knowledge construction in groups with guidance from those more knowledgeable than us (Vygotsky, 1978). Mobile devices facilitate this social constructivism by their ability to communicate and engage in social collaboration in real time. Mobile devices can therefore assist students in generating content and providing tools for collaboration rather than simply accessing teacher-generated content on an e-Learning server.

At this point it is important to examine some of the features that m-Learning is NOT. Parsons (2014) and Brown and Mbati (2015) have devised quite an exhaustive list about the myths and misconceptions of m-Learning, some of which are outlined below.

Myth 1 – m-Learning refers to the learner being mobile **–** The learner need not be on the move physically, very often the learner is static while engaging in m-Learning; it just means that we can take our learning tools with us in appropriate places.

Myth 2 – m-Learning means we learn with mobile telephones **–** m-Learning is not only restricted to mobile telephones, it normally refers to handheld devices that may include tablets, PDAs, etc.

Myth 3 – m-Learning is all about the mobile device **–** Technology is an enabler of education and the main purpose for integrating the technology is to enhance the experience. Without the pedagogy to support the proper use of the technology, the experience will not be effective.

Myth 4 – m-Learning is simply e-Learning on mobile devices **–** Unfortunately this is not so since many of the e-Learning interfaces are not designed for mobile devices and do not take into account any of the advantages provided by the mobiles such as location awareness and the different forms of asynchronous communication that may be possible.

Myth 5 – m-Learning means accessing and completing all relevant course material on a mobile device **–** Like the concept of being "completely online", m-Learning is not completely "mobile". M-Learning can be components of an e-Learning course that add value to the teaching and learning experience or can be an entire course.

Myth 6 – m-Learning simply uses the existing learning environment designs and current teaching and learning methodologies **–** The same way e-Learning is simply not taking face-to-face materials and transposing them online the same holds true for m-Learning. The existing e-Learning environment designs and teaching methodologies cannot simply be transposed to m-Learning. M-Learning requires a redesign in teaching and learning activities to fully maximise the m-Learning environment and experience.

So, we know what it is not, but what exactly is m-Learning? In its simplest form m-Learning is a form of student centred learning that utilises the benefits of mobility, connectivity, communication, content creation, context sensor, collaboration and sharing that mobile devices provide. This is perhaps best explained by a simple example. I sometimes teach a computer course for beginners and one of my assignments would be "*build the best computer you can with $1000*." In the ideal world, I would give each student $1000.00 and send them off to build the machine. I would require that they write three assignments detailing what was being done and present the final product at the end of the course. The student would then go off and create a secured space online (an e-Portfolio of sorts), whereby utilising their mobile device the student would upload videos via YouTube of perhaps the building of the computer; scans of receipts having purchased the equipment in an appropriate format, e.g. .jpeg to Flickr; provide a spreadsheet in Google sheets of monies spent, etc. The student would be required to invite other members in the class and myself (the instructor) to the group and have regular posts in a blog for sending and receiving feedback, messaging between members of the group, etc. in the e-Portfolio. There would be regular meetings between myself and the student and regular posts

into the e-Learning software for the university if necessary. At the end of the course the student should know: all the components of a computer, the differences between them, what makes one better than the other, etc. At the end of the course the students would present the machine and explain why they chose the various components to make it the "best machine for under $1000.00".

The example above, although quite simple describes m-Learning using social media and Web 2.0 tools to augment the e-Learning process. Cochrane (2014) has outlined six critical success factors for m-Learning:

1) The pedagogical integration of the technology into the course and assessment
2) Lecturer modelling of the pedagogical use of the tools
3) Creating a supportive community
4) Appropriate choice of mobile devices and Web 2.0 social software
5) Technological and pedagogical support
6) Creating sustained interaction that facilitate the development of ontological skills

In the m-Learning environment the roles of the lecturers and students have changed from the status quo. Lecturers are no longer directors and deliverers of content now; they are facilitators of the experience and students are no longer passive participants but they are co-constructors of knowledge.

This shift admittedly is a radical one especially in an educational system that is rooted in the old British learning system focused on examinations. The implementation of m-Learning will have to be a slow and gradual process. The integration of the Web 2.0 tools will have to be introduced gradually as a form of coursework in a course as part for the final grade and then as it becomes more integrated across the length of the course the tools and unique offerings of the mobile technologies will become more aligned and integrated into each stage or part of the course. As the implementation of the pedagogy grows, different Communities of Practice (COP) will have to be setup to provide support for the lecturers and students to achieve their goals.

According to Parsons (2014) and Brown and Mbati (2015) some of the pedagogical Affordances offered by m-Learning include:

1) *Use of SMS* – A just-in-time tool that can be used to communicate with a large group of people or individuals

2) *Quizzes* – Multiple-choice questions can be setup and sent to mobile phones, even very basic ones and the responses captured via Short Messaging System (SMS)
3) *Audio-video affordances* – Many mobile telephones have the capability to both capture and display audio and video
4) *Language learning* – Coupled with the ability to capture audio is the ability for playback that can assist in the oral practice especially for learners who may be learning new language. They can do so "on the go"
5) *Positioning and contextual learning* – Location relevant information, for example during field work, can be pushed to a mobile device in real time and can be used in geotagging information or events with a time stamp for recording purposes
6) *Personalised learning environment* – The learners build their own learning space using web-based applications available on the mobile device and social media to create a community of learning which is shared. Publishing and sharing of information is done in real time. Mobile devices facilitate easy creation of online content that can be published easily and in real time using social media and other applications.

6.3.2 Challenges for implementing m-Learning in the Caribbean

There are several challenges that will face Caribbean universities attempting to implement m-Learning; one of the first of course would be bandwidth. Fortunately for users in Trinidad and Tobago one of the ISPs has offered Facebook as a free "*service*" on the telephone, i.e. once you are on their network you do not require a data plan to access Facebook. While there are plans to roll this service out to other islands in the Caribbean some of the other Web 2.0 tools are not free and require Internet connectivity on the mobile device. While Internet may be free at the University campuses and other public locations (e.g. public buses in Trinidad and Tobago where there is free Wi-Fi) as explained in the previous chapter, it is not universally available for free, and it is the poorer communities which have limited access. Not everyone has a smartphone and even less so the persons in the poorer communities. The next issue is one of digital literacy. There is a learning curve for users to get familiar and comfortable with the Web 2.0 tools and the devices that may be required to take advantage of these tools. Sometimes specialised apps, e.g. those needed for the reading of e-books, need to be functional on a variety of platforms, e.g. Android (at its numerous flavours and versions), Apple IOS, Chrome, etc. and this provides a technical challenge especially when it comes to maintenance and support. Finally, there is the content-driven paradigm.

The content-driven paradigm focuses on subject content. The learner is required to master the content and the level of mastery determines the qualification. In the outcomes-based approach the curriculum and educational activities are focused on the learning outcomes that are to be achieved by the learners. It is like building a table. In the content-driven approach, the learner is told how to build the table and is assessed on the final product of the table. In the outcomes-based approach the student is assessed on the table-building process that they choose and not just the final table itself. There is so much meaningful information out there that is easily accessible. In the real-world context, the learner needs to be able to access and sift out the most appropriate information so that they can '*build the best table possible'*. If the instructor tells the learner what to do and how to solve a problem or pass a course, then all that is required of the learner is to 'toe the line' and know how to pass an examination without the need to think critically for themselves (rote learning versus meaningful learning (Mayer,2002)).

This shift to a more outcome-based form of learning requires a culture shift in the way learners are currently taught especially here in the Caribbean. The e-Learning environment at UWI is still very instructor-centric. Instructors determine what information goes into the modules/shells in the e-Learning programme, they determine course work, the final examination, when tutorials are to be held, etc. The most common complaint of any employer hiring a UWI graduate is that of "*lack of work readiness"*. They may possess the qualification, but lack the ability to think critically (Thurab-Nkhosi et al., 2013). The m-Learning environment fosters not only online interaction and learning, both in a formal and informal setting but also puts the onus on the students to do research and think critically to solve problems.

6.4 Future research

A number of avenues exist for future research. The first is to tap into the cell phone and make it more productive. This can be done by changing the means of inputting and displaying information on the device. Perhaps one of the best examples of that is the Superbook (Superbook, 2016). The Superbook is a Kickstarter product that turns any smartphone into a laptop for under $99.00 USD. It is a screen and attachable keyboard that plugs into the ordinary smart phone and utilises the processing power of the smart phone to run the apps in a laptop like environment. The Superbook also utilises the mobile data or Wi-Fi of the cell phone for Internet access. The Superbook essentially is just an Android app with hardware built specifically to make it more like a laptop.

I believe that it can be used as a hybrid for the current e-Learning system and m-Learning and with the android application package (.apk) being made available, the design possibilities are limitless.

Another avenue for future research would be to expand the sample size to encompass more students and lecturers in the questionnaire. Yet another would be to examine the change in the perceptions over time on the Learner and Institutional factors and their effect on the critical success factors from both the students' and lecturers' perspectives.

Future research could also include additional demographic data in the analysis, e.g. reasons for enrolling in the course – age, gender, etc. – to see their effect on the outcome variables (Cortes and Barbera, 2013). A qualitative study could be done from the point of view of lecturers whose first language is not English and compare it to those whose first language is. Another qualitative study could be undertaken to compare the impact on the students of lecturers whose first language is English but are from different Caribbean islands. Additionally, a study could evaluate student response to a programme that has a variety of lecturers from different islands (Deuber, 2013).

Future research could also develop an application that is the equivalent of an e-Portfolio that can be seamlessly integrated into the common learning systems of Moodle, Blackboard, etc. thus making the transition from e-Learning to m-Learning easier.

6.5 How my positionality has changed

Having gone through the process of implementing and evaluating e-Learning programmes, especially here in the Caribbean, I realise that the process is far from straightforward. There can be no 'one size fits all' solution. My hat is off to the educators who teach in ether medium, online or face-to-face, but even more so those who can and have mastered both. It has truly been a learning experience and I look forward to seeing what the education landscape will be like in ten to fifteen years when my daughter is in high school and university.

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APPENDIX A

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Take time to decide whether or not you wish to take part. Thank you for reading this.

This research seeks to interrogate the culture of the Caribbean online student via responses to a 2 questionnaire survey. We would like to understand you as a student in the context of the courses you are doing. For each course that you are doing please fill out a DIFFERENT questionnaire.

The survey is in two parts and the system creates an identification code by answering the first three questions. Your Identification code will only be used to correlate this survey and the one that is to follow later on in this term.

All students taking the programme past and present have been approached and it is important that you realize that participation is entirely voluntary and carries no personal benefits or detriments. If you do take part and complete the questionnaire your consent will be assumed. Any submission you make will be anonymous by default and all information submitted will be kept confidential. Please answer ALL questions as your feedback is important.

Should you require any further information please contact Michael Soo Ting at michael.sooting@sta.uwi.edu

APPENDIX B

1) What day of the month were you born? *
2) What is the last digit of the year you were born? *
3) What is the last letter of your first name? *
4) Gender *
5) Age *
6) Name of the online course you are taking *
7) Reason for enrolling in course selected above *

- Degree / Certification requirement
- Improve Job performance
- Personal goal /interest
- Reference from colleague
- Suggestion from instructor
- Promotion (potential)
- Other:

8) Nationality *

- Belizean
- Guyanese
- Surinamese
- Trinbagonian
- Other:

9) What country do I access the programme from? *

- Belize
- Guyana
- Suriname
- Trinidad and Tobago
- Other:

10) My level of competence at using common computer applications (word processing, spreadsheets, databases and presentations) is: *

- Beginner
- Intermediate
- Advanced

11) Speed of your primary Internet connection *
12) How many years have you been a user of the Internet? *
13) How many hours a day are you connected to social networks (facebook, instagram, twitter etc.)? *
14) How many hours a day do you devote to this course? *
15) What time of the day do you generally use for doing the course tasks? *
16) Are you currently employed? *

16a) If 'Yes', are you

- Full Time
- Part Time
- Only on Weekends

17) Please select the most appropriate response to the statements below *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
It is easy for me to persevere so that I can achieve my goals					
I am confident that I can effectively deal with any unexpected event (personal or academic) during the term.					
I know how to manage my time to do well in this course.					
I can learn from discussions in forum.					
I am capable of learning in online educational environments.					
I am confident that I can use the technology to take part in this course.					
This course is relevant to my goals.					

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
I feel motivated to learn in this course.					
I need additional motivation from the teacher to complete the tasks					
I am able to use the information I have learned in other courses to this course.					
I am weak in some areas of the course.					
I count on the prior knowledge needed for this course.					
The expectations for the amount of coursework are fair.					
I will be able to keep up with the workload.					
The course information I received before enrolling gave me an accurate picture of the course.					

18) Please select the most appropriate response to the statements below *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
The grades I get are directly related to the time I devote to study.					
I use quality time to do the tasks of this course.					
I enjoy the time I devote to the course.					
Leisure time in front of the computer has a positive influence in my academic performance in this course.					
I think I can devote enough time to the course.					

19) For this course, please select the most appropriate response to the statements below *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
It is easy to attend the live sessions					
It is easy to participate in live sessions					
Group assignments are instrumental in my understanding of the course materials					

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
The lecturer is easy to understand					
I often solicit feedback from the course lecturer(s)					
Contacting my lecturer is easy					
The IT tools provided address the needs for student participation e.g. uploading and downloading documents, quizzes, group discussion, etc.					
I enjoy the online classroom environment more than the traditional face to face classroom environment					

20) Indicate how much time did you spend on the Internet doing the following *

	less than 1 hr	1-2 hours	2-3 hours	3-4 hours	4-5 hours	5-6 hours	6-7 hours	7-8 hours	more than 8 hours
School matters									
Communication with Family / Relatives									

	less than 1 hr	1-2 hours	2-3 hours	3-4 hours	4-5 hours	5-6 hours	6-7 hours	7-8 hours	more than 8 hours
Communication with my friends									
Personal Recreation									
Personal Development									

21) How often do you use the Internet from these locations? *

	Never	Once a day	Many times daily	1-2 days per week	3-5 days per week	every other week	Once per month	Less than once per month
Home								
School								
Offices								
Other people's house								
Internet Cafe								
Others								

22) Please select the option that represents how frequently you used the following online tools and activities *

	Hardly Ever	Occasionally	Frequently	Very Frequently	Not Applicable
E-Mail					
Instant Messaging (MSN,YM etc.)					
Electronic Banking					
Sell goods / services					

	Hardly Ever	Occasionally	Frequently	Very Frequently	Not Applicable
Find news or information about current events					
Get information for school / work (research)					
Search for medical / health information					
Serch for governmental information					
Search for entertainment information					
Search for sports related information					
Search for travel information					
Employment/job search					
Online education or training					
Online games					
Online gambling					
Participate in chat groups					
Listen and download music					
Watch videos (Youtube, stream movies, etc.)					

	Hardly Ever	Occasionally	Frequently	Very Frequently	Not Applicable
Download e-books, presentations, etc.					
Listen to radio					
Use social networks (Facebook, etc.)					
Write a personal log					
Create / manage own website					
Read other people’s personal website or blogs					
Contribute to websites, e.g. Wikipedia					
Share files, artwork, photos, videos with others					

APPENDIX C

1) What day of the month were you born? *
2) What is the last digit of the year you were born? *
3) What is the last letter of your first name? *
4) Gender *
5) Age *
6) Name the online course to which this survey response refers *
7) Nationality *

- Belizean
- Guyanese
- Surinamese
- Trinbagonian
- Other:

8) What country do I access the programme from? *

- Belize
- Guyana
- Suriname
- Trinidad and Tobago
- Other:

9) My level of competence at using common computer applications (word processing, spreadsheets, databases and presentations) is: *

- Beginner
- Intermediate
- Advanced

10) Number of semesters I have given online courses
11) Speed of your primary Internet connection *
12) How many years have you been a user of the Internet? *
13) How many hours a day are you connected to the Internet? *
15) How many hours a day are you connected to social networks (facebook, instagram, twitter, etc.)? *
16) How many hours a day do you devote to this course? *
17) What time of the day do you generally use for doing the course tasks? *
18) For this course, please select most appropriate response to the statement below *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
Gaining access to conduct live sessions is easy					
Conducting group sessions is					

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
easy in the online environment					
Lecturing to students whose first language is not the same as my own is easy					
The IT tools provided make the MANAGEMENT of the course content easy e.g.uploading of files					
The IT tools provided make the DELIVERY of the course content easy					
The transition from lecturing face to face to lecturing in the online environment is easy					
I enjoy lecturing in the online environment more than the face to face environment					

19) Please select the most appropriate response that represents your answer to each of the following statements *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
It's easy for learners to persist to achieve their goals.					

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
I am confident that learners' abilities can help them to effectively deal with any unexpected event (personal or academic) during the term.					
Learners know how to manage their time to do well in this course.					
Learners can learn from discussion in forum.					
Students can learn in this online educational environment.					
I'm confident students can use technology to take part in this course.					
This subject is relevant to learners' objectives.					
Learners generally seemed motivated to do well in this course.					
Learners need additional motivation from instructor to complete their tasks.					
Learners should be able to apply knowledge obtained in other subjects in this subject.					
Learners show some weaknesses in some areas of the course.					
Learners count on prior knowledge for this course.					

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
The course information learners received before enrolling gave them an accurate picture of the course					
The expectations for the amount of coursework are fair					
Learners will be able to keep up with the workload					

20) Please select the most appropriate response to the statements below *

	Strongly Disagree	Disagree	Agree	Strongly Agree	Not Applicable
Learners' grades are directly related to the time they devote to study.					
Learners use quality time to do the tasks of					
Learners enjoy the time they devote to the course					
Leisure time in front of the computer has a positive influence on learners' academic performance in this course					
I think learners devote enough time to the course.					

APPENDIX D

1) What is the last letter of your first name? *
2) What is the last digit of the year you were born? *
3) What day of the month were you born? *
4) Gender *
5) Select course to which this response refers *
6) Please select the number that represents your answer to each of the following questions using the scale: 1=Strongly Disagree, 2=Disagree 3=Agree, 4=Strongly Agree. Check N/A only if an item is not applicable *

	1	2	3	4	NA
I had access to adequate tools and resources (library, modules, etc.) to learn in this course.					
I received the technical support I needed when I had a problem.					
The instructor seemed concerned about my needs as a learner.					
The instructor actively encouraged me to participate in the course.					
I felt I was a part of a community of learners in this course.					
The instructor used effective teaching strategies.					
The instructor encouraged a					

	1	2	3	4	NA
variety of perspectives					
The teacher was knowledgeable about his/her field					
All important site content was easy to locate and identify.					
The site provided a clear means of obtaining technical help.					
The media used were appropriate for the content.					
All assignments were returned with useful feedback from the instructor.					
The instructor responded promptly to my questions					
The instructor provided individualized guidance that met my needs.					
Online comments by other participants helped me to learn.					
I contributed to the learning					

	1	2	3	4	NA
environment by responding to my peers.					
I learned to value other points of view.					
Content was presented at an appropriate level for me.					
Content was relevant to the objectives of the course.					
Content was stimulating to me as a learner.					
The objectives of this course were evident in the learning activities.					
The course material was presented in ways that suggested future application.					
My grades have been directly related to learning objectives, activities and application of materials					
I was motivated to do well in this course.					
Apart from the mark I am					

	1	2	3	4	NA
expecting on this subject, this course was a useful learning experience					
I recommend other people to enroll in this online course.					
I learned from the activities assigned in the course.					
The course was relevant to my needs.					
I did well on assignments and tests.					
I can explain the content covered in this course to others.					
I have noticed the difference between my prior knowledge and the knowledge I gained by the end of the course.					
During the course, I have been conscious about my strengths and weaknesses in my learning.					
I can make correct decisions and					

	1	2	3	4	NA
solve problems with the knowledge I have gained in this course.					
I know how I will use the course knowledge in new situations.					
I have opportunities to apply the course knowledge.					
As a result of this course, I am able to apply my learning to other similar courses.					
As a result of this course, I am able to apply my knowledge to a different context, such as my personal or professional life.					
With the knowledge gained from this course, I can more broadly explore a problem in the field of study.					
I received adequate training on the Platform.					

7) Please select the number that represents your answer to each of the following questions using the scale: 1=Strongly Disagree, 2=Disagree 3=Agree, 4=Strongly Agree. Check N/A only if an item is not applicable *

	1	2	3	4	NA
The bandwidth that I have made accessing the live sessions easy					
The bandwidth with which I access the Internet limited my participation in the online classroom sessions					
I utilised the recorded sessions more than the live sessions because of insufficient bandwidth at the time when the live sessions were being held					
Based on the available bandwidth the times when the live sessions were being held were inconvenient for me					
In my opinion the online sessions do NOT have to be experienced live, the recorded sessions are just as good					

	1	2	3	4	NA
The online environment made learning in this course easier than if it were delivered in the face-to-face environment					
Participating in this course was more convenient because it was delivered online					
Group assignments were more difficult in the online environment than in the traditional face-to-face environment					
The lecturer's ability to speak English greatly impacted my ability to grasp the subject					
The lecturer spoke English clearly and was easy to understand					
The lecturer delivered the material clearly with appropriate supporting documents					

	1	2	3	4	NA
The lecturer needed to paraphrase and summarise often to ensure that his/her point was made clear					
Lecturers whose first language is English but NOT from a Caribbean country communicated better than those from a Caribbean country					
My lecturer was always easy to contact					
My lecturer provided feedback in a timely fashion					
My lecturer's feedback was useful / helpful					
The software used for the live sessions made it easy to participate					
The software used for the live sessions was user friendly					
The software used for the live sessions provided all of the tools necessary to					

	1	2	3	4	NA
facilitate the online classroom environment, e.g chat rooms, breakout sessions, etc.					
The software provided the necessary tools for assignments in groups					
The course management software (myeLearning) was easy to use					
The course management software met my needs as a student					

8) Please select the number that represents your answer to each of the following questions using the scale: 1=Strongly Disagree, 2=Disagree, 3=Agree and 4=Strongly Disagree. Check N/A only if an item is not applicable *

	1	2	3	4	NA
By taking this online course I have saved time in comparison to a face-to-face course.					
This online course has encouraged my participation in comparison to face-to-face courses.					
The frequency in which I received questions and					

	1	2	3	4	NA
answers made me feel part of the group.					
Instructor could manage the time of assignments during the course.					
As time goes by, my involvement in the course has increased.					
The workload during the course was adequate for my rhythm of work.					
Time the teacher gives to me is enough.					
Time in online discussions favors my knowledge.					
Overall time is adequate for the contents of the course.					
Time for assignments is adequate.					
The time devoted to the course is worth.					
I immediately use knowledge I've acquired in this course in my personal and					

	1	2	3	4	NA
professional life.					

9) Would you accept having a 20-minute interview through Skype or Webex to give further explanation to your answers? *

- YES
- NO

If "YES" then please type in your email address or Skype name below

APPENDIX E

What is the last letter of your first name? *
What is the last digit of the year you were born? *
What day of the month were you born? *
Gender *
5) To which course does this response refer? *
6) Please select the number that represents your answer to each of the following questions using the scale: 1=Strongly Disagree, 2=Disagree 3=Agree, 4=Strongly Agree. Check N/A only if an item is not applicable *

	1	2	3	4	N/A
The bandwidth that I had made access to the live sessions easy					
Students had difficulty hearing me due to bad connections on my side					
Students tended to use the recorded sessions more than attend the live sessions					
Students had difficulty attending sessions because of when they were held					
Students found that the online environment made learning in this course easier than if it were face to face					
Students found that the online environment					

	1	2	3	4	N/A
made participating in this course easier than if it were face to face					
I had to be deliberate to speak "proper English" so that everyone could understand me clearly					
I had to slow my speech so that students could understand me more clearly, my message clearer to all students					
I needed to paraphrase often so that all students could understand me					
I was more accessible to the student in the online environment					
I was able to provide feedback to the student in a timely fashion					
I was able to deliver useful feedback to student					
The software used for the live					

	1	2	3	4	N/A
sessions made it easy for everyone to participate					
The software used in the live sessions was user friendly					
I found that the software used for the live sessions provided the neccessary tools to facilitate the online classroom, e.g. breakout sessions, chat rooms, etc.					
Online comments by other participants helped students to learn					
The online environment made managing group assignments easy					
The Learning Management System (myeLearning) was easy to use					
Students found myeLearning easy to use					
MyeLearning met my needs as a lecturer					

	1	2	3	4	N/A
MyeLearning met the needs of the students					

7) Please select the number that represents your answer to each of the following questions using the scale: 1=Strongly Disagree, 2=Disagree 3=Agree, 4=Strongly Agree. Check N/A only if an item is not applicable *

	1	2	3	4	N/A
Students have received adequate training on the Platform.					
Students had access to adequate tools and resources (library, textbooks, etc.) to learn in this course					
Students have received the technical support they needed when they had a problem					
Students know that I am concerned about their needs as learners					
I have actively encouraged students to participate in the course					
I have developed a community sense among students in the course					

	1	2	3	4	N/A
I have used effective teaching strategies					
I have encouraged a variety of perspectives					
I have a broad knowledge about his/her field					
All important site content was easy to locate and identity					
The platform provided a clear means of obtaining technical help					
The technological media used were appropriate for the content					
I returned all assignments with useful feedback					
I responded promptly to students' questions					
I provided individualised guidance that met learners' needs					

	1	2	3	4	N/A
The software made online group sessions easy					
Students contributed to learning environment by responding to their peers					
Students learned to value other points of view					
Content was presented at an appropriate level for students					
Content was relevant to the objectives of the course					
Content was stimulating for students					
The objectives for this course were evident in the learning activities					
The course material was presented in ways that suggested future application					
Grades were directly related to learning objectives activities and					

	1	2	3	4	N/A
application of resources					
Students seemed motivated to do well in this course					
Apart from the marks students expected on this subject, this course was a useful learning experience					
It is very likely that students recommended other people to enroll in this course online					
Students learned from the activities assigned in this course					
The course was relevant to students' needs					
Students did well on assignments and tests					
Students can explain the content covered in this course to others					
I have noticed the difference between students' prior knowledge and					

	1	2	3	4	N/A
the knowledge they have gained at the end of the course					
During the course students have been conscious about their strengths and weaknesses in their learning					
Students can make correct decisions and solve problems with the knowledge they have gained in this course					
Students know how to use the course knowledge in new situations					
Students have opportunities to apply the course knowledge					
As a result of this course students are able to apply their learning to other similar courses					
As a result of this course, students are able to apply their knowledge to a different context, such as their personal or					

	1	2	3	4	N/A
professional lives					
With the knowledge students have gained from this course, they can more broadly explore a problem in the field of study					

Would you accept having a 20 minute interview through Skype or Webex to give further explanation to your answers? *
If "YES" please type your Skype username and/or email below

APPENDIX F

M.Sc. in Biodiversity Conservation and Sustainable Development in the Caribbean - Core Courses

Course Code/Name: BIOL6200/Characteristics of Biodiversity

Lead University	**University of Belize**
Course Leader	**Dr. Arlenie Perez**
Teaching Team	**Dr. Arlenie Perez, Dr. Caroline Herron, Dr. Elma Kay, Dr. Leandra Cho-Ricketts, and Dr. Thippi Thiagarajan**
Credits	**3**
Core/ Optional	**Core**
Semester	**1**
Prerequisites	**None**

Course Description

This course forms part of the background information to the programme. It includes a review of basic concepts of biodiversity from the molecular- to ecosystem- level, and This will be placed in the context of the current extinction crisis and international treaties such as the Convention on Biological Diversity formulated to address this crisis. The course also highlights the importance of biodiversity in terms of ecosystem function, goods and services.

"Characteristics of Biodiversity" will define biodiversity in terms of species richness and diversity indices and explore the cline in diversity across different latitudes. Within this, concepts such as endemism and keystone species will also be described. The molecular genetic component of the course will cover the concepts of molecular genetics, intra-specific variation, inter and intra-specific genetic diversity, processes of evolution and speciation.

The course will then go on to review the characteristics of regional ecosystems in the Caribbean, including forest, savannah, riverine, wetland, mangrove and coastal-marine systems including coral reefs, beaches and estuaries. Impacted ecosystems such as urban and agricultural landscapes will also be treated, as well as the ecosystem patterns unique to Caribbean island ecosystems. In each case the systems will be considered holistically in relation to their diversity, distribution, ecology and ecosystem function, including the goods and services they provide.

Course Code/Name BIOL6201/Threats to Tropical Biodiversity

Lead University	**UWI — St. Augustine**

Course Leader	**Dr. Luke Rostant and Dr. Howard Nelson**
Teaching Team Dr	**Professor Andrew Lawrence, Professor Pathmanathan Umaharan,**
	Mary Alkins-Koo, Dr. Mike Oatham, Dr. Dawn Phillip, Dr. Howard Nelson, Dr. Luke Rostant
Credits	**3**
Core/ Option	**Core**
Semester	**1**
Prerequisites	**None**

Course Description

This course provides a detailed review of the main threats facing global biodiversity and in particular, tropical biodiversity. It will describe the critical processes affecting a variety of tropical systems and explore the underlying pressures on these ecosystems. As such, it complements BIOL6200 in providing the fundamental framework and concerns which underpin and drive current environmental management practices.

"Threats to Tropical Biodiversity" examines the major threats to tropical biodiversity and ecosystems, as described in the CB D: habitat loss and degradation, over-exploitation, climate change, pollution and introduction of alien species. It also examines the history of human intervention in tropical environments. In specific relation to loss of genetic diversity, issues including threats to genetic diversity, loss of populations, reductions in heterozygosity and their consequences, inbreeding depression and genetic bottlenecks will be reviewed.

Throughout the course, examples and case studies of major threats will be considered in relation to the impacts known for the ecosystems described in BIOL6200. It will include a description of human-altered terrestrial and coastal environments.

Consideration will also be given to the issues of environmental stress including impacts of pollution and climate change on terrestrial and marine systems. Evidence for the impacts of global warming on species and ecosystems, and methods for the detection of climate change are also covered in this course.

Course Code/Name	**BIOL6206/Management and Analysis of Environmental Data**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Luke Rostant**
Teaching Team	**Dr. Luke Rostant**
Credits:	**3**
Core/ Optional	**Core**
Semester	**1**
Prerequisites	**None**

Course Description

The aim of this course is to provide students with a fundamental understanding of the importance of storage, retrieval and analysis of environmental data. In particular, the course will provide practical training in statistical analysis of environmental data and demonstrate the storage and retrieval of biodiversity information using national and international databases. As such, this course will show students how data, through appropriate management and analysis, becomes information, which then informs the decision-making process. In addition, it will provide the student with fundamental skills, which may underpin many elements of their future research project and career.

Students will initially review fundamental univariate numerical techniques, including basic parametric and non-parametric statistics. Students will then complete task sheets which, thereby, demonstrate an understanding of the application of appropriate tests to datasets. These sheets will be completed using either of the statistical package Statistix and/or Minitab, and they will also be introduced to the R environment.

The course will then progress to explore the use of multivariate statistical techniques to analyse detailed environmental datasets. Students will also be introduced to the use of Bayesian statistics, and biodiversity-specific data analysis software including ECOM II, Primer, CAP4, SDR4, DISTANCE and Vortex.

Course Code/Name	**BIOL6208/Conservation & Management of Biodiversity**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Howard Nelson**
Teaching Team	**Professor Andrew Lawrence, Dr. Howard Nelson, Professor Pathmanathan Umaharan, Dr. Dawn Phillip**
Credits:	**3**
Core/ Option	**Core**
Semester	**2**
Prerequisites	**None**

Course Description

This aim of this course is to highlight some of the key concepts and approaches to the conservation and management of topical biodiversity. Students will gain an understanding of the possible conservation approaches available to environmental managers and how these have been informed by fundamental science. In addition, students will gain an understanding of how conservation priorities are determined globally and how these priorities have been implemented at a national and regional level. As such, this course will give the student an appreciation of current management approaches applied to the conservation of biodiversity and how this interfaces with other aspects of the programme.

Conservation elements of the course will include development of priorities for conservation, conservation of genes and genetic diversity, selection and design of protected areas, the application of island biogeography theory and SLOSS, population dynamics and population viability analysis to protected area design. Students will gain an understanding of the principles of protected area selection site management. The use of zoning schemes, particularly in relation to coastal zone management schemes will also be covered. The use of management plans will be discussed together with the assessment of management effectiveness.

The course will also examine ex-situ conservation programmes and re-introductions of species as well as aspects of habitat restoration. The important role and participation of the public will also be considered with regard to the selection, design and management of protected areas as well as through the potential benefits of tourism and ecotourism.

Course Code/Name	**BIOL6210/Field Practicum**
Lead Universities	**University of Belize (Marine) and Anton de Kom Universiteit van Suriname (Terrestrial)**
Course Leader	**Dr. Elma Kay & Dr. Paul Ouboter**
Teaching Team	**Dr. Elma Kay, Dr. Paul Ouboter, Professor Andrew Lawrence, Dr. Leandra Cho-Ricketts**
Credits	**3**
Core/ Option	**Core**
Semester	**3**
Prerequisites	**None**

Course Description

This course is designed to provide students with the practical skills required to investigate specific research and monitoring questions, as well as conduct survey work. Results of work carried out in the field will be analyzed using various statistical techniques and will be mapped using GIS. This course comprises the main practical portion of the programme. It will provide students with the opportunity to apply and test their understanding of concepts covered in the taught courses of the programme. The course will go over the appropriate collection and survey techniques for various taxa. Status surveys and other population ecological work will be covered. Socio-economic survey work will also be undertaken in the field.

Course Code/Name	**BIOL6211/Research Project**
Lead University	**Varies depending on location of student's primary supervisor**
Course Leader:	**Dr. Howard Nelson**
Course Team:	**Staff engaged in the delivery of the M.Sc.**
Credits:	**12**
Core/ Option	**Core**
Semester	**1, 2 and Summer**
Prerequisites	**None**

Course Description

The aim of the research project is to allow the student to synthesise and articulate several aspects of the taught programme within a single themed research topic In addition, it provides the opportunity for further detailed skills training in aspects of environmental monitoring, assessment or management of tropical biodiversity. It will allow the student to pursue an individual study on a particular research topic or issue of interest to the student and will incorporate technical skills training specific to the individual student. As such, the research project will provide the opportunity to develop a specific set of practical and reporting skills that will be of use to the student in their future career.

The Research Project is a fundamental component of the M.Sc. programme and this is reflected in the credit weighting, and by the fact that the M.Sc. runs for an extra 6 months, to provide the student with the necessary time to complete the project to a high standard.

Students will consult with the Course Leader or Focal Point early on in the M.Sc. to discuss potential ideas for their research project. A list of potential projects will be also be made available for those students who do not have a specific topic in mind. During the second semester, the student and course leader/Focal Point will meet to further develop the research project idea, develop clear aims and objectives, and identify appropriate second supervisors.

The research project may cover any feasible aspect of environmental management of tropical biodiversity. It may involve a pure research study on a fundamental aspect of tropical biodiversity or address more applied issues. It may involve field or laboratory work or may be a desk study involving data analysis or interrogation of legal documents. It may support studies being undertaken by staff within the 4 partner universities, or it may address an issue related to a student's employer. For students from outside of the 4 partner countries, the project may be undertaken within the country hosting one of the 4 partner universities, or in the student's home country.

The project should give the student a chance to further develop skills taught during the programme and provide the opportunity to cultivate a more detailed understanding of some specific component of the programme.

Course Code/Name BIOL6212/Taxonomy and Biodiversity Informatics

Lead University **Anton de Kom Universiteit van Suriname**

Course Leader **Dr. Paul Ouboter**

Teaching Team **Dr. Paul Ouboter, Mrs. Yasmin Comeau**

Credits **3**

Core/ Option **Core**

Semester **1**

Prerequisites **None**

Course Description

This course will stress the importance of taxonomy in biodiversity conservation. It will provide students with knowledge of the principles of taxonomic rules and classification systems, and existing biodiversity informatics tools. Students will be able to apply this knowledge through the use of natural history collections, and taxonomic and biodiversity databases.

This course is a core course in the programme, providing an understanding of the description and classification of organisms as the basis for biodiversity conservation. It provides an overview of the status of taxonomy and various classification systems as well as a summary of the speciation process, biogeography and the field of molecular systematics. Species are highlighted as the building block for taxonomic classification and species concepts are discussed in detail.

During the course, students learn to appreciate the role of natural history museums and herbaria together with their collections. Collection and preservation methods for various taxa are presented and their curation is discussed. Identification methods and tools, including taxonomic keys, are presented and used as part of the course.

The course includes a bioinformatics component that focuses on the use of online databases, as well as those found at local institutions. These include biodiversity databases, molecular databases and natural history collection databases. By the end of the course, students learn to use various databases to derive biodiversity information. The use of database software is also emphasized as a tool for the creation of new biodiversity databases.

Course Code/Name BIOL6214/Environmental Resources Policy

Lead University	**University of Guyana**
Course Leader	**Mr. John Caesar (University of Guyana)**
Teaching Team	**Mr. John Caesar, Dr. Howard Nelson, Professor Andrew Lawrence**
Credits	**3**
Core/ Option	**Core**
Semester	**2**
Prerequisites	**None**

Course Description

This policy course provides an overview of the foundations for environmental resource policy evolution and the linkages with wider socio-economic and socio-ecological issues. Students will be exposed to the various concepts of environmentally and ecologically sustainable development processes emerging from social consciousness of environmental impacts on natural resources and their management. It provides a review of the basic principles involved in setting environmental resource management goals, and a means for understanding how development of a consensual vision in environmental resource policy, is framed by the policy process.

Development of policy for key natural resource areas using best practices in the policy process will be reviewed in this course. Environmental Resources Policy will explore the relevant issues and techniques for scoping and developing environmental resource policies. Students are will prepare policy briefs for specific environmental and natural resource issues, including a step-by-step policy making exercises and simulations of practical problems and issues involved in the policy making process. Overviews of carefully selected international environmental instruments and their nexus with global natural resource management and environmental drivers will be provided. The course will enable students to develop a basic understanding and appreciation of environmental resource governance models and how these influence policy.

M.Sc. in Biodiversity Conservation and Sustainable Development in the Caribbean - Optional Courses

Course Code/Name **BIOL 6202/ Environmental Law and MultilateralEnvironmental Agreements**

Lead University **UWI — St. Augustine**

Course Leader **Dr Rajendra Ramlogan**

Teaching Team **Dr Rajendra Ramlogan**

Credits **3**

Core/ Optional **Optional**

Semester **1**

Prerequisites **None**

Course Description

This course will provide students with a working knowledge of the philosophical bases and key principles of environmental management, general foundations/sources of environmental law, and an introduction to the history, structure and function of current international environmental agreements (IEAs) specifically related to biodiversity conservation. It describes sector-specific regimes, enforcement of environmental laws and international and regional environmental law. The course will provide students with a clear understanding of the current regional legislative models for biodiversity conservation, and critical international agreements on biodiversity protection.

Introduction to Environmental Law and International Environmental Agreements provides a background to the sources for existing environmental laws, and of the specific framework for environmental regulations in the Caribbean. It examines how human behaviour related to the environment is regulated at the international level, with specific reference to key biodiversity-related IEAs. This includes a brief review of the legal and institutional framework within which international law making on the environment takes place. The course provides students with a basic understanding of the existing legal environmental regimes of selected Caribbean countries.

The course then articulates this regional framework within its international context. BIOL6202 will introduce students to some of the factors that surround and influence the negotiation and implementation of international environmental law. Key IEAs, including the Convention on Biological Diversity, the Biosafety Protocol, the UN Convention on Climate Change, Cartagena Convention, RAMSAR, CITES and Principle on Forests will be used as examples to illustrate the key issues. Students will also be introduced to key regional environmental agreements, including the Cartagena Convention, SPAW Protocol. Additionally, students will be introduced to key issues specific to biodiversity conservation including bio-piracy, liability and redress,

access and benefits sharing, and existing legal models for management of cross-border resources including migratory species and cross-4urisdictional protected natural areas.

Course Code/Name BIOL 6203/Environmental Economics

Lead University **UWI — St. Augustine**

Course Leader: **Dr. Sandra Sookram**

Teaching Team: **Dr. Sandra Sookram**

Credits **3**

Core/ Optional **Optional**

Semester **2**

Prerequisites **None**

Course Structure

The primary purpose of this course is to provide students with an introduction to environmental and natural resource economics. Its secondary purpose is to give students an insight into how economists think about the environment and how they approach environmental problems. It will provide an introduction to economic value of environmental assets and costs of environmental problems. It will provide students with the basic theory in environmental and natural resource economics and how this underpins environmental management policy and decision-making.

Environmental Economics will begin by introducing basic economic principles and exploring the limits of human nature in dealing with environmental degradation. It will then consider environmental economics from several perspectives, examine various economic tools and discuss their limitations. Using examples, it will then apply these tools to everyday scenarios that illustrate the possibilities and limitations of economics in resolving environmental and natural resource issues.

Course Code/Name	**BIOL 6204/Environmental Impact Assessment**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Dawn Phillip**
Teaching Team	**Dr. Dawn Phillip, Mr. Garrett Manwaring**
Credits	**3**
Core/ Optional	**Optional**
Semester	**2**
Prerequisites	**None**

Course Description

Environmental Impact Assessment begins with a general overview of the variety of environmental assessment tools currently available and an introduction to Environmental Impact Assessment (EIA) including definition, goals, objectives and purpose of EIA, definition of key terms, history of Environmental Impact Assessment and the legislative, policy and institutional framework for EIA. .

It will describe the EIA process, with emphasis on biodiversity conservation and sustainable use; the development of the Terms of Reference (TOR) including screening, scoping and public participation; and the assessment of project impacts, including understanding the ecosystem, assessment of significant impacts of the project and impact management.

The course will then consider reporting EIS and Environmental Management Plans, review of the EIS, linked to the TOR; and follow up monitoring, auditing, adaptive management and enforcement. Special consideration will be given to public participation, EIA standards, EIA for island, and Strategic Environmental Assessments

Course Code/Name	**BIOL 6205/Principles and Practice of Geoinformatics**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Luke Rostant**
Teaching Team	**Dr. Luke Rostant, Dr. Bheshem Ramlal**
Credits:	**3**
Semester	**1**
Prerequisites	**None**

Course Description

This course provides an overview of the main concepts associated with the discipline of geoinformatics. This includes an overview of the various concepts, technologies and techniques available for spatial decision-making. It provides an introduction to geographic information systems, Global Positioning Systems and field survey techniques. Principles and Practice of Geoinformatics will cover spatial data acquisition using GPS and field survey techniques, GIS data structures and capabilities. It will describe GIS and network analysis and spatial data analysis, and GIS functionality. Finally, it will consider hardware and software systems and the design and implementation of GIS .

Course Code/Name	**BIOL 6207/Sustainable Use and Management of Natural Resources**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Howard Nelson**
Lecturers	**Professor Andrew Lawrence, Mr. Mark Wuddivira, Dr. Laura Roberts-Nkrumah, Dr. Howard Nelson, Dr. Mike Oatham, Professor Indar Ramnarine**
Credits:	**3**
Core/ Optional	**Optional**
Semester	**1**
Prerequisites	**None**

Course Description

This course will familiarize students with contemporary issues in sustainable use of tropical resources and sustainable development. The mainstreaming of biodiversity within development is a priority for the Convention on Biological Diversity (CBD) and this course will explore some of the key issues and problems associated with this process. It will introduce students to renewable ecosystem-based industries and the environmental issues historically associated with their operation and consider what is required of these sectors as they move toward sustainability.

Sustainable Use and Development of Natural Resources addresses important tropical ecosystem-based industries including forestry, agriculture, fisheries, energy, the pharmaceutical industry and tourism. In order to be sustainable, these industries must adopt environmental activities as core to their business, rather than consider them as an externality. Topics covered in this course include an analysis of land capability and optimal land use. Social aspects of land-use and land degradation, together with the need for participatory approaches in sustainable development, will be discussed. In addition, the integration of soil and water conservation into farming systems, and integration of water needs in agriculture with industrial and potable supply requirements will be reviewed.

Agro-ecological systems such as sustainable mono-cropping, multiple cropping and agro-forestry systems for tropical environments will be reviewed. Sustainable forestry and timber production will also be examined. Participants to the course will also be exposed to development and exploitation of biodiversity for renewable energy, i.e .for bio-fuels, and to the relevance of carbon sequestration in the context of REDD+ and related discussions in the Climate Change arena.

Finally, current issues of fishery management will be examined as countries try to achieve sustainability in tropical capture fisheries, including management of freshwater environments for

fisheries production, the integration of aquaculture production systems into agricultural and water conservation practices.

Course Code/Name	**BIOL 6209/Pollution and Ecotoxicology**
Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Azad Mohammed**
Teaching Team	**Dr. Azad Mohammed, Dr. Denise Beckles**
Credits	**3**
Core/ Optional	**Optional**
Semester	**1**
Prerequisites	**None**

Course Description

The pollution of the natural environment is a global problem in both terrestrial and aquatic environments, and a major threat to biodiversity. . Pollution and ecotoxicology are, therefore, key issues that must be addressed within a sustainable development framework, particularly for heavily industrialized countries in the Caribbean.

Toxicology has only come of age as a science within the last 30 years as concerns for consumers, workers, the public and environmental health has increased. Among the major driving forces for the expansion and advancement of the science is the significant increase in the importation, manufacture, and usage of synthetically produced chemicals. More recently, increased effluent discharges into the environment from industries has been shown to have a noticeable impact on ecosystems. However, whether this impact can be described as negative can only be determined by understanding how organisms within that ecosystem respond to particular stressor in the environment. The range of impacts can often include responses by single organisms (structural endpoints) and ecosystem level responses (functional endpoints).

This course is designed to give students an understanding of the basic principles of toxicology and how toxicants are distributed, taken up, assimilated and impact the environment.

Course Code/Name BIOL 6213/Advanced GIS

Lead University	**UWI — St. Augustine**
Course Leader	**Dr. Luke Rostant**
Teaching Team	**Dr. Luke Rostant, Dr. Howard Nelson**
Credits	**3**
Core/ Optional	**Optional**
Semester	**2**
Prerequisites	**Principles and Practice of Geoinformatics or equivalent**

Aims and Distinctive Features

The aim of this course is to provide the student with a detailed understanding of the methods used in GIS applications, related to biodiversity conservation. This will include a review of database structures, their management and design, as well as the range of spatial statistical tools regularly used in biodiversity conservation. Students will be introduced to the process used to develop and implement Windows-based modules for specific GIS applications for biodiversity conservation. The course will provide the students with an in depth insight into the use of GIS in multiple applications in biodiversity conservation, and the range of spatial data used in natural resources conservation. The course assumes that the student has previously had an introductory course on GIS .

Advanced GIS commences with a brief review of GIS fundamentals including its historical development, data sources, data structures, hardware and software environments. It will provide students with an advanced view of database development and management and image processing. Students will then review land cover preparation and develop an understanding of the range of available spatial statistical tools and sources for various types of spatial data. The students will then be introduced to Windows-based visual basic environments and spend some time developing their skills in developing GIS modules for these environments. The final third of the course will focus, through case studies, on the use of GIS to problem-solve in the fields of fisheries, threatened species management and climate change modeling. Students will then be presented with biodiversity problems which can be addressed through GIS, and asked to develop individual solutions for these GIS based problem sets.

Course Code/Name BIOL 6215/Socio-ecology and Natural Resources Management

Lead University	**University of Belize**
Course Leader	**Dr. Filiberto Penados**
Teaching Team	**Dr. Filiberto Penados**
Credits	**3**
Core/ Option	**Optional**
Semester	**2**
Prerequisites	**None**

Course Description

The Convention on Biological Diversity expressly recognizes the importance of rural, indigenous and traditional users of biodiversity. The primary purpose of this course is to provide students with an introduction to the cultural, socio-economic and traditional beliefs, values and attitudes that affect the way rural, tribal and other indigenous users of natural resources interface with these resources. It also introduces the students to the approaches available to natural resource managers to integrate these users in sustainable management of biodiversity. The course will serve as an introduction for those students who have had little exposure to the disciplines of economics, social psychology, demography, and social organization to the issues surrounding the use of natural resources by rural and indigenous peoples.

Successful natural resources management requires the development of consensus of all stakeholders on the goals of such management and the activities to be undertaken to achieve such goals. The need for such a consensual approach is especially important in biodiversity management situations where indigenous, tribal and rural communities have traditionally used or hold rights to access and utilization of such resources. To enable the students to understand the context for these types of challenging resource management scenarios, the course begins by introducing current sociological thinking on the nature of, and relationships between, human values, beliefs, and attitudes to nature. It then reviews western scientific approaches to renewable resources management in the context of traditional economically driven resource production. The students will use regional case studies of natural resources use by rural, tribal indigenous peoples and compare and contrast the bases for these interactions with western, science-based natural resources management. Finally, the students will be introduced to the basic tools currently used by natural resource managers to assess impacts on management interventions on rural and indigenous peoples, and tools for integrating these communities in resource management decision making.

Michael L Soo Ting <edp09mls@sheffield.ac.uk>

Doctoral student at the University of Sheffield soliciting advice

19 messages

Michael L Soo Ting <edp09mls@sheffield.ac.uk> 13 October 2014 at 13:49

To: ebarbera@uoc.edu

Good day Professor Barbera,

My name is Michael Soo Ting and I am an EdD candidate at the University of Sheffield. I am a part time Educational Technologist at The University of the West Indies (UWI) and assisted UWI in setting up their first online MSc. programme (http://sta.uwi.edu/fst/lifesciences/edulink/). The MSc. is a joint programme between the universities in Belize, Suriname, Guyana and the Trinidad and Tobago campus of UWI and course lectures are conducted from any of these campuses. Each of these locations have their challenges especially when it comes to technology..

Students currently enrolled in the programme come from not only Belize, Guyana, Suriname and Trinidad but from Fiji, Haiti, Solomon Islands, the US and Canada.

I was thinking of utilising your Systematic Multicultural Model to analyse the programme to see the effect that culture and the digital divide has on the students. The number of students currently enrolled is however small (less than 100).

I was wondering if you can make any recommendation as to how I can take my research forward.

Please drop me a line,

Thank you advance

Michael Soo Ting

Elena Barberą Gregori <ebarbera@uoc.edu> 14 October 2014 at 09:47

To: edp09mls@sheffield.ac.uk

Sure Michael,

It will be interesting to have data from these countries.

I can send you the links to the questionnaires for teachers and students if we can work together in some papers, what do you think?

If you agree I will resend your request to a colleague of mine that is in charge of the data base.

Let me know,
Elena

Elena Barberà Gregori

Escola de Doctorat [Directora del Programa de Doctorat en Educació i TIC]**niversitat Oberta de Catalunya**

Roc Boronat, 117 / 08018 Barcelona
http://cv.uoc.edu/~ebarbera/

--- Missatge original de Michael L Soo Ting <edp09mls@sheffield.ac.uk> per a Elena Barberˆ Gregori (ebarbera@uoc.edu) enviat el

13.10.2014 19:49 [Quoted text hidden]

Michael L Soo Ting <edp09mls@sheffield.ac.uk> 14 October 2014 at 18:36

To: Elena Barberą Gregori <ebarbera@uoc.edu>

Hi Elena,

I would certainly love to pursue this some more so sure, please feel free to forward my request to your colleague and yes I would love to work together on some papers with you.

Just to give you some idea where my head is at ... the countries involved in the MSc programme are quite different culturally although they are quite close geographically. Unfortunately this is UWI's first real INTERNATIONAL online MSc programme for although they have others they are primarily geared towards ANGLO-speaking countries in the Caribbean where UWI has satellite campuses. I say unfortunately because that means that the pool of eligible candidates for interviews is quite small.

In my experience as the Educational Technologist involved in administering the programme a number of issues have come up, e.g. 1) language (in Suriname English is not their first language) and 2) Digital divide (In Belize for example there is only 1 ISP and they block VOIP) and this too is cultural. The number of students involved in the programme is small maybe about 75 and there are 10-12 lecturers and I don't know how that is going to sit when it comes to sheer numbers for the statistical analysis.

What are your thoughts?

Please feel free to drop me a line at anytime, if you would like to chat further. I am of course available via Skype, Facetime, etc. etc. and my mobile number is below if you would like to text/contact me at short notice.

I hope we can do some great things together, regards,

Michael

1-868-620-8284

[Quoted text hidden]

Elena Barberą Gregori <ebarbera@uoc.edu> 15 October 2014 at 03:58

To: edp09mls@sheffield.ac.uk

Hi Michael,

It is true, the sample is too divers although if you think the students and teachers can respond to both questionnaires it will be worthy to try to send them.

Are they online or blended students? If they are blended maybe you can delivery the questionnaries in class and make sure they answer them.

Well, you know better the context so maybe we can collaborate in another way.
Just let me know,

Elena

Elena Barberà Gregori

Escola de Doctorat [Directora del Programa de Doctorat en Educació i TIC]
Universitat Oberta de Catalunya

Roc Boronat, 117 / 08018 Barcelona
http://cv.uoc.edu/~ebarbera/

--- Missatge original de Michael L Soo Ting <edp09mls@sheffield.ac.uk> per a Elena Barberˆ Gregori (ebarbera@uoc.edu) enviat el 15.10.2014 00:36

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What are your thoughts?

Please feel free to drop me a line at anytime, if you would like to chat further I am of course available via Skype, Facetime etc. etc. and my mobile number is below if you would like to text/contact me at short notice.

I hope we can do some great things together, regards,

Michael

1-868-620-8284

[Quoted text hidden]

Michael L Soo Ting <edp09mls@sheffield.ac.uk> 15 October 2014 at 08:41

To: Elena Barberą Gregori <ebarbera@uoc.edu>

HI Elena,

The courses are delivered completely online. The only physical contact the students and lecturers may have is during the field practicum at the end of the taught courses. I will try to get the students to give a response for each of the courses that they do since the lecturer maybe based in another country and the issues esp. technical issues may be different. I will also try to solicit responses from some of our most recent graduands to get their feed back as well.

When you send me the links to the questionnaires I suspect I will have to modify them a little to include the users nationality, where they are accessing the course from, bandwidth, first language, etc. Based on what I get back we'll see how it goes from there.

Let me know what you think, thanks in advance for all your help

Regards,

Michael

[Quoted text hidden]

Elena Barberà Gregori <ebarbera@uoc.edu> 15 October 2014 at 09:57

To: edp09mls@sheffield.ac.uk

Cc: "@Armando_Cortes Cortes Ordoñez" <acorteso@uoc.edu>

Hello Micheal,

so, do you think you can have responses from them. It is better deliver only a questionnaire but longer including the two?

Let me know and I send you the links.

You can also work on the changes with Armando who is in charge of the questionnaires part Elena

Elena Barberà Gregori

Escola de Doctorat [Directora del Programa de Doctorat en Educació i TIC]
Universitat Oberta de Catalunya

Roc Boronat, 117 / 08018 Barcelona
http://cv.uoc.edu/~ebarbera/

--- Missatge original de Michael L Soo Ting <edp09mls@sheffield.ac.uk> per a Elena Barberˆ Gregori (ebarbera@uoc.edu) enviat el 15.10.2014 14:41

HI Elena,

The courses are delivered completely online. The only physical contact the students and lecturers may have is during the field practicum at the end of the taught courses. I will try to get the students to give a response for each of the courses that they do since the lecturer maybe based in another country and the issues esp. technical issues may be different. I will also try to solicit responses from some of our most recent graduands to get their feed back as well.

When you send me the links to the questionnaires I suspect I will have to modify them a little to include the users' nationality, where they are accessing the course from, bandwidth, first language, etc. Based on what I get back we'll see how it goes from there.

Let me know what you think, thanks in advance for all your help

Regards,

Michael

[Quoted text hidden]

Michael Soo Ting <msooting@gmail.com> 15 October 2014 at 11:38

To: Elena Barberà Gregori <ebarbera@uoc.edu>

Cc: edp09mls@sheffield.ac.uk, "@Armando_Cortes Cortes Ordoñez" <acorteso@uoc.edu>

HI Elena,

I will try to get responses from as many persons as possible (students and lecturers alike). I can always tweak the survey if you send it to me in hard copy (or via the web page links) and post it up on the University website (or use Survey Monkey) and I'll send you the responses.

Regards,

Michael

[Quoted text hidden]

Elena Barberą Gregori <ebarbera@uoc.edu> 15 October 2014 at 12:32

To: msooting@gmail.com

Cc: armando.cortes@gmail.com, edp09mls@sheffield.ac.uk

Excellent,

Armando, please, send the links to Michael and the explanations as well.

Keep me posted.
Good luck.

Elena

Elena Barberà Gregori

Escola de Doctorat [Directora del Programa de Doctorat en Educació i TIC]
Universitat Oberta de Catalunya

Roc Boronat, 117 / 08018 Barcelona
http://cv.uoc.edu/~ebarbera/

--- Missatge original de Michael Soo Ting <msooting@gmail.com> per a Elena Barberˆ Gregori (ebarbera@uoc.edu) amb c˜pia a edp09mls@sheffield.ac.uk,@Armando_Cortes Cortes Ordoñez (acorteso@uoc.edu) enviat el 15.10.2014 17:38

[Quoted text hidden]

Armando Cortes <armando.cortes@gmail.com> 16 October 2014 at 05:15

To: Elena Barberą Gregori <ebarbera@uoc.edu>

Cc: msooting@gmail.com, edp09mls@sheffield.ac.uk

Dear Michael

Our research work has the aim of deepening understanding of the educative factors intervening in the correct performance of an online course in different countries.

The students' profile with whom we have carried out previous research is learners studying in Social Science Departments.

One stage of the study consists of conducting two online surveys to instructors and learners: the first one, 15 days after starting the course and the second one, 15 days before the end of it. The survey would be hosted in our platform. The time to complete each one is around 15 minutes and with it, we will make a holistic exploration of educative factors online. For making the match of the survey at the beginning of the course and the one at the end, we ask them to create an identification code.

I'm also including the provisional links of the surveys.

Surveys for the beginning of the course:

Addressed to Learners

http://www.surveygizmo.com/s3/1849949/Q1-Learners-University-of-Sheffield

Addressed to Instructors

http://www.surveygizmo.com/s3/1849947/Q1-Instructors-University-of-Sheffield

Surveys for the end of the course

Learners:

http://www.surveygizmo.com/s3/1849946/Q2-Learners-University-of-Sheffield

Instructors

http://www.surveygizmo.com/s3/1849945/Q2-Instructors-University-of-Sheffield

We look forward to receiving your answer and please, do not hesitate in contacting me should you have any doubts or need further information.

Kind regards,

Armando

[Quoted text hidden]

The University Of Sheffield.

The School Of Education.

Michael Soo Ting
EdD Caribbean Programme

Head of School
Professor Jackie Marsh

Department of Educational Studies
388 Glossop Road
Sheffield
S10 2JA

Telephone: +44 (0)114 222 8115
Email: t.a.earnshaw@sheffield.ac.uk

20 June 2012

Dear Michael,

ETHICAL APPROVAL LETTER
Evaluating the effectiveness of an online web-based MSc. programme in the Caribbean and South America

Thank you for submitting your ethics application. I am writing to confirm that your application has now been approved.

You can proceed with your research but we recommend you refer to the reviewers' additional comments (please see attached).

This letter is evidence that your application has been approved and should be included as an Appendix in your final submission.

Good luck with your research.

Yours sincerely

S. A. Warren

Dr Simon Warren
Chair of the School of Education Ethics Review Panel

cc Pat Sikes

Enc Ethical Review Feedback Sheet(s)