CARIBBEAN EDUCATIONAL RESEARCH JOURNAL

School of Education  
The University of the West Indies  
Cave Hill Campus  
Barbados

Tel: 1 246 417-4425  
Fax: 1 246 417-9615

Copyright ©2015 School of Education, The University of the West Indies Cave Hill Campus, Barbados

Caribbean Educational Research Journal (ISSN: 1727-5512) is published twice a year in April and September. The Journal publishes original articles which have undergone rigorous blind review.

Executive Editorial Board

Dr. Jennifer E. Obidah  
Editor-in-Chief & Dean, Faculty of Humanities & Education, The University of the West Indies, Cave Hill Campus, Barbados

Dr. Babalola J. Ogunkola  
Managing Editor & Director, School of Education  
The University of the West Indies, Cave Hill Campus, Barbados

Dr. Grace-Anne Jackman  
Associate Editor & Lecturer, School of Education  
The University of the West Indies, Cave Hill Campus, Barbados

Subscription Rates

<table>
<thead>
<tr>
<th>Category</th>
<th>BBD</th>
<th>USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals</td>
<td>$100</td>
<td>$50</td>
</tr>
<tr>
<td>Institutions</td>
<td>$150</td>
<td>$75</td>
</tr>
</tbody>
</table>

Subscription requests, editorial correspondence and books for review should be sent to:

Dr. Babalola J. Ogunkola  
Managing Editor  
Caribbean Educational Research Journal  
School of Education  
The University of the West Indies  
Cave Hill Campus  
Bridgetown, BB11000  
Barbados
CONTENTS

Editorial
Dr. Babalola J. Ogunkola.......................................................................................................................... 1

Contents
The Role of Teacher Education in Supporting the Transformation of Early Childhood Education in Jamaica
Zoyah Kinkead-Clark .................................................................................................................................... 3
International Organizations and their Educational Mandates: Challenges for Small Islands in the Caribbean Region
Donna Swapp .............................................................................................................................................. 17
Attitudes of Chemistry Undergraduate Students towards Mathematics at the UWI, Cave Hill Campus
Leah Garner-O’Neale & Akieya Cumberbatch............................................................................................ 33
Learning Styles, Teaching Strategies and Academic Achievement among some Psychology Undergraduates in Barbados
Grace Fayombo ........................................................................................................................................... 46
Developing Teacher Reflexivity and Communities of Practice through the Incorporation of New Literacies in a Content Area Methods Course: A Case Study of Student Teachers’ New Literacies Experience
Angelina Polius ............................................................................................................................................ 62
Reframing Transformational Leadership for Education and Nation Building in the Caribbean
Phillip A. Smith, André Harper & Dennis G. Francis .................................................................................. 76
Online Education and Academic Performance: The Case of Online Tertiary Students in the Caribbean
Ashford Kerr ............................................................................................................................................... 90
Gender Bias in the Performance of Trinidad and Tobago Students on PISA 2009
Vivian Alexander & Yukiko Maeda ............................................................................................................ 109
Education for Social Transformation in Nigeria
Akinjide Aboluwodi .................................................................................................................................... 122
Notes for Contributors

The Caribbean Educational Research Journal (CERJ) is published twice a year (April and September) by the School of Education of the University of the West Indies, Cave Hill Campus, Barbados. The Journal seeks submission of original articles on topics covering all aspects of education in the Caribbean and in the global community. Research or application-oriented articles that describe, among others, curriculum, pedagogy, professional development or educational facilities issues are considered for publication in this journal.

All articles are refereed by a rigorous review process involving at least two blind reviews by qualified academic professionals. Submissions are judged by sustainability of the content, the intellectual framework and significance to society in general.

CERJ solicits only original contributions that have not been previously published or submitted elsewhere. An important criterion for acceptance of a manuscript for publication is the relevance of the work to the educational/training environment and its potential usefulness for advancing the quality of education at all levels.

CERJ only accepts electronic submission of manuscripts. Submit the manuscripts for review process by sending an email with the paper as an attachment to drbeejay@hotmail.com or babalola.ogunkola@cavehill.uwi.edu. In the body of your email message, include the author(s), name(s), contact information of the corresponding author and the title of your submission. Your submission should be in a file format supported by Microsoft Word (PDF submission will not be accepted). All submissions should be in English. The manuscript should be single-spaced, with a single column, 11-point Arial Narrow justified font, and 1” margins on all sides. A summary (Abstract) of between 150 and 200 words should be included in the first page of your submission.

Tables and figures should be included in the text, approximately where the author thinks that they should appear. Manuscripts should be edited for spelling and grammar. Reference citation ordering and format must follow APA style referencing. References must be complete. The paper should not normally exceed 10 single-spaced pages, including all sections, figures, tables, etc. However, long articles may be considered.
Editorial

The aim of the Caribbean Educational Research Journal is to constantly focus on broadening intellectual resources, understanding and developing exchange of ideas among education professionals in order to offer intellectual contributions towards educational development in the Caribbean. In this issue of the journal, we hold on tenaciously to this aim by rigorous consideration of submission based on their values and the extent to which they have inherent ability to contribute intellectually to educational development. Valuable contributions from researchers from Jamaica, Barbados, St. Lucia, United States of America, United Kingdom, Canada and Nigeria made up this issue.

Zoyah Kinkead-Clark focuses on the role of teacher education programmes in transforming early childhood education in Jamaica and advises that locally obtained and derived research should be at the helm of Jamaica’s teacher-training programmes. On the other hand, Donna Swapp in a theoretical paper examines the mandates of international organizations in the context of significant socio-historical, political and geo-economic complexities unique to a particular group of islands in the Caribbean. The article makes a good read. Leah Garner-O’Neale and Akieya Cumberbatch whose research centres on determining the attitudes of Chemistry undergraduates toward Mathematics conclude that the overall Chemistry undergraduates’ attitudes toward Mathematics are moderate and that there are no significant differences in the attitudes based on sex and level of study of the students of the University of the West Indies Cave Hill Campus.

Grace Fayombo in her study investigates the learning preferences, the teaching strategies and their influence on the academic achievement of some undergraduate psychology students. She finds out, among other things, that students learn differently and that they also prefer different teaching strategies, hence instructors should endeavour to use differentiated instruction in order to improve information assimilation and learning experiences of the students. Angelina Polius contends that web-based formats are increasingly emerging as 21st century modalities for effective teacher preparation. Therefore she draws findings from a case study, which focuses on the introduction of new literacies in a semester-long content area methods course. Her findings reveal that participants’ engagement with new literacies creates opportunities for collaborative learning, sharing, critical thinking and reflection that lead to the development of third space knowledge.

Phillip Smith, André Harper and Dennis Francis in an opinion paper consider the potential ways by which educational leadership links to national policy objectives of economic development and they explore how a synthesised model of transformational educational leadership informed by diversity components, social justice and application of spiritual values, may affect the leadership praxis in the Caribbean region. Ashford Kerr is concerned about high failure rates among online tertiary institutions resulting in high levels of attrition, reduced graduate throughput, and increased cost of training for a nation’s labour force.

Vivian Alexander and Yukiko Maeda investigate the presence of gender bias in the Trinidad and Tobago’s sample of the Programme for International Student Assessment 2009. In their findings, among other things, three Mathematics items exhibit gender differential item functioning for Mathematics literacy – two in favour of males and one in favour of females.
Implications of these findings are presented in the paper. Finally, Akinjide Aboluwodi in a theoretical paper which centres on social transformation in Nigeria contends that suspicions and distrust among the various ethnic groups in Nigeria lead to bickering among the various group leaders resulting in their failure to achieve cohesion. He concludes that adopting the option of social transformation is a step towards building trust and social participation among the various ethnic groups in Nigeria.

It must be mentioned, though, that the eventual publication and release of this issue of the journal is a fulfillment of the promise made during the Schools of Education Biennial conference (a conference jointly organised by the three physical campuses of the University of the West Indies – Mona Campus in Jamaica, St. Augustine Campus in Trinidad and Tobago and Cave Hill Campus in Barbados from the 1st to 4th June, 2015) that papers presented in the conference will be rigorously reviewed and published in an issue of the Caribbean Educational Research Journal. Therefore, this issue contains some of the papers from the conference and others were individually submitted.

Dr. Babalola J. Ogunkola
Managing Editor
The Role of Teacher Education in Supporting the Transformation of Early Childhood Education in Jamaica

Zoyah Kinkead-Clark

School of Education, Faculty of Humanities & Education, University of the West Indies, Mona Campus, Jamaica

This article focuses on the role of teacher education programmes in transforming early childhood education in Jamaica. With less than 30% of Jamaica’s early childhood teachers (for children birth to five years) trained, quality of practice is a major issue that has stifled the continued development of the sector. I argue that teacher education programmes must be aligned with broader sector goals and initiatives and that pre-service teachers must be immersed in realistic, rather than generic, learning experiences that will allow them to transfer theory to practice. Locally obtained and derived research should be at the helm of Jamaica’s teacher training programmes. Cultural relevance is important if future teachers are to be successful in teaching in Jamaica’s diverse early childhood classrooms. Additionally the current teacher education framework and its heavy leaning toward theory must be usurped by strengthened teacher education programmes that allow our pre-service teachers to be engaged in practice experiences that are rich, varied and relevant to the needs of the students.

Introduction

Within the past forty years, the early childhood sector (specifically for children from birth to five years) in Jamaica has undergone considerable change where the system has been challenged to improve on its successes and effectiveness in an era that has become increasingly diverse, demanding, technologically driven and financially constrained. However, in spite of the many challenges, significant strides have been made where, among other things; the Early Childhood Commission (ECC) was established, student enrolment has increased to over 90% for children ages three to five years, partnerships with noteworthy organisations have been built and maintained, curriculum reform has been achieved, and more importantly many of our more vulnerable children have been provided with opportunities to break out of the cycle of poverty, and at the very least be given the chance to experience success later on in life (Davies, 2013; Leo-Rhynie, 2013).

Despite the dearth of funds, in recent years, the support of early education in Jamaica has been tremendous from both the Government, and more so private organisations in order to ensure that further improvements in the early childhood system continue to be reaped (Leo-Rhynie, 2013). Through changes in policy, partnerships and support from many local and international bodies, schools have been built, public education programmes have been promoted, and hundreds of pre-trained teachers in the system have received vocational training in Early Childhood Care and Development in order to meet Jamaica’s minimal requirement of working in early childhood institutions.

Email: zkinkeadclark@gmail.com

ISSN 1727-5512
©School of Education, The University of the West Indies Cave Hill Campus
http://www.cavehill.uwi.edu/fhe/hum/publications/EducationCERJ.htm
The focus on the teachers as an integral aspect of the early childhood system has consistently been highlighted as a key factor in the way forward for Early Childhood Education (ECE) in Jamaica, particularly in light of the fact that the majority of the persons staffing early childhood institutions do not possess professional teacher training qualifications. Jamaica currently has over 8,000 trained and pre-trained teachers with varying levels of qualifications (ranging from vocational training to post graduate studies) who work in the over 2,600 ECE institutions across the island (Gleaner, 2012). Approximately 90% of the teachers meet the minimum qualification standards for teaching at the early childhood level. With numbers of about 4,000, these pre-trained teachers with minimal vocational training dominate the early childhood sector (JIS, 2010). Diploma-trained teachers are the second largest subset, representing 22% of the teachers in the system. Teachers trained to the Masters and Bachelor levels are about six hundred or roughly 9%.

While for many decades, the good intentioned pre-trained teachers have “held the fort” and manned the system, with some degree of success, it is not surprising to recognise the urgency of current leaders in the field who have highlighted the need to upgrade teacher qualifications as an issue of dire concern.

From a Jamaican standpoint, with 25% of the teachers in the system trained to the diploma and bachelor level, it is fair to say that there are far more professionally qualified teachers in the system now than ever before, especially when compared to a decade ago. Despite this, Professor Samms-Vaughan, former Chairman of the Early Childhood Commission, the organisation responsible for the oversight of early childhood institutions in Jamaica, has consistently maintained that there is no room for complacency. While this is indeed a move in the right direction, the majority of these trained teachers are employed in Government-owned infant schools/departments or privately-owned pre-schools and preparatory schools. Needless to say this practice perpetuates inequity and elitism in education whereby children of more affluent families are given opportunities to have a better head start in life over their less fortunate counterparts. The ripple effects of this dilemma are vicious especially in light of the fact that some of the more vulnerable children, particularly those in poorer communities, have a significantly reduced chance of being taught by a professionally trained and qualified teacher in the first five years of life, a fact which may have an impact on their future likelihood of success (Samms-Vaughn, 2008). It is the aspiration to stem this inequity and inequality in early education why emphasis is being placed on improving the sector.

As outlined by Samms-Vaughan’s longitudinal studies and as affirmed by extant arguments, significant and sustained benefits exist for children who have access to quality early childhood programmes. According to UNICEF-Jamaica, quality early childhood programmes, seek to improve both children’s readiness for primary education and learning outcomes in selected curricular areas in primary education, such as child rights and life skills-based education. Special attention will be paid to the development of gender-sensitive, interactive and child-centred teaching and learning methodologies (n.d.).

The benefits of programmes emphasising outcomes and embracing these philosophies cannot be overstated. Research has consistently maintained that children who have access to quality early childhood care and education are more ready and more likely to succeed in primary school and are more likely to finish secondary school. Additionally, they also display greater cognitive function, have higher IQ scores are less likely to be held back in school, less likely to require special education intervention, and are less likely to become truant or engage in criminal

It is for these reasons that improving the quality and quantity of Jamaica’s early childhood teachers has been at the fore of the drive to improve the current state of the early childhood sector. As many stakeholders have recognised, a critical variable that must be considered in order to improve the system is to address the quality of the persons staffing the system. Admittedly while research has not been consistent in establishing or dismissing the correlation between teacher qualifications and programme quality, one fact that has been consistent is that there is a strong correlation between early childhood teachers’ understanding of the importance of child development, child psychology and developmentally appropriate pedagogy and how these relate to academic achievement (Barnett, 2003; Darling-Hammond, 2000; Early et al., 2006).

In light of the following, this policy paper suggests that a major part of the transformation of the Jamaican early childhood sector rests with the development of teacher training initiatives and programmes that support the immediate needs of the sector. This article also argues that a holistic approach needs to be taken to address the unique cultural factors affecting early childhood education. Through this, teacher education programmes that emphasise child development and its importance and relevance to classroom instruction and practice are crucial. Additionally programmes must be reflective of, and aligned with the broader goals of early childhood transformation initiatives. This will further support the development of the sector and allow the said goals to be achieved.

Methodology

The data gathered for this paper are derived from a meta-synthesis of extant literature germane to teacher education and early childhood education from both a Jamaican and international perspective. Systematic reviews as defined by Carney and Geddes (2002) refer to the process of synthesising empirically validated research studies (usually peer reviewed) about a given topic which then allows for a wider interpretation and a deeper understanding of the findings. This process leads to generating new theories or concepts. For this article, while attempts were made to predominantly use peer-reviewed journal articles, because of the dearth of literature that speaks to early childhood education in Jamaica, a wider scan was conducted where information from newspaper articles, the Ministry of Education and the Government of Jamaica information news service (JIS) was also used.

The primary research question which guided the research articles selected for analysis was: how can teacher education aid in the transformation of early childhood education in developing countries? The steps for conducting systematic reviews, as suggested by Bettany-Saltikov, (2010) guided the search, selection and analysis process of the data used for this article. These steps are as follows:

1. Establish criteria for selection of articles and other sources prior to commencing data search.
2. Peruse newspaper article archives, read reference lists, and use key terms (and their synonyms) in scholarly search engines to ascertain the articles relevant to the primary question.
3. Assess the quality of the selected articles.
4. Extract the data in the selected articles germane to the primary research question.
The Historical Context of Early Childhood Education in Jamaica

This article presents the history of the early childhood sector in Jamaica because the formative years of the system continues to directly impact and influence the current practices of the sector today.

The history of early childhood education in Jamaica, as with many other Caribbean islands, suggests that it had the humblest of beginnings. Admittedly, though many changes and improvements have taken place in the past few decades, it is still not uncommon to witness questionable early childhood practices across pockets of the island.

For many years, early childhood education was given scant attention by government leaders and officials. In fact, as with other West Indian islands, education in Jamaica, and its dependencies, was first embraced by the church as an area of importance (though often it was used as a means of indoctrination and gaining members). In the mid 1930’s a parish rector, Henry Ward, established Jamaica’s first public nursery for children whose parents had left them uncared for while they went to work in the banana fields. This, according to Ward, was needed as many of these children faced imminent danger in being left on their own for several hours each day (Morrison & Milner, 1995).

As with many schools, catering to young children at the time, this nursery was staffed by untrained women who were predominantly members of the church. This practice continued for several decades and ultimately evolved into many of these women branching out on their own. In this, they would take in children at their own homes by providing child care and later, by extension, schooling. It was, and currently still exists, where parents who worked outside the home, would depend on these private home caregivers to teach their children. Essentially, these “home schools” flourished and rapidly grew in numbers and came to be known as basic schools, because they provided the basic academic skills young children needed to learn (Commissong, 1999).

In the 1960’s, the Bernard Van Leer Foundation, a philanthropic organisation in the Netherlands, earnestly seeking a project to sponsor, took on the charge of working with Jamaican officials in streamlining and strengthening the very ad hoc and disorganised state of the early childhood sector (Commissong, 1999). The project, under the guidance of D.R.B. Grant, labelled as the father of the early childhood movement in Jamaica, set about to improve the quality of the sector through emphasis on best practice, improved facilities and teacher training. As a teacher educator affiliated with the University of the West Indies, Grant, was keenly and specifically interested in improving the quality of teaching because he understood the impact and the difference quality teaching could have on the lives of poor children.

Massive professional development initiatives were undertaken with the aim of improving teaching practices to reflect best practice in the field. Years later, this initiative ultimately resulted in the development of the first early childhood teacher education programme in Jamaica. In the 40 years since, basic schools continue to flourish. As it stands there are over 2600 early childhood institutions across Jamaica, a number that increases on a daily basis. As previously mentioned, many of these basic schools are predominantly staffed by untrained and pre-trained teachers (known locally as practitioners) who often struggle with, and who essentially lack, the requisite competencies to meet the challenges of Jamaica’s diverse early childhood classrooms (Davies, 2013; UWI, n.d.). As Grant suggested over 50 years ago, and as reiterated by current
leaders in the early childhood sector, teacher training is a significant aspect in the move toward Jamaica’s development of an effective, well-functioning early childhood system.

**Teacher education in Jamaica**

Though several definitions have been suggested, for purposes of this paper teacher training is defined as a programme of study offered to in-service and pre-service teachers which exposes them to content, skills and dispositions needed to effectively meet the needs of students from the early childhood through tertiary years.

Though recent arguments in the past few years have sought to challenge the relevance of teacher education, very few, especially those in developing nations, can dispute the impact quality teacher training has on transforming schools, by extension the lives of our citizens, and essentially contributing to social and national development (Darling-Hammond, 2000; Rowe, 2003; Talbert-Johnson, 2006). For small, developing, low-resource countries, such as Jamaica, we recall all too well the low national literacy rate and inequity in education that existed for us to dismiss or make light of the necessity and importance of broad-based teacher training initiatives. Further to this, research findings have clearly stated that there is a strong correlation between quality teacher training and improved social markers such as entrepreneurship, literacy rates and social development; milestones of which many developing nations are still aiming to achieve (Igwe, 2011; Kankam, 2005; Wiseman Al, Sadaawi & Alromi, 2008).

From a local standpoint there may be some truth to the assertions of critics who are vicious in their attacks on the effectiveness, or lack thereof of teacher education programmes. Such critics have frequently labelled these programmes as out of touch, generic, expensive and ineffective, in adequately preparing teachers for the realities of the classroom (Gitomer, Latham, & Ziomek, 1999; Hess, 2002). Despite this, according to Darling-Hammond (2000), research over the past several decades, has consistently found that even with the many flaws and weaknesses, graduates of teacher education programmes are more successful in meeting the needs of their students than those without specialised training.

Globally the strengthened emphasis on teacher education has focused on improved training of teachers with the aim of meeting the needs of the system. The findings of Darling-Hammond (2000; 2006); Cochran-Smith (2005) and Rowe (2003) among others, have all highlighted the benefits of quality teacher education and its importance to social development. A significant aspect of the need for teacher education programmes rests in the arguable assumption that “teachers are made, not born” as opposed to “teachers are born, not made”. This perspective advances that in order to be effective, quality teachers; aspirants must be given opportunities to take part in teacher education programmes that expose them to learning experiences, current research and pedagogical strategies that foster the development of quality teacher competencies and traits. Due to a lack of human and financial resources, for decades, Jamaica’s education system was forced to assume the latter. Though many teachers’ training institutions had been established, there really was a dearth in the number of teachers needed to staff the hundreds of early childhood, primary and secondary schools across the island. For several reasons, these programmes could not meet the demand of persons desiring to be admitted to college and this dilemma ultimately necessitated the need to use untrained persons to fill the several teacher vacancies in schools (Miller, 2001). With particular reference to the early childhood level, the system was and continues to be forced to employ persons without training with the hope that they would have the inborn, innate competencies to teach. This practice was, and continues to be, problematic.
As current leaders in the sector have highlighted, though this practice may have filled a need, this has not been as successful as they would have hoped. Essentially, the conclusion drawn is that there is a tremendous need for quality, professionally-trained teachers to support the goal of an efficiently organised system. This, according to Talbert-Johnson (2006) is at the core of quality training programmes. As she suggests; “Teacher education programs are at a critical link for the preparation of teachers who possess an ethical stance regarding the knowledge, skills, and dispositions required to intervene effectively with all students. Therefore, teacher education is taking center stage in the discussion relevant to teacher quality and its effectiveness on the achievement of diverse students....”

Within the past few decades, significant strides have been made in education and as such the use of untrained graduates (university graduates, without specialised teacher training) to teach has been significantly reduced (particularly at the primary and secondary levels). As the early childhood sector has not been so fortunate, many of our schools continue to be staffed by ill-prepared practitioners who do not have the skills needed to meet head on the demands of the classroom. This dissonance is what has essentially propelled leaders in the field to appeal for the implementation of higher practice standards and the improved training of teachers as a means of developing the sector.

The emphasis on teacher training is critical to the improved development of Jamaica’s early childhood sector because, as posited by Hagan et al (2003) graduates of quality teacher training programmes have an advantage over their pre-trained counterparts. The authors’ findings suggest that for those whose pre-service educational experiences are reflective of current research in education, they are far better prepared to meet the unique challenges they may encounter in the classroom. For instance, one such challenge as highlighted by Taylor (2010) and Talbert-Johnson (2006), relates to the need to understand and embrace cultural differences in the classroom. According to the authors, teacher training provides future teachers with the skills needed to use and build on learner diversities in the classroom.

The findings of Rowe (2003) also support this presumption. In Rowe’s research he explored the role of teachers in students’ academic and socio-emotional development. His findings suggest that “quality teachers” and by extension quality teacher training is important as these determining factors have a significant impact on students educational outcomes. Essentially, “quality teachers” and their teaching practices are shaped by their educational and professional development opportunities and these learnt competencies are then transferred to the classroom.

What does the ideal Early Childhood specialist look like?

According to Colker (2008), when focusing on the ideal characteristics of the early childhood expert, emphasis is often placed on the personal traits combined with quality specialised professional training which provides the practitioner with the requisite skills and competencies to understand and to deal with the unique behavioural, developmental and academic needs of young children. From a local perspective, it is felt that teachers with at least a teaching diploma or bachelor’s degree are capable and knowledgeable enough to be the lead teachers. Further to this, teachers must also be good observers, possess excellent organisational skills, be good communicators that allow them to reach both the children and the parents during instruction and consultations respectively (Colker, 2008; Kane, 2008; Simms, 2010).

Interestingly within the past two decades, a major shift in the qualities of the ideal early childhood specialist has occurred where technological proficiency has been included as a
necessary skill. Undoubtedly our changing society has warranted that teachers possess technological skills as essentially these will allow them to keep up with the changing modes of teaching, learning, communication and ultimately will allow them to remain relevant in a technologically-driven world.

In response to the unique needs and requirements of the profession, early childhood teacher training programmes, both locally and internationally, have consistently endeavoured to develop programmes that engender in graduates the qualities needed to be successful teachers and which are reflective of the ideal early childhood specialist.

While not specifically used as a guide, it is fair to state that in the local context the desired traits for early childhood teachers are similar to those established by the National Association for the Education of Young Children (NAEYC), through their standards for teacher preparation programmes. The Association focuses on nine core values for professional preparation which implicitly specifies the core values for teachers in their practice (2009). According to the NAEYC (2010), early childhood specialists must:

1. Be knowledgeable in the use of developmentally appropriate practices in the classroom.
2. Be aware of the importance of the physical, social and emotional environment in promoting learning.
3. Develop strategies to facilitate students’ acquisition of basic Mathematical concepts.
4. Utilise a cadre of strategies that support students’ acquisition of literacy skills.
5. Develop a repertoire of skills to assess students.
6. Build a bank of strategies that can be used to support children with alternate learning styles.
7. Embrace cultural diversity in the classroom.
8. Understand trends and issues in the field.
9. Have comprehensive knowledge of the early childhood curriculum.

In the Jamaican context and similar to other countries, there are also legal and professional guidelines used to establish the desired characteristics of early childhood pre-trained teachers. Through the passage of the Early Childhood Act in 2003, the Government of Jamaica specified the legal requirements that all early childhood specialists must meet. Additionally, the ECC, through its stipulated Standards for Management of ECE institutions, has also implicitly highlighted the traits and characteristics of the ideal pre-trained teachers. According to the ECC, all pre-trained teachers must possess the dispositions that will allow children to succeed. They explain it is important that “The staff at early childhood institutions has the characteristics, training, knowledge, skills, and attitude, to help children achieve their full potential” which is acquired through studies, training and professional development (ECC, 2007, p 13).

The Framework of Early Childhood Teacher Education in Jamaica
Teacher training in Jamaica is done in a unique way. In this, eight individual teachers colleges across the island come together to form what is known as the Teachers Colleges of Jamaica (TCJ), a body sponsored by the Government of Jamaica and overseen by the Joint Board of Teacher Education (JBTE), the organisation responsible for certification of teachers and the development of teacher education. The rationale for this partnership is fairly simple in that it is believed that through collaborative engagement and effort, there is greater efficiency,
maintenance of higher accreditation standards, strengthened programme content and essentially improved “capacity and capability of colleges” (Teachers Colleges of Jamaica, 2012).

Of the eight members of the TCJ, currently six of them provide teacher training in early childhood education. Generally, all programme specialisations follow a similar framework. Previously, full-time programmes had duration of three years and would allow students to earn a teachers’ diploma. Within the past five years, with the current thrust by Jamaica’s Ministry of Education to ensure the improved quality of teachers, amendments were made to the Education Act which stipulate the bachelor’s degree as the minimum qualification for teachers. This requirement made it necessary for teacher education programmes to offer the four-year bachelor’s degree in the colleges.

The current teacher education framework as stipulated by the Joint Board of Teacher Education outlines four distinct areas for all teacher training programmes. In this, 20% of course content for a bachelor’s degree covers general education, 30% deals with professional studies, 45% is related to the specialisation courses and 5% is allocated to course electives (Teachers Colleges of Jamaica, 2012).

**Aligning teacher education programmes to support the needs of Jamaica’s early childhood sector**

*Preparing teachers for the real world*

A significant feature that strengthens or minimises the success of teacher education programmes is how well programmes are aligned to the realities of the real world (Lehesvuori, 2013; Public Agenda, 2000; Ramsey, 2000) and how easily students can transfer their knowledge gained to their teaching experiences. Interestingly this individualised approach can be both advantageous and disadvantageous. From a Jamaican standpoint and as noted in other countries, one might argue that current teacher-training initiatives are out of touch and not reflective of the majority of our schools. The heavy emphasis on theory needs to be usurped by strengthened competency based assessment models (Ball & Cohen, 1999; Oonk, 2009; Public Agenda, 2000). From a local standpoint, it has consistently been noted that a major weakness has been the lack of understanding of child development. Anecdotal evidence indicates that many pre-service and in-service teachers have minimal understanding of this extremely important aspect of their practice. A greater focus on child development, holistically, will undoubtedly have a positive impact on teachers’ practice. Having a more in-depth understanding of how children develop, grow and are shaped by the social, emotional and cultural landscape will essentially provide teacher education graduates with the requisite skills needed to be more successful in Jamaica’s classrooms.

A major challenge that consistently reveals itself in the Teaching Practicum component of programmes, is that many pre-service teachers are able to cite, quite eloquently, philosophical and psychological theories but struggle to transfer the said theoretical concepts to teaching and learning experiences. A considerable part of this has been with how teacher education programmes are structured. As it stands, many of the courses are heavily theory based, with one or two micro-teaching experiences interspersed throughout with an intense practice experience in the final semester of the fourth year. In this, students are placed in a school for 3 months. The current model of teacher training needs to be transformed to reflect a more balanced approach that also focuses on practical experiences.

Locally, the current teacher education programme framework has been in existence for decades and even though our schools have changed, children have evolved and experiences are different, our teacher training programmes have virtually remained the same. With the exception
of upgrading teacher qualification from a three-year diploma to a four-year bachelor’s degree, there still remains the heavy leaning on content and theory, with a twelve-week practicum experience in the final year of the programme. This dissonance between teacher education programmes and reality needs to be addressed if the trajectory of early childhood education is to be changed.

Situating teacher education in the Jamaican context

Another aspect that needs to be addressed is the unique challenges faced by Jamaican teachers in Jamaican classrooms. Current understandings of culture have revealed that cultural variances have a significant impact on student learning (Gay, 2002). With the increased output of locally-produced educational and child development research, teacher education programmes are essentially obligated to use these findings to strengthen and undergird our teacher training initiatives.

For example, poverty, malnutrition and crime, which sadly have marred the Jamaican landscape for many years, impact the lives of our children in numerous ways. It is not uncommon to hear pre-service teachers complain about the difficulties they have in meeting the needs of children from such circumstances, as they feel unable to relate to them, are challenged in understanding the homes, families and communities they come from and struggle with tailoring instruction for meeting those who have alternate learning styles.

Interestingly, Samms-Vaughn’s Profile Project (2008), a longitudinal study following the lives of several hundred Jamaican children for approximately ten years has provided very detailed insight into several ways poverty, maternal traits and social conditions affect young children. The findings have revealed that Jamaica’s reality is that many of our children come from extremely deprived circumstances and that the impact this has on children is significant. The unique social challenges and cultural differences should be viewed as critical in the development of programme structures and content in teacher education programmes. Courses such as, child development or even strategies related to content delivery should be undergirded by the realities of the Jamaican situation and pre-service teachers should be provided with strategies to deal with these in the classroom.

Jamaica’s teacher education programmes have a responsibility to ensure that pre-service teachers are provided with opportunities to engage in experiences that are applicable and relevant to the contexts for which they are being trained. Teacher education programmes have a responsibility to ensure that locally-obtained research findings, such as that of the Profiles Project, are disseminated and that the data shape how and what is taught in these programmes.

In addition to the previous issues, our teachers are not prepared to deal with the socio-emotional issues that children come to school with. Research speaks quite clearly about the impact of socio-emotional challenges on children’s academic performance (Elias & Harold, 2006; Flook, Repetti & Ullman, 2005; Zins et al, 2007). From a local standpoint there is much to be concerned about. According to the SOS Children’s Village, approximately 75,000 of Jamaica’s children are orphans, thousands have witnessed or been victims of violence and thousands are engaged in child labour as they help to support their families financially (n.d). Courses specifically related to socio-emotional development and mental health of young children should be critical elements of our teacher programmes. Pre-service teachers need to be exposed to a repertoire of strategies and content that they can realistically use to help such students in their practice.
Finally, the cognitive abilities and academic needs of the children also need to be considered. Having an understanding of the areas of deficiencies will allow teacher education programmes to develop courses that can readily address this. For instance, a major issue in the Jamaican early childhood sector relates to the competencies students have as they transition from the pre-primary to primary years. The evidence suggests over 70% of the children at the pre-primary level do not have the literacy nor numeracy skills to successfully meet the academic demands of primary school (MOE, Education Statistics, 2008/9).

In light of the deficiencies in student competencies, teacher education programmes are essentially obligated to ensure that pre-service teachers are provided with the skills and strategies to deal with the issues at hand. The Ministry of Education and other stakeholders have been very vocal in the need to improve the competencies of students in the key areas of numeracy and literacy. Whether through additional or strengthened content knowledge and the need to focus on methodological issues, having an understanding of the weaknesses in the skills students take from their pre-primary education, is critical if student improvements are to be made.

**Opening doors for the other 75%**

A critical aspect in changing the trajectory of the early childhood sector in Jamaica is undoubtedly the need to have fully trained teachers in all early childhood institutions. As previously mentioned, current statistics reveal that fewer than 30% of the teachers in these schools have a teaching diploma or more advanced qualifications (Davies, 2013).

Through aligning teacher education programmes to the Jamaican context, several variables would have to be taken into account. For instance having an understanding of the profile of current early childhood teachers would make the task easier. The data suggests that the typical early childhood practitioner is a female and approximately 45 years of age. The question is how do we provide opportunities for her to access programmes of study while taking into account the unique challenges she might be experiencing in her daily life.

Though changing, Jamaica’s teacher training institutions are predominantly located in largely populated towns. Especially for those in rural communities, there is great difficulty in finding a programme that will allow them to meet their family responsibilities while at the same time advance their academic qualifications. The feminised demographics of early childhood educators, in addition to cultural norms, which view women as the main care givers in homes, have prevented many of them from relocating to areas where they can access a programme.

Within the past five years, there have been more tertiary institutions offering programmes of studies in Early Childhood education in many rural parts of the island. While this increase has certainly provided greater opportunities for those desirous of pursuing further studies there still remains a gap for many who have time and financial constraints.

Teacher education programmes must provide greater opportunities for many of our pre-service and untrained in-service teachers to be able to improve their qualifications while meeting their personal demands. Whether through distance learning, online learning or high intensity summer programmes, in order to realistically provide greater opportunities for the untrained teachers to be trained, teacher education programmes would need to be specifically designed to fit in the lives of the over 75% of untrained teachers in the system.

Teacher quality is important and teacher training makes a difference (Darling-Hammond, 2000; Rowe, 2003; Samms-Vaughn, 2008). If Jamaica’s early childhood sector continues to be dominated by untrained professionals then many of our early childhood institutions will continue to be marred by a lack of quality, which inevitably would be detrimental to children. Teacher
education programmes, through the provision of flexible programme offerings and schedules are important if this issue is to be overcome.

Conclusion
Given the need to improve Jamaica’s early childhood sector, the focus must be on the quality of the teachers staffing the sector and by extension, how teacher education programmes can support this initiative. Through continued review, reform and upgrading, teacher education programmes can be tailored and aligned to meet the unique developmental and academic needs of children and address the immediate needs of the sector and this will undoubtedly support the venture of an early childhood system reflective of best practice.

Very few can deny the diversities and the realities of Jamaica’s early childhood system. In light of this, what is needed are programmes that adequately prepare teachers for meeting these diversities and realities. Teacher education programmes that are developed for pre-service teachers and by extension, in-service teachers, cannot and should not be generic. What is needed are programmes that are reflective of the unique cultural differences, social practices and socio-economic challenges. Understanding the issues at hand and finding ways of preparing teachers to deal with these is extremely important.

Truthfully, the past 20 years have proven we have been somewhat successful in this venture and other countries have too recognised this. Our teachers are well prepared and trained to teach. The massive teacher recruitment of thousands of Jamaica’s teachers to the UK, the United States, the wider Caribbean and other countries around the world is proof that our system does result in the development of highly sought after and qualified teachers, the issue however is how well do we prepare our teachers to deal with the realities of the Jamaican context.

I argue that a review of the framework of teacher education must be done, specifically as it relates to the weighted allotment for specialised courses, content courses and professional courses. I also argue that more time needs to be given to specialised courses and that these should specifically emphasise issues in child development and be based on the needs of our children, teachers and communities. It will certainly not be an easy move. The many challenges faced at the early childhood level will not be solved overnight. I do maintain however that teacher education programmes should be at the nucleus of the transformation as we provide the resources needed to have a well functioning early childhood sector. As research has clearly stated, quality teachers make a difference and by extension quality teacher training is crucial (Darling-Hammond, 2000; Rowe, 2003; Talbert-Johnson, 2006).

References


Teachers Colleges of Jamaica. Handbook of regulations for bachelor education (2012). Kingston: Joint Board of Teacher Education.


For decades now, structural adjustment programs of international donor organisations have permeated and configured the socio-political and economic landscapes of Caribbean territories. In particular, the education-driven reform mandates of these organisations pervade discourse regarding policy articulation and implementation in systems of education across this region. This theoretical paper examines the mandates of international organisations in the context of significant socio-historical, political and geo-economic complexities unique to a particular group of islands in this region. The paper unfolds through a critical analysis of the literature on economic globalisation, internationalisation of education and Caribbean history, and against the researcher’s own positioning as a Caribbean citizen, educator and researcher. The research methodology guiding this inquiry entails a vertical case study of the Caribbean region through a postcolonial theoretical framework of inquiry, using Caribbean nation states and international donor organisations as the main units of analysis. The paper argues for an ontological and epistemological reassessment of the nature and scope of international lending organisations’ involvement in the economic and educational affairs of small islands in the Caribbean region.

Keywords: International organisations, economic globalisation, neo-liberalism, structural adjustment programs, international education mandates, Caribbean education reform, OECS small islands

Introduction
This research paper aims to demonstrate the dissonance between the mandates of international organisations, with some attention to those impacting education, and the contexts of countries of the Organisation of Eastern Caribbean States (OECS). I begin by describing the theoretical framework, research design, and main units of comparison, and also justify why this paper fits within the field of comparative and international education. A historical overview of the OECS ensues. Specifically, I situate this sub-region within its British, colonial past and highlight several socio-historical, political and geo-economic peculiarities of this particular group of small islands in the Caribbean. Next, I engage in a discussion on globalisation, juxtaposing both the Caribbean region and international organisations relative to this phenomenon and situating the latter as vehicles of global, neoliberal agenda setting. Within this discussion, I examine the nature, scope and purposes of these organizations, especially in relation to their roles in debt financing and restructuring in OECS countries. I then problematise, in theory and through the use of examples, the substance and impact of the mandates of international organisations, especially in relation to education, emphasising their incongruity given the afore-mentioned contexts of OECS. I then put forward some considerations to inform future relations between
countries of the OECS and international organizations, and conclude with a summary of each aspect of the paper.

**Theoretical Framework**

Postcolonial theory (also termed postcolonialism) builds on the shortcomings of dependency theory to reflect a distinct ontological and epistemological shift from scholarships of “unitary and homogeneous ways of thinking” to embrace multiple, deeper, and more lateral connections and inter-connections between and across phenomena (Ninnes & Burnett, 2004, p. 182). For postcolonial theorists, vertical and/or one-dimensional explorations of the relationship between colonizing and colonized countries propagate limited, isolated, and often inaccurate understandings of the full colonial experience. Instead, postcolonial theory is concerned with the nuances and complexities of colonial and post-colonial eras, and its inherently critical core problematises Westernised principles of development. Tikly (2001) postulates that postcolonial theory is the basis for articulating “a less Euro-centric and more comprehensive account” of globalisation in developed and developing societies in this post-colonial era (p. 250).

In the first part of this paper, I draw on Tikly’s (1999) work in advancing postcolonialism as a process of disengagement of the OECS from British colonial ties. This position facilitates a more in-depth discussion of the colonial experience and emphasises the ways in which this experience continues to influence the contemporary struggle for development in previously colonised countries, including culture and social identity. I also draw on Tikly’s scholarship in situating postcolonialism as “the emergence over several centuries of the system of global capitalism” (p. 606). I apply this theorist’s assertion of three important functions of this positioning: situating colonialism as a fluid, ongoing system, the form and effects of which have been acted upon by globalisation; critiquing the experiences of the colonial era in both colonised and colonising countries, thus attending to the ways colonial structures and norms were intrinsic to the latter; and, highlighting the dominant role that European colonisation has played in shaping postcolonial economic development. In the second half of the paper, I engage in postcolonial theory to situate the presence of international organisations in the affairs of the OECS and problematise the neoliberal principles of development couched in the mandates of these organisations. In discussing some considerations to inform policy articulation and implementation in the OECS region going forward, and draw on (i), Ali’s (2010) conceptual framework which problematises the consumer-driven nature of Caribbean societies and advocates the creation of a contextually relevant policy research model, and (ii) Smith’s (2012) decolonising methodologies in disrupting colonial systems and ideologies and the articulation of authentic, indigenous development initiatives.

**Methodological approach**

There is much ontological and epistemological contention in the field of comparative education regarding the framework that should guide social inquiry (Karns & Mingst, 2010; Manzon, 2007; Ninnes & Burnett, 2004; Phillips & Schweisfurth, 2008). Debates surround the kinds of studied phenomena that can be acceptably situated within the field of comparative research and the methods employed that can be deemed ‘comparative’ in design. The re-articulation of the field into comparative and international education makes it, arguably, more open to scholarships of unorthodox conceptualisations. This paper is both comparative and international in that I situate the Caribbean within global discourse and use this region in analyzing several different elements across various regional and international dimensions: systemic and historic characteristics
peculiar to a group of Caribbean islands; nature and scope of international mandates, especially those impacting education; small island nation states and international organisations; and, dissonance between small island contexts and international education policies.

The vertical case study
The vertical case study method as employed in this research paper captures the uniqueness of the Caribbean, and the local context of OECS small islands in this sub-region. This method is concerned with macro-level analysis of phenomena across levels of a given system, region or some other specified unit (Vavrus & Bartlett, 2006). In this way, the vertical case study not only privileges investigations into the local contexts of the phenomenon, it also focuses on both the narrow and broader impact of said local contexts. In this paper, I employ this method to generate micro-level understanding and macro-level analysis of the OECS sub-region, thereby situating the contexts of local small islands within a much broader regional - socio-historical, political, and geo-economic - framework. Individual OECS islands, the broader Caribbean region, and specific peculiarities of OECS islands all alternatively and collectively serve as point/s of departure (i.e. local contexts) for discussion. Through the vertical case study, I examine features common to particular Caribbean territories in relation to how they are impacted by economic reform mandates of international organizations, especially those with relevance to education. In this way, an integrated discussion of the wider contexts of specific small islands (i.e. narrow focus) unfolds, and I examine their interconnected structures, systems, and experiences which in turn sheds light on how certain socio-historical, political and geo-economic factors have shaped these systems and development initiatives in the region (i.e. broader focus).

Units of analysis
One of my main units of comparison is small islands of the OECS. My interest in this sub-region is highly subjective. I was born and raised in Grenada, completed my undergraduate studies in this region, and taught at the secondary level for 11 years before taking up a scholarship to complete post-graduate studies overseas. Further, relative to other fields of inquiry, the Caribbean region is under-studied in global development literature. That is, there is a paucity of empirical scholarship to inform discussions regarding regional development (Ali, 2010; Hickling-Hudson, 2000a; Melville, 2002). There are therefore many fruitful avenues for research and development in this region, particularly regarding education reform in the OECS. Also, significant homogeneity among islands of the OECS makes comparison valid and worthwhile, such as a common language, culture, political system, and monetary currency. Manzon (2007) espouses that “a prerequisite for any comparative study is to establish the parameters for initial comparability of the chosen units of analysis” (p. 88), and Bray and Mason (2004) assert that the units for comparison must have sufficient in common to make an analysis meaningful. In this paper, I group several OECS islands and argue that, in light of their commonalities, international mandates - especially those impacting education - affect them in similar ways.

Socio-historical, political and geo-economic contexts of OECS islands
The Caribbean has a history of European colonisation, and islands of the OECS, in particular, share a history of British rule. The OECS was formed in 1981 and has seven full members and two associate members (OECS, 2015). These member islands are Antigua and Barbuda, Dominica, St. Lucia, St. Vincent and the Grenadines, Grenada, St. Kitts and Nevis, and
Montserrat; Anguilla and the British Virgin Islands remain associate members (underlined islands are the focus of this paper). Any meaningful scholarship on Caribbean development must therefore be approached with an appreciation of the heritage of colonialism inextricably woven into the cultural fabric of each island in this region. This legacy inevitably, and quite markedly, shapes the development of regional islands in this post-colonial era (Ali, 2010; Alonso, 2002; Brizan, 1998), and has created lasting impressions ranging from dependency, subservience and inanity to regional pride, patriotism and resilience. I assert that these constitutions encompass the complexities and contradictions of the colonial experience and shed light on the philosophical issues which inform post-colonial development in the region. Key socio-historical, political, and geo-economic circumstances of OECS countries include their novelty as independent states, the recent introduction of formalized education, a consumption culture, high public debt exacerbated by vulnerability to natural disasters, and membership in regional organizations. These circumstances both shape and constrain the efforts of local and regional governments towards social and economic development, and must be attended to more meaningfully when articulating and implementing policy frameworks for this sub-region.

Perhaps the most striking peculiarity of small islands in the OECS is our fairly young stint as independent nation states. Local and regional efforts towards development are thus a fairly new initiative - only three to four decades in the making. The cultural heritage of our people, and our successes, struggles and future aspirations are inescapably imbued by this historical fact. This ‘newness’ has revealed itself in persistent political instability, civil unrest (Hickling-Hudson, 2000a) and public corruption in the region (Naude, Santos-Paulino & McGillivray, 2009; Steele, 2003). In Grenada, the political revolution of 1979 and the government coup of 1983 are striking examples (see Brizan, 1998; Steele, 2003), seriously reversing major economic, social and educational gains of that period (Hickling-Hudson, 1988 & 2006). Hickling-Hudson’s (1988 & 2006) scholarship explores how successive governments embraced a culture of eradication, abandoning developmental programs of the prior regime (even those of social and educational value) to instill their own, and ceded to Western dictates in institutionalising a ‘neo-liberal’ brand to local governance. The genesis of Western influence in Grenada’s domestic governance was arguably with the United States’ ‘invasion’ of Grenada in 1983, a move which catapulted the level of international aid to the state and the establishment of structural adjustment programs.

Another socio-historical peculiarity of the OECS is the relatively recent introduction of formalised schooling in these small islands. Prior to the 1940s, education was an exclusive privilege for landowners and their children (Alonso, 2002; Hickling-Hudson, 2000; Steele 2003). The colonial rulers’ first steps towards formalised education were introduced during the 1940s, following the then dominant model of western schooling with one-roomed schools, outdoor plumbing and school inspectors serving localities (for a fuller account of these early patterns of western schooling and the global politics of their genesis see Allison, 1989; Gidney, 1999; Green, 1990; Hans, 1958). The system gradually grew more inclusive and sophisticated, and dwindling economic returns from the plantation system later loosened the grip of the British colonisers, who began to increasingly relinquish governance to local authorities (Rogozinski, 1999). Moreover, the Caribbean region generally lacked institutions of higher learning and did not have its first university until the mid-20th Century; a few wealthy nationals travelled to Britain to earn their degrees and then later formed the University of the West Indies in 1948 (Hickling-Hudson, 2000a). However, this university’s expansion has been slow. Hickling-Hudson asserts that by 2000, less than 3% of the region’s working population held a university
degree. Given that there is an analogous relationship between education and human capital, this historical trajectory points to the under-developed nature of the human capital resource in the sub-region (Melville, 2002; Wint, 2003). It also shows that OECS countries, compared to more developed nations of the world, have been slow in institutionalising a ‘cultural commitment’ to higher or mass education, a reality which I believe substantially impacts the quality, level and scope of education reform initiatives conceived and successfully instituted in these small islands.

With the advent of full independence of OECS territories, education became formalised as a right for all citizens, and governments assumed control of publicly-funded education. To achieve this, local governments largely built on the inherited British schooling system (Brizan, 1998; Steele, 2003; Tikly, 1999). This trajectory is significant in two important respects. In the first, it illustrates how the colonial experience dually shapes the post-colonial (i.e. post-independence) development efforts of regional governments and our people’s social consciousness. That is, our norms and valued understandings of social identity, politics, and culture have been influenced by the colonial plantation reality to which we were enslaved for centuries. Ali (2010) aptly asserts that “[i]t is these contextual issues that have influenced our form of democracy, the ideals and traditions we embrace in our post-colonial independent societies and the approaches we have used to formulate and implement policy including education policy” (p. 75). This quote segues into the second significance of this trajectory: that the dependence of OECS countries on colonial systems of development nurtures these islands’ positionality, from the onset of independence to the present, as consumers of Euro-centric (i.e. Westernised) policy models, a phenomenon Ali dubs ‘internationally-dependent policy consumption’ (p. 75). This practice extends to discourse at the local, national and sometimes regional level, and is evident in the tendency of governments, private institutions and managers to outsource contracts and personnel for development initiatives, and our people’s propensity to frame their social and cultural identity around British and American preferences. Our status as consumer societies speaks to two points raised by Tikly (1999). The first is that this post-colonial, post-independence era represents a process of disengagement from imperialist ties. Within this process, colonialism is described as a fluid, ongoing phenomenon being (re)fashioned by globalisation, with OECS countries engaging it in highly nuanced and paradoxical ways. The second point alludes to the global politics of development and to the dominant role that “European colonization of countries outside of Europe has played in defining the postcolonial condition” (Tikly, Ibid., p. 606). This is another important context to be problematised when assessing and implementing developmental goals for this region.

Further, the economies of Caribbean islands, and in particular those of the OECS, principally grew from the plantation system of colonialism, and this is still significantly the situation today (Ali, 2010; Naude et al., 2009). Tourism, however, is swiftly becoming the major economic earner for the region, with OECS islands having largely tourism-based, small, open economies (OECS, 2012). Taken together, the demographic and geographical dimensions of these islands amount to approximately 620 000 inhabitants over a total land mass of just under 3000 km²; figures which allude to the small economic and human resource bases of this sub-region (see Alonso, 2002; Naude et al., 2009). Moreover, many of the natural resources of these islands remain underdeveloped or unexplored due, in part, to governments’ financial and technical deficiencies, including very high public debt (Alonso, 2002; Louisy, 2001; Melville, 2002). This abject reality is further exacerbated by the region’s vulnerability to natural disasters including earthquakes, hurricanes and volcanoes (see Naude et al., 2009; Shotte, 2013). Islands of the OECS sit squarely in the path of annual hurricanes, and given their geographical and
topographic makeup, are particularly vulnerable to secondary natural hazards such as floods and landslides. Southeastern OECS territories (i.e. Windward Islands), especially, are continually hit by hurricanes which wreak havoc on their agrarian economies. For instance, the eruption of La Soufrière volcano in St. Vincent in 1979 wiped out the island’s banana industry, while continuous eruptions on Martinique’s Soufrière Hills continue to frustrate developmental efforts, especially regarding agriculture and population growth (Rogozinski, 1999). With regards to Grenada, International Monetary Fund (IMF) reports indicate that “Grenada suffered damage of 200 percent of GDP from Hurricane Ivan” (IMF, 2005). United Nation’s figures indicate that over 80% of Grenada’s infrastructure was destroyed (UN, 2015). Current public debt-to-GDP in this country is almost 110% and the current world economic recession has negatively impacted projected growth rates (Global Finance, 2015). The islands of St. Lucia, St. Vincent, and Barbados were all hit by Hurricane Tomas in 2010, with St. Lucia suffering much destruction: causalities, property damages, massive landslides and flooding (Government of St. Lucia, 2012; Mail Online, 2010). Hence, the agricultural export and tourism sectors of many, if not all, OECS islands face economic crisis.

Regional agreements, though well-intentioned and of appreciable benefits to member countries, can also constrain the developmental efforts of OECS governments and add complexity to these islands’ ability to satisfy the educational mandates of international lending agencies. In addition to being members of the OECS, these states also hold membership in other regional bodies including Caribbean Community (CARICOM). This institution has 15 members and five associate members (CARICOM, 2015). A 2001 agreement by this organisation, entitled the CARICOM Single Market and Economy (CSME), adds another dimension to the structure and execution of developmental programs in OECS territories (CARICOM Single Market and Economy, 2011). This agreement is closely patterned after the World Trade Organizations’ General Agreement on Trade and Services (GATS) in that its main goal is to ensure the free movement of goods, services, and capital in CARICOM territories. Wint (2003) posits that the CSME was motivated by the self-interest of the larger Caribbean islands, with OECS small islands facing a distinct disadvantage due to their smaller economic bases and limited potential in regards to transferable knowledge and skills. This situation results in a sort of double jeopardy for OECS small islands in that they are forced to compete in the ‘free trade’ fracas from both a regional and an international arena. These regional agreements were conceived, in part, in an effort towards regional integration as part of the post-colonial enterprise, but their implementation has not been without conflict. Prominent Caribbean educator Dr. Didacus Jules asserts that “[w]e fight harder against each other than against the international forces that conspire to keep us subjugated” (The Allister Francis Memorial Lecture, Antigua & Barbuda, 2011). Dr. Jules’ quote alludes to the phenomenon of globalisation, the region’s vulnerable positioning within it, and the reliance of regional governments on funding from international organisations despite clear challenges in fulfilling the conditions attached to said funding.

**Globalisation, education and international organisations**

Globalisation has profoundly impacted many regions and spheres of the world, and is described as the increasing rate of transnational influence on national systems of government (Ball, 1998; Bottery, 2004). This paper is concerned with economic globalisation, which stresses market competition in promoting greater worker productivity and financial viability through a global economic consensus often perpetuated through neo-liberal principles (Alexander, 2001; Menashy, 2007). Neo-liberalism, then, describes a consumer-type business approach to
education that emphasises deregulation, decentralisation and privatisation, choice and accountability, and testing and assessment (Ball, 1998; Carnoy & Rhoten, 2002; Green, 2002; Ryan, 2012). More specifically, Harvey (2005) describes neo-liberalism as “a theory of political economic activities that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedom and skills within an institutional framework characterised by strong property rights, free markets and free trade” (p. 5). As Carnoy and Rhoten (2002) assert, this neoliberal agenda is ‘a major force in shaping education worldwide’ (p. 1).

In their book, Rizvi and Lingard (2010) richly capture the global politics of education, asserting that a now common tactic in promoting a global education imperative is to introduce most government reports and bilateral agreements with a framed discourse of “global imperatives” and language of how best to meet the challenges of economic globalisation (p. 37). Bates (2011) describes this phenomenon as the “internationalisation of education” (p. 9) while Moutsios (2009) sees it as the “transnationalisation of education policy making” (p. 474). Profound in the work of these theorists is a highly consistent level of congruity regarding the impact of globalisation on developing societies, and especially the role of international organisations in advancing a neo-liberal education agenda. These marketisation reforms of international organisations are spread by means of global and local networks, and exert pressure on national governments to cut public spending on education while seeking alternative capital for education expansion. Green (2002) argues that this global economic consensus serves the interests of powerful western states whose economies continue to prosper “under protectionist regimes” (p. 11) held by and through international agencies, which Green refers to as “global enforcers of ‘free-market’ globalisation” (p. 11). Green continues that a ‘free trade’ mantra is preached by western states who continue to maintain subsidies on their products while promoting it elsewhere.

Almost fifteen years ago, Anne Hickling-Hudson, Caribbean national, educator and researcher postulated that “we hover on the brink of a Global age in which the globe rather than the nation-state will be the point of reference for socio-political movements, economic patterns, and expressive culture” (Hickling-Hudson, 2000a, p. 219). A little over a decade later, Dr. Jules, in his address identified above, cautioned that the “Caribbean is now full sea on the flood of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”. While the Caribbean region is the overall subject of discussion for both speakers, small islands of the OECS, especially, are today grappling with the very real, grim realisation of globalisation and how we navigate its perilous currents will determine whether we shape our fortunes or lose our ventures”.

In this paper, international organisations refer to institutions of global prominence and membership which have significant power in influencing national systems of government on global scales, and international donor organisations are described as financial lending institutions that give loans and/or grants to borrowing countries with stipulations attached to these funding agreements (Sarooshi, 2005; Schechter, 2010). I frame these organisations all as agents of transnational [education] policy making, but limit my discussion to those with the most impact in
Using Moutsios’ (2009) scholarship, I explore how, through global eco-politics, these organisations have been able to infiltrate the national political arenas of OECS borrowing countries, with their resultant educational policies being the outcome of not merely international but transnational relations in the sense that the national borders of these countries have been eroded and subsumed within this globalisation discourse. This discussion lays bare the homogenous, neoliberal nature of these policies, with central themes of deregulation and privatisation that are rooted in fundamental ideological and philosophical assumptions about the role of the state, free trade, and individual enterprise in achieving efficiency in public services and fostering economic performance (Karns & Mingst, 2010; Rizvi & Lingard, 2010; Sarooshi, 2005). The international organisations discussed here are the World Bank, the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), and the World Trade Organisation (WTO).

The WTO and the OECD are organisations of significant global leverage. The WTO has a membership of 153 countries (WTO, 2012), and an aim of eradicating restrictions and barriers to global trade and services, thereby opening domestic markets to capital flows (Joachim, Reinalda & Verbeek, 2008; Schechter, 2010). However, these restrictions are imposed only on selective domestic markets as nation states can refuse to open their markets but still negotiate access to other markets (Moutsios, 2009). The WTO’s impact regarding education is such that the GATS agreement lists education as one of the services to be opened up thereby creating “a free global market in education” (Ibid., p. 468). The OECD has 34 members and alliances with many other countries and organisations (OECD, 2012); half of the world’s goods and services are either made or conducted in its member states (Moutsios, 2009; Schechter, 2010). Made up of an impressive network of researchers, policy makers and consultants, the OECD is a “transnational mechanism of surveillance of economic performance and a crucial sphere of influence on the global political scene” (Moutsios, op. cit., p. 468). The OECD’s influence in education in recent years has centered on the development and publication of international standardised assessments of educational programmes, with the education systems of nation states coming under intense scrutiny, and creating intense political debates in participating countries whose governments use these results to condemn or justify education policy decisions (Schechter, op. cit.).

The World Bank (the Bank), formally the International Bank for Reconstruction and Development (IBRD), and the IMF are two other organisations of transnational and international impact. The Bank has a membership of 187 countries, and membership in the Bank is contingent on membership in the IMF (World Bank, 2015). It is the largest external loan provider for education initiatives, and thus concomitantly has the most major impact on global education policy making (Archer, 2006; Karns & Mingst, 2010; Moutsios, 2009). The central mandates of the Bank are to promote global financial discipline and develop global market economies (World Bank, 2015), mandates which are further strengthened by the powerful influence of the United States and other western states and reflected in their educational programs as well (Ali, 2010; Moutsios, 2009). The IMF is a lending organization that works to “foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world” (IMF, 2015). It has a membership as extensive as the Bank’s but is not as inclusive in its funding projects. However, what unites these two organizations is the congruence of conditions attached to loan agreements to which borrowing countries must adhere if they are to be granted these loans (Klein 2007; Moutsios, 2009). Many of the Bank’s initiatives are carried out in collaboration with IMF loan
programmes of structural adjustments (SAPs), and it is here that the secondary impact on education is keenly felt. What is important to note is that these conditions are mandated in all borrowing countries, regardless of local circumstances. SAPs, and other internationally-driven mandates, therefore tend to encourage policy consumption. This tendency to apply abstract, generic, one-size-fits-all conditions in borrowing-OECS countries is what is being problematised in this paper. This assumes that policy implementation is unproblematic and linear, when it is in fact anything but (Ball, 1998; Pal, 2010). The tendency of these Eurocentric and Westernised lending organisations to dictate loan terms and expect compliance in borrowing countries also speaks to ways in colonialism was never a mere peripheral system that was acted upon the colonised, but was an inherent and enduring fabric of these colonial masters (Tikly, 2001 as referencing Hall, 1996). The socio-historical, political and geo-economic contexts discussed above do not seem to weigh in, or are not assessed to any significant degree, when policy frameworks and mandates are being articulated for this sub-region.

Regional impact: Analysing the dissonance between the international mandates of international organisations and the contexts of islands of the OECS

The point has been made that OECS small islands largely constitute struggling economies and under-developed sectors and so lack the capacity to significantly engage in the market/transfer of goods and services (revisit Ali, 2010; Green, 2002; Louisy, 2001; Melville, 2002; Moutsios, 2009). Two provisions of the World Trade Organization’s GATS outlined by Moutsios (2009) foster economic inequality and potentially worsen economic decline and marginalization of OECS small islands: the lack of reciprocity in the open market ideal, and the norm of holding meetings in private among delegates of powerful nations. As this theorist explains, the first almost certainly guarantees the exploitation of poorer markets (as starkly corroborated in Green, 2002; Moutsious, 2009; Phillips & Schweisfurth, 2008) while the second secures the exclusion of these poor countries that are best able to articulate their needs and circumstances. Moutsios (2009) continues that in practice, wealthy nations like the United States maintain tariffs and subsidies on their goods and services while demanding openness in Caribbean economies. This begs the question, whose interests are being served by the WTO’s global aims of eradicating restrictions and barriers to global trade and services, thereby opening domestic markets to capital flows? The GATS mandates, in its current constitution, offer little tangible benefits to OECS small islands. Unemployment rates, sustainable economic growth, and poverty are serious concerns (CARICOMSTATS, 2014). A quick study of the World Bank and IMF websites indicates that regional governments have conceded, however, and through the GATS provision for education, there has been the introduction of distance education, e-learning and privatisation in OECS territories (see also Alonso, 2002). The St. George’s University in Grenada, a world-renowned medical campus, has now extended programs to include advanced degrees in the arts and humanities. In St. Lucia, the introduction of an offshore campus of Monroe College in 2007 created much controversy, with suspicions about the integrity of their programs and claims of lost revenues for the national Sir Arthur Lewis College (TheVoice slu Online, 2010). Other foreign-based universities and virtual campuses now offer online degrees in the OECS region, a situation which has impacted local and regional colleges and universities (Hickling-Hudson, 2000a).

The heavy presence of the World Bank and the IMF in the Caribbean is visible in the structural adjustment programs that are fundamental to these organisations. Structural adjustment programs (SAPs) of the IMF include measures geared at abolishing restrictions,
promoting exports, and reducing the public wage bill through privatisation and straightforward cuts (Green, 2002; Harvey, 2005; OAS, 2015). The short-term effects are acknowledged by the IMF to be negative, but are nevertheless justified by supposed long-term, sustainable gains to be made from the accumulation of revenue in borrowing countries (Green, 2002; Harvey, 2005; Melville, 2002; Moutsios, 2009; OAS, 2015). These conditions then directly and/or indirectly define the parameters of education policy decisions in borrowing countries, and as with the WTO’s GATS, translate to freedom of the education enterprise, privatisation of educational services, and budgetary cuts in education initiatives, among others. While the impact of SAPs in the Caribbean and other regions remains contested, there is ample evidence in the literature on the deleterious effects on the poor and overall worsened economic and social conditions (Green, 2002; Harvey, 2005; Melville, 2002; Moutsios, 2009). For example, under the IMF in the 1980s, Grenada embarked on the privatisation of national assets, retrenchments and cuts in public spending, and removal of government subsidies among other austerity measures. And similar to other jurisdictions the impact was keenly manifested in declined living conditions, high poverty and unemployment; this context is depicted in appreciable detail in the calypso of Grenadian entertainer Elwin ‘Black Wizard’ McQuilkin titled “IMF” (listen at Spicevibes, 2015). What is significant about this situation is that in 2015, OECS islands continue to face these same challenges (see Green, 2002; Harvey, 2005; Moutsios, 2009). The supposed long-term and sustainable gains to be made from the accumulation of revenue in borrowing countries remain elusive. Today, in the face of the persistent economic recession, fluctuating oil prices on the international markets, and natural disasters exacerbating development efforts, it becomes more difficult to analyze precisely how the IMF’s aims of promoting high employment and sustainable economic growth and reduce poverty are being realized in OECS countries.

An important factor in strengthening the influence of the Bank and IMF in the Caribbean is these institutions’ influence in relation to other external lending agencies, through what Rizvi and Lingard (2010) describe as a consensus strategy. Countries successful in procuring loans are seen by other potential investors and funding agencies as politically and economically credible, which in turn motivates the latter to invest and divulge [more] financial assistance (Harvey, 2005; Klein 2007). Due to fiscal deficits, high debt, poor infrastructure and low human capital articulated above, local governments of OECS countries need to entice future investors in order to secure economic capital for their development initiatives. However, in the face of this ‘consensus’ trend, one can appreciate borrowing regional governments’ quandary in attempting to balance contextual complexities while attempting to satisfy the mandates of neo-liberal lenders. And there are negative repercussions for borrowing countries’ failure to comply with loan conditions, such as economic sanctions, drying up of aid, and blacklisting on international markets (Phillips & Schweisfurth, 2008). For governments of struggling small economies, therefore, not only are sanctions undesirable, but non-compliance paints an uninviting picture to other potential investors, a scenario which regional governments understandably are anxious to avoid.

At the same time, an important political context which adds complexity to regional governments’ ability to embrace the mandates of the international organisations concerns the volatility of government tenure in democratic OECS states. The political decisions made by regional governments are significantly influenced by this reality, and this context becomes relevant especially when analysed against the policies of the IMF, for instance, with regard to the supposed long term sustainable economic benefits of short term austerity measures. Contemporary Caribbean leaders are politically-savvy people who are very in tune with the
major ideologies and wants of their citizens. In my experience, the average Caribbean national views ‘progress’ as manifested in tangible outcomes, such as constructions of roads, building of stadia, hotels, and schools, job creation, subsidies, and yes, cash (economic hardship is faced by many, so it is unsurprising that hard cash in a poor man’s pocket remains very effective in ‘securing’ his vote around election time). Given that, albeit in the short term, IMF conditions include retrenchment, budget cuts, and the removal of subsidies, governments in the region, despite needing capital to fund development initiatives, are necessarily hesitant to go that route. This reality speaks to level of dissonance between the mandates of international organizations and local and regional contexts.

I turn now to examining the level of incongruity between the educational reform mandates of the World Bank and the contexts of countries in the OECS with reference to two examples of the World Bank propagating neoliberal education reform in borrowing countries. Moutsios (2009) asserts that these examples point to the self-interests evident in these mandates, and thus demonstrate how these mandates principally serve the interests of powerful member states of the Bank. According to this theorist, in the 1960s and 1970s the thrust of Western education was in the development of technical and vocational training, with the World Bank prioritising the establishment of these fields over appeals from developing countries for funding in other areas. During that same period, the government of Grenada prioritised the development of educational programs in the arts and humanities, areas which were considered ‘unpopular’ for international funding. Instead, Grenada successfully secured aid from Cuba and Brazil; by the early 1980s, this newly-independent state had forged close social and educational alliances with Cuba, and renowned Brazilian educator Paulo Freire worked closely with Grenadian educators during this same period to revamp the national system of education (Hickling-Hudson, 1998, 2000, 2014). (However, the results were disbanded shortly after with the government coup and subsequent United States’ ‘intervention’ in this country in 1983 (Brizan, 1998; Hickling-Hudson, 1988, 2000b; Steele, 2003), as a new, more ‘Western-tolerant’ government forged new economic alliance with the US. Many neo-liberal critiques argue that Western involvement in local governance is often precipitated by economic and political interests (Green, 2002; Harvey, 2005; Klein, 2007), a proposition which sheds light on the United States-Grenada situation discussed above.)

Similarly, Moutsios (2009) continues, when the West shifted its emphasis during the 1980s to prioritise higher education, the World Bank took up this mantra, stressing the introduction of tuition fees in post-secondary institutions and encouraging mass attendance. Steele (2003) asserts that the then most pressing educational needs of newly independent OECS territories were to increase primary and secondary school attendance and to attend to teacher training. However, as Steele explains, regional governments were often unable to secure funding for these locally-prioritised programmes. In keeping with the World Bank’s emphasis on post-secondary education, however, the T. A. Marryshow Community College in Grenada (see Brizan, 1998; Steele, 2003) and the Sir Arthur Lewis College were two institutions to receive international aid and comply with the introduction and increase of tuition fees as stressed by the Bank during that period. More recently, in keeping with the new millennium global thrust of ‘Education For All’(Archer, 2006) and ‘No Child Left Behind’(Cawthon, 2007) policies, OECS territories have embarked on a drive to implement universal secondary education, despite clear fiscal, infrastructural and human resource shortcomings. As a secondary school teacher in Grenada during this period, I experienced how our government’s attempts towards universal education exacerbated an already tense and unflattering education climate, what with
overcrowded classrooms, teacher shortages, limited space, poor school structures, and increasing number of students with special needs. Local news broadcasts and my participation in regional teacher conferences lead me to conclude that the circumstances in other islands are similar.

Given the significant level of dissonance of international mandates with regional contexts, and the highly negative short term impact of programmes of structural adjustments on the social and economic livelihood citizens, especially those already disproportionately marginalised, many regional governments do not approach the IMF or other lending organisations to aid in their development initiatives. This is despite serious fiscal, infrastructural and human capital challenges, vulnerability from having open economies and limited access to external capital, and their position far outside the sphere of influence at international development symposiums. This financial aid, if reimagined, could potentially serve tremendous economic and social benefits to these struggling countries.

Considerations moving forward
The issues addressed in this paper problematise the articulation of a global education that purports to meet the diverse needs of different places and peoples. By the evidence, desensitised, prescriptive and standardised policies couched in western principles of governance and development result in a series of cyclical and damaging consequences for the Caribbean region. Small islands of the OECS, in particular, are better served by policies which attend to their socio-historical, political, and geo-economic reality. This requires this sub-region, and the broader Caribbean, to embark on what Smith (2012) describes as decolonisation methodologies, an undertaking of disruption of the decontextualised, neoliberal agendas pervasive in former colonised OECS countries, and (re)creation of contextually relevant indigenous policy to serve these localities. Such meaningful, sustained development is predicated on an ontological and epistemological reassessment of the nature of international aid and the processes through which such aid is implemented in these states, and thus calls for radical changes in the ideologies of both international organizations and the OECS.

A necessary preliminary step is the establishment of a more synergistic relationship between international lending organisations and borrowing countries in the OECS, in which representatives from both sides engage in more nuanced discussions of broader themes relating to policy transfer and localised challenges of implementation. While allowing for the inevitability of a highly globalised environment shaping education policy, in particular, the aim of these dialogues could be to assist OECS small islands to “draw from global development initiatives to inform indigenous educational efforts” (Swapp, 2014, p. 3). A pivotal starting point would be to examine, more meaningfully, the local context of borrowing countries, with particular attention to factors which can enable or constrain success. Applied knowledge of the history, politics and culture of regional islands and how they influence development will facilitate a more equitable and socially-just relationship between both sides and concomitantly, the mandates attached to aid would reflect financial support - not censure – of OECS governments.

Improving the research capacity of the OECS sub-region to pave the way for empirical investigations that are grounded in indigenous forethought and execution can potentially facilitate dialogues in this newly reconstructed relationship. These kinds of research can fill the current gap between international mandates and local contexts of small islands, speaking to the needs of the region and of local countries, and thus informing discussions with international partners in the implementation of policy initiatives. A clearly established research model also
earns us respect in the international community and improves our leverage at international symposia and other forums in which we are able to use empirical data to articulate our needs and contexts. This research model builds on Ali’s (2010) framework of moving the Caribbean region away from a consumption type approach to policy transfer to a more “contextually relevant policy research model” (p. 75). This is an ambitious but viable decolonising initiative, one that disrupts destabilising imperial systems. In practice, this model critically assesses the nature of international aid against local needs of OECS small islands, isolates and examines contextual factors which impact or can potentially impact development initiatives, and hypothesises and investigates sustainable outcomes.

Regional governments also have a responsibility to rethink political discourses at the local level regarding financial aid from institutions such as the World Bank and the IMF. Small islands of the OECS stand to benefit tremendously from international aid, but the conditions attached to such aid are a very problematic issue. Debates surrounding future international aid for the OECS region must therefore be premised on an understanding that financial aid in itself is not an indictment against governments, but represents opportunities for growth in all sectors. Similarly, OECS citizens can play an important role in facilitating their region’s development. Despite, and perhaps due to, the complexities of our colonial heritage, we are, inherently, a resilient people. Through determination, prudence and hindsight we can shake the concomitantly persistent culture of dependency and learned helplessness to make significant progress. Education about the kinds of global issues that continue to thwart local governments’ effort at development is needed if social unrest and political instability in member states are to be appeased. Such knowledge can enlighten citizens to become more supportive of their political leaders, thus reducing the level of anxiety governments experience in their quest to win votes through the manifestation of tangible developmental projects and goals. The road ahead is challenging but the mandate lies with all to be responsible, moral citizens dedicated to the development of the OECS and the broader Caribbean region.

Conclusion
The level of inconsistency between the mandates of international organisations and the contexts of small islands of the OECS was the main subject of this paper. The first part of the paper described the paper’s postcolonial framework of inquiry, situating the vertical case study as the overarching investigative method and OECS small islands as main units of analysis. The next sections of the paper explored several socio-economic, political and geo-economic circumstances which enabled and constrained regional development, including the newness of independence and the relatively recent introduction of formalised education, the consumptive nature of Caribbean society, and the region’s vulnerability to natural disasters. An examination of the global politics surrounding economic development followed, focusing on how aid-affiliated education policies proliferated in the OECS region are the outcome of both international and transnational influences, perpetuated by international lending agencies such as the IMF and World Bank. Within this discussion, the nature and purposes of these policies were problematised; the paper argued that these policies were couched in Westernized, neoliberal principles of development and driven by the powerful member states of these lending organisations, and insensitive to the contexts of small islands of the OECS. The final section of the paper put forward some considerations rooted in an overarching ontological and epistemological reassessment of the way financial aid is conceived and implemented in these developing small islands.
References


Attitudes of Chemistry Undergraduate Students towards Mathematics at the UWI, Cave Hill Campus

Leah Garner-O’Neale* & Akieya Cumberbatch

Department of Biological & Chemical Sciences, Faculty of Science & Technology, The University of the West Indies, Cave Hill Campus, Barbados

Mathematics is core to all sciences, yet many science students can be heard echoing a general dislike for Mathematics and Mathematics-related topics. This study was conducted to determine the attitudes of Chemistry undergraduates toward Mathematics at the University of the West Indies, Cave Hill Campus. The questionnaire used in the study consisted of the Martha Tapia Attitude toward Mathematics scale which measured four domains: motivation, value, self-confidence and enjoyment. There were 124 students in the actual study. The data collected were tested and analyzed using SPSS V 18. Descriptive frequencies, independent t-test and one-way ANOVA analysis at a confidence level of 0.05 were carried out. The study highlighted that the overall Chemistry undergraduates’ attitudes toward Mathematics were moderate however, there was no statistically significant differences based on their sex or level of study. Within the four domains most persons had a good level of value for Mathematics but the majority moderately enjoyed Mathematics, were motivated and had moderate self-confidence. There were no significant differences in these four domains based on sex or level of study. It is recommended that Chemistry lecturers can play a role in improving the attitudes of their students towards Mathematics.

Keywords: Mathematics, Chemistry, attitude, gender, level of study

Introduction

Understanding Mathematics is important in the daily practice of life (Tapia, 1996) from calculating grocery bills and evaluating hire purchase to preparing a budget. In Barbados, achievement in Mathematics has been emphasised from the primary level to the tertiary level. In fact, a passing grade in Mathematics is required for entry into the Faculty of Science and Technology (Undergraduate Admissions Entry Requirements, 2014) yet many of our Chemistry lecturers note that their students lack some basic mathematical skills. Chemistry like other natural sciences is based on Mathematical theories (Ogilvie & Monagan, 2007) and requires the application of Mathematical logic (Bisenieks & Meija, 2004). Mathematics applications are used in areas such as statistical analysis, mole concept calculations, kinetics and group theory to name a few. It is therefore important that Chemistry students foster good attitudes towards Mathematics.

Attitudes

Attitudes are symbolic in identifying behavioral patterns of individuals and in asserting definitive responses (Oluwatelure & Oloruntegbe, 2010). In addition, in an area such as Science it may postulate future participation (Busch, 1995). An attitude can be defined as a psychological...
tendency expressed by evaluating a particular entity with some degree of favor or disfavor (Ozgun-Koca, 2010). McLeod (1992) purports that attitudes towards Mathematics generally develop in two ways, either by having a series of repeated emotional reactions towards Mathematics or by the attachment of an existing emotion to the new scenario.

Literature suggests that students’ attitudes toward Mathematics may affect their achievement (Cheug, 2009; Elliott, Oty, McArthur, & Clark, 2001; Tapia, 1996;). On the other hand, some argue that less positive attitudes are not always an indicator of low achievement scores (Rech, 1994) or that there is no statistical significant correlation between attitude and achievement (McKnight et al., 1987). McLeod (1992) sums up the relationship between attitude and achievement as complex and unpredictable. However, Cheung (2009) recognized that attitudes may be used to assess students’ behaviours and Ozgun-Koca (2010) noted that students’ attitudes can impact their career paths.

Additionally, gender disparities of student attitudes toward Mathematics have been extensively researched. Some researchers suggest that females have a less positive attitude than males towards Mathematics (Frost, Hyde & Fennema, 1994; Orhun, 2007; Osborne, Simon, & Collins, 2003; Townsend & Wilton, 2003). Grade level disparities have also been highlighted by McLeod (1994) who noted that there was a decline in Mathematics attitudes as students go higher in school and their learning. Other research concurred with the view of students’ attitudes decreasing as they progressed through school (Ozgun-Koca, 2010; (Tapia, 1996).

Tapia and Marsh (2000a) suggest that attitude towards Mathematics can be analyzed under four factors. These are motivation, value, enjoyment and self-confidence.

**Motivation**

Motivation may be described as the drive behind an individual’s actions towards a certain situation (Middleton & Spanias, 1999). There are two types of motivation: intrinsic and extrinsic. Intrinsically-motivated students are those who enjoy learning, for their personal benefit while extrinsically-motivated students partake in classroom activities for the appraisals (Middleton & Spanias, 1999). However, research states before intrinsic motivation can occur, students must be more than likely comfortable, challenged and expectant of success. Hence, a lack of teacher support and favourable learning environments will hinder intrinsic motives. If a student recalls bad experiences, it may explain the decrease in the number of students who actually value and enrol in further Mathematics due to weak motivational experiences. Given that motivation is strongly linked to students’ beliefs, it is wise to pay special attention to what students believe about Mathematics so as to understand what drives their actual outcome (Pajares & Graham, 1999). Also, motivation is correlated to achievement therefore the more motivated individuals are; the more positive their attitude is toward Mathematics thus the higher their success (Singh, Granville, & Dika, 2002). To assist in the development of students’ Mathematical abilities and motivation, teachers must possess a supportive character as teachers have a strong influence on building students’ motivation (Kirk, 2013). In addition, teachers must also allow students to make connections between what they already know, the new material and how it may be used in future applications (Champion, Parker, Mendoza-Spencer, & Wheeler, 2011).

**Value**

When students value Mathematics, they consider it important, beneficial or useful. Rath, Harmin and Simon (1987) recognize that the process of valuing occurs in three stages: (1) free choice
from among alternatives after considering the consequences, (2) affirmation and (3) repeated action of choice, building a pattern. In fact, students value something more when they are able to make connections with it (Elliott, et al., 2001; Witten, 2005). Valuing Mathematics must be a factor in identifying Chemistry undergraduates’ attitudes toward Mathematics simply because a person’s values can influence his or her attitude and thus, his or her actions (Chen & Stevenson, 1995; Ozgun-Koca, 2010). When a student thinks that the knowledge gained from a particular subject will help them reach goals that are important to them (i.e. they value it) they are more likely to persevere with it and continue to strive to learn it amidst the pressure of achievement (Mac Iver & Reuman, 1998). Relating valuing Mathematics to achievement, Kloosterman and Stage (1992) purport that students who believe Mathematics is useful will be more motivated and hence have increased achievement. In terms of gender disparities, Wolters and Pintrich (1998) indicated that there were no gender variations in the usefulness of Mathematics, however, McLeod (1992) suggests that males generally value Mathematics more than females.

**Enjoyment**

Students who enjoy Mathematics find pleasure and satisfaction in it. Mac Iver and Reuman (1998) suggest that when a student believes that a subject (like Mathematics) is interesting or enjoyable, they are more likely to apply effort and be persistent with it until they master it (high achievement). These students tend therefore to be intrinsically motivated to do the subject (Middleton & Spanias, 1999) and to seek out the activity just because they enjoy learning (Middleton, 1993). Dickinson and Butt (1989) suggest that students tend to enjoy a task more when they have a level of success in it. In fact, when students are rewarded for their success in Mathematics, they tend to enjoy it more and have higher level of achievement than when incentives are not given (Middleton & Spanias, 1999). Frenzel, Pekrun, and Goetz (2007) reported a gender variation in enjoyment, noting that males tend to have higher levels of enjoyment than females. Additionally, it was noted that as students move up the ladder enjoyment declines (McLeod, 1992; Middleton & Spanias, 1999). The avoidance of calculations at the tertiary level as highlighted in Ogilvie and Monagan (2007) support the findings that enjoyment declines as students advance in school.

**Self-confidence**

According to Cretchley (2008), self-confidence in Mathematics refers to the self-belief about the ability to do Mathematics or learn mathematical concepts. As we can well imagine, self-confidence and self-efficacy are critical factors that can affect a person’s future (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). A person’s belief may lead them towards a particular task (Bandura, et al., 2001) and if that person has little or no self-confidence in his or her ability they will most likely under perform. In fact, a person who is self-confident usually performs better than one who lacks self-confidence (Stiggins, 1999; Symonds, Lawson, & Robinson, 2010). In terms of gender, some literature support males as being more confident than females in Mathematics learning however, gender disparities in Mathematics achievement has diminished (McLeod, 1992; Orhun, 2007).

**Purpose of the Study**

The purpose of this study was to investigate the attitudes of Chemistry undergraduates towards Mathematics at the University of the West Indies, Cave Hill Campus. To determine a relevant position on the topic, the following research questions will be answered:
1. What is the general attitude of the Chemistry undergraduates towards Mathematics?
2. Is there a significant difference in the general attitude of the Chemistry undergraduates towards Mathematics based on their
   i. Sex?
   ii. Level of study?
3. What is the attitude of Chemistry undergraduates towards Mathematics in the following domains:
   i. Enjoyment
   ii. Motivation
   iii. Value
   iv. Self confidence
4. Is there a significant difference in these domains based on students’
   i. Sex?
   ii. Level of study?

Methodology
Design
This study is quantitative, with a descriptive survey research design. This allowed the researchers to collect data regarding the participants’ views on a particular topic in a timely manner. (Creswell 2008; Leacock, Warrican & Rose, 2009).

The Sample
A total of one hundred and twenty-four (124) Chemistry undergraduates, representing over 77% of the population, from across all four levels of study participated in the study. Convenience sampling was employed. All Chemistry students who did not participate in the pilot and were attending classes the day of the study participated. This consisted of 90 females and 34 males. Thirty one of the participants were at the preliminary level, 64 at level 1, 13 at level 2 and 16 at level 3.

Instrumentation
A questionnaire comprising two sections was used to collect the data. The first section gathered demographic information and the second section was adapted from the Attitude towards Mathematics Index (ATMI) by Martha Tapia (Tapia, 1996; Tapia & Marsh, 2000b; Tapia & Marsh, 2004). The adapted ATMI consisted of forty questions and was answered based on a four-point Likert scale. According to Tapia (1996), the ATMI consisted of four domains: Motivation, Enjoyment, Value and Self-Confidence. There are five questions corresponding to the Motivation domain, ten questions measuring Enjoyment and Value each and fifteen questions for the Self-confidence domain.

Reliability and Validity
The instrument was subjected to expert suggestions and comments which were incorporated before administering. Thirty undergraduate chemistry students participated in the pilot. Cronbach’s alpha, a measure of internal consistency was used to determine the reliability of the overall instrument as well as of each domain (Travakol & Dennick, 2011).
The Cronbach alpha of the entire scale was measured as 0.97 where as those of the domains were as follows: Value, $\alpha = 0.87$; Enjoyment, $\alpha = 0.89$; Self-confidence, $\alpha = 0.95$; and Motivation, $\alpha = 0.82$.

**Scoring & Data Analysis**

The participants’ overall attitude was determined based on the total score of the ATMI. Possible scores range from a minimum of 40 to a maximum of 160 since a 4-point Likert scale was used. For analysis the ranges of scores were divided into 3 portions. Scores ranging from 40-80 indicated a poor attitude, 81-119 a moderate attitude and 120-160 a good attitude. Likewise the range of scores for the four domains can be found in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Domain</th>
<th>Poor</th>
<th>Moderate</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>5-10</td>
<td>11-14</td>
<td>15-20</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>10-20</td>
<td>21-29</td>
<td>30-40</td>
</tr>
<tr>
<td>Value</td>
<td>10-20</td>
<td>21-29</td>
<td>30-40</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>15-30</td>
<td>31-44</td>
<td>45-60</td>
</tr>
</tbody>
</table>

For research questions 1 and 3, means, percentages and standard deviation were used in the analysis and for research questions 2 and 4, independent samples T-test and One-way analysis of variance (ANOVA) were utilized. All analyses were run with an alpha level of .05.

**Results & Discussion**

*Research question 1: What is the general attitude of Chemistry undergraduates towards Mathematics?*

As seen in Table 2, the general attitude of the Chemistry undergraduates towards Mathematics was moderate (mean = 106.6). In particular, the majority of the population (60.5%) had moderate attitudes. This suggests that these students have a combination of both positive and negative attitudes towards mathematics. Table 3 further suggests that only 12.1% of the population had poor attitudes and 27.4% had good attitudes towards Mathematics.

Table 2

<table>
<thead>
<tr>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Attitude</td>
<td>124</td>
<td>57</td>
<td>156</td>
<td>106.6</td>
</tr>
</tbody>
</table>
Table 3

*Distribution of general attitude among participants*

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Description</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-80</td>
<td>Poor</td>
<td>15</td>
<td>12.1</td>
</tr>
<tr>
<td>81-119</td>
<td>Moderate</td>
<td>75</td>
<td>60.5</td>
</tr>
<tr>
<td>120-160</td>
<td>Good</td>
<td>34</td>
<td>27.4</td>
</tr>
</tbody>
</table>

When one considers the large range in score, 57-156, (Table 2) it is recognized that the general attitude widely varies. Moreover, the fact that only 27.4% of the population had an overall good attitude suggests that over 70% of the chemistry students do not have good attitudes towards Mathematics. This can be problematic since as suggested by McLeod (1992), these negative emotions regarding Mathematics can be attached to the calculations in Chemistry. Since attitude may affect achievement (Cheug, 2009; Elliott et al., 2001; Tapia, 1996) this may explain why to lecturers it appears as if Chemistry undergraduates lack some mathematical skills.

Research question 2: Is there significant difference in the attitude of Chemistry undergraduate students based on their sex or level of study?

Table 4

*Difference in general attitude towards Mathematics based on sex*

<table>
<thead>
<tr>
<th>Sex</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>df</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>34</td>
<td>108.2</td>
<td>23.4</td>
<td>122</td>
<td>-0.498</td>
<td>0.619</td>
</tr>
<tr>
<td>Female</td>
<td>90</td>
<td>105.9</td>
<td>20.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows the difference in means and standard deviation as well as results from the T-test when considering the difference between the attitudes of males and females towards Math. Aligned to that suggested by literature, (Frost et.al., 1994; Orhun, 2007; Osborne et. al., 2003; Townsend & Wilton, 2003), the males have better attitudes than females towards Mathematics, however, this difference was not significant (t = -0.498, p = 0.619). This is not surprising since as suggested by Ogunkola & Garner-O’Neale (2013) in the Caribbean there are no marked differences between males and females in various sciences including Chemistry in the area of achievement which can be linked to attitude although the relationship is complicated (McLeod, 1992).

In terms of level of study (Table 5), there is a slight increase in the general attitude of the participants as the level of study increased although this change was not statistically significant ($F_{[3,120]} = 1.688$, $p = 0.173$).
Table 5

Difference in general attitude towards Mathematics based on level of study

<table>
<thead>
<tr>
<th>Levels</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prelim</td>
<td>31</td>
<td>99.0</td>
<td>21.1</td>
<td>64</td>
<td>134</td>
<td>[3,120]</td>
<td>1.688</td>
<td>0.173</td>
</tr>
<tr>
<td>1</td>
<td>64</td>
<td>108.1</td>
<td>24.5</td>
<td>57</td>
<td>156</td>
<td>[3,120]</td>
<td>1.688</td>
<td>0.173</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>110.2</td>
<td>14.4</td>
<td>82</td>
<td>134</td>
<td>[3,120]</td>
<td>1.688</td>
<td>0.173</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>111.9</td>
<td>20.7</td>
<td>79</td>
<td>153</td>
<td>[3,120]</td>
<td>1.688</td>
<td>0.173</td>
</tr>
</tbody>
</table>

This finding somehow contradicts findings by McLeod (1994) and Ozgun-Koca (2010) who suggest that as students progress in school their attitudes towards Mathematics decline. As students grow older and move forward, it is thought that their attitudes tend to worsen due to the increase in workload (Ali & Reid, 2012). This slight increase of positive attitude may be due to the fact that students have developed a better understanding of how mathematical concepts are used overtime as they progress. When students are introduced to new theories they do not immediately have a complete understanding of the concepts thus the lower frequency in the preliminary year. Thereby, as students advance to higher levels, the previous mathematical concepts and skills which were taught are reinforced thus helping to provide them with a better understanding; overall creating a better attitude towards Mathematics as they progress through the levels of the University.

Research question 3: What is the attitude of Chemistry undergraduates towards Mathematics in the various domains?

The ATMI can be divided into four domains: self-confidence, value, enjoyment and motivation (Tapia, 1996). Figure 1 shows the distribution of attitude towards Mathematics in each of the domains.

![Figure 1. Distribution of attitude towards Mathematics in various domains](image-url)
When the various domains are examined, it is noticed that about half of the participants (50.8%) definitely valued Mathematics. Witten (2005) suggests that students value something more when they can relate it to their context. The participants understood the importance of Mathematics but they lacked the motivation, self-confidence and enjoyment in doing it.

In fact, in terms of enjoyment, only 27.4% of the participants greatly enjoyed Mathematics. This finding supports that of Ali and Reid (2012) who also noted that most students do not enjoy Mathematics. However, 50% of the participants reported moderate levels of enjoyment when doing Mathematics. Likewise, 50% of the participants also reported moderate levels of self-confidence to do Mathematics and 17.7% reported low levels. Tapia (1996) suggests that students who have low self-confidence may also receive or have received low scores in Mathematics, whereas students who have high levels of self-confidence may have received high grades in Mathematics (McLeod, 1992; Parsons, Croft & Harrison, 2009).

Far too many students lack the motivation to do Mathematics since only 16.1% of the participants were reportedly highly motivated. Almost 48% of the participants reported moderate levels of motivation to do Mathematics. This suggests that students lack the driving force or will to do Mathematics even within the context of Chemistry. This may have a negative impact on their achievement and progress in Chemistry (Singh et. al., 2002). It was suggested however, by Singh et. al., (2002) that teachers may increase students’ motivation levels by creating relevant situations for students to make connections. Actually, Middleton and Spanias (1999) suggest that the culture of the classroom can have an impact on the students’ motivation to do Mathematics. It must be conducive for learning and enjoying Mathematics.

Research question 4: Is there any significant difference in the four domains of attitude based on the participants’ sex and level of study?

There is no difference between males and females in the four domains of attitude as seen in Table 6. This suggests that the females enjoy, value and are motivated to do Mathematics just as much as the males. The biggest difference between the two sexes was in the domain of self-confidence which may further support findings that males achieve more in Mathematics than females (Orhun, 2007) but this difference was not statistically significant (t = -0.53, p = 0.600).

Table 6

<table>
<thead>
<tr>
<th>Category</th>
<th>Sex</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>df</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Confidence</td>
<td>Female</td>
<td>90</td>
<td>40.3</td>
<td>10.4</td>
<td>122</td>
<td>-0.53</td>
<td>0.600</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>34</td>
<td>41.4</td>
<td>9.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>Female</td>
<td>90</td>
<td>29.1</td>
<td>5.6</td>
<td>122</td>
<td>-0.50</td>
<td>0.617</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>34</td>
<td>29.6</td>
<td>4.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment</td>
<td>Female</td>
<td>90</td>
<td>25.3</td>
<td>6.6</td>
<td>122</td>
<td>-0.10</td>
<td>0.920</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>34</td>
<td>25.4</td>
<td>5.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>Female</td>
<td>90</td>
<td>11.2</td>
<td>3.4</td>
<td>122</td>
<td>-0.78</td>
<td>0.436</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>34</td>
<td>11.7</td>
<td>3.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In terms of level of study (Table 7), although not statistically significant, there is a slight increase in the students’ level of self-confidence ($F_{[3,120]} = 1.213, p = 0.308$) and value ($F_{[3,120]} = 2.250, p = 0.086$) as the level of study increases. Increased self-confidence suggests that final year Chemistry students are more confident when solving mathematical problems (McLeod, 1992) than the other lower levels of study. This may be because they would have had much more practice with these types of questions. Witten (2005) suggests that high value could indicate that Chemistry undergraduates have an understanding of the importance of Mathematics and its interconnection with Chemistry. Ozgun-Koca (2010) also suggests that students use their prior experiences in Mathematics to determine its usefulness. Therefore as students increase in level of study they would have increasingly more experiences as hence would a greater tendency to value Mathematics. In terms of enjoyment, the students at level 2 have the highest mean (26.6) whereas the preliminary level students were least motivated (mean of 10.5). However, there was no statistically significant difference in enjoyment ($F_{[3,120]} = 1.500, p = 0.218$) or motivation ($F_{[3,120]} = 1.053, p = 0.372$) as the level of study increased.

### Table 7

**Differences in the four Domains of Attitude based on Level of Study**

<table>
<thead>
<tr>
<th>Domain</th>
<th>Levels</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Confidence</td>
<td>Prelim</td>
<td>31</td>
<td>38.1</td>
<td>9.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>64</td>
<td>40.8</td>
<td>10.9</td>
<td>1.213</td>
<td>0.308</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
<td>42.8</td>
<td>7.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>16</td>
<td>43.1</td>
<td>8.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>Prelim</td>
<td>31</td>
<td>27.2</td>
<td>5.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>64</td>
<td>29.8</td>
<td>5.3</td>
<td>2.250</td>
<td>0.086</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
<td>29.3</td>
<td>4.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>16</td>
<td>30.9</td>
<td>4.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment</td>
<td>Prelim</td>
<td>31</td>
<td>23.2</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>64</td>
<td>25.9</td>
<td>7.1</td>
<td>1.500</td>
<td>0.218</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
<td>26.6</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>16</td>
<td>26.2</td>
<td>5.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>Prelim</td>
<td>31</td>
<td>10.5</td>
<td>3.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>64</td>
<td>11.7</td>
<td>3.6</td>
<td>1.053</td>
<td>0.372</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>13</td>
<td>11.4</td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>16</td>
<td>11.7</td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Implications & Recommendations**

Less than 30% of Chemistry students in the study have a good attitude towards Mathematics and this is likely to impact how they approach those topics in Chemistry that rely heavily on Mathematics as well as their demeanor in the classroom. Although students value Mathematics, they lack self-confidence, motivation and enjoyment which can be transferred to Chemistry.
Some efforts must therefore be placed on encouraging good attitudes towards Mathematics among the Chemistry students.

It is recommended that Chemistry lecturers can play a significant role in this by bridging the gap between Mathematics and Chemistry whether it is done explicitly through lectures or demonstrated by helping to build the students’ awareness of the influence of Mathematics on Chemistry (Ruffell, Mason & Allen, 1998). This is all part of building a positive culture in the classroom as suggested by Middleton and Spanias (1999) which is conducive for learning and enjoying Mathematics. One way in which this can be done by the University lecturers is by scaffolding the Mathematics experience within the Chemistry classrooms so that students can have small successes as they progress, according to Dickinson and Butt (1989) this can lead to increased enjoyment. This may help build self-confidence as students who value and enjoy Mathematics tend to have higher achievement and greater self-confidence (Pokay & Blumfeld, 1990). Chemistry lecturers can also extrinsically motivate students by rewarding them for their successes in solving mathematical applications or problems in Chemistry which may also lead to higher levels of enjoyment (Middleton & Spanias, 1999). In any event, topics of Mathematics in the Chemistry classroom must be addressed rather than ignored.

Conclusion
Among the Chemistry undergraduate students at the University of the West Indies Cave Hill Campus the overall attitude towards Mathematics depicted was moderate. In addition the Chemistry undergraduates scored moderately in all four affective domains of the ATMI used. However it was noted that there is a higher valuing and self-confidence towards Mathematics than enjoyment and motivation. Furthermore, the study highlighted there was no statistical significant differences between sex or across grade levels as it relates to the overall attitude of the Chemistry undergraduates or subdivided into the four domains.

References


Ozgun-Koca, S. A. (2010). If mathematics were a color... *Ohio Journal of School Mathematics, 62*(Fall), 5-10.


Learning Styles, Teaching Strategies and Academic Achievement among some Psychology Undergraduates in Barbados

Grace Fayombo

School of Education, Faculty of Humanities & Education, The University of the West Indies, Cave Hill, Barbados

Learners process incoming information in different ways; hence, the instructors need to vary their methods of teaching to ensure that all students learn. This study investigated the learning preferences (visual, auditory, kinaesthetic), the teaching strategies (videos, games, role-play, discussion, group work, clarification pauses, five-minute-paper, discussion forum and glossary activity) and their influence on the academic achievement of 171 undergraduate Psychology students at the University of the West Indies, Cave Hill Campus, Barbados. The participants completed three self-report instruments: a) Active Learning Strategies Questionnaire, b) Learning Style Survey (VAK) and c) Academic Achievement Scale. Findings revealed students’ preferences for visual, auditory, kinaesthetic and multiple modes of learning styles and the majority of the students benefited from the learning strategies utilised in the classroom. Additionally, the teaching strategies and learning styles contributed 20% ($R^2 = 0.20$) to the variance in academic achievement and this was statistically significant ($F (2,168) = 21.04, p < .05$). These findings discussed the importance of utilising different teaching strategies to accommodate different learning styles and promote students’ academic achievement in Psychology.

Keywords: Teaching strategies, Learning styles, Psychology, Academic achievement, Student Learning Outcomes (SLO’s)

Introduction

There are myriad possible ways through which learners process incoming information from the environment. It is believed that most people favour some particular method of interacting with, taking in, and processing stimuli or information thereby exhibiting distinctive behaviours suitable to allow them to learn. For quite some time now, educators in all fields are becoming increasingly aware of the critical importance of understanding how individuals learn perhaps because this impacts the teaching strategies, academic performance and learning outcomes (Brady 2013, Tulbure 2012). Learning style as a theory has provided some valuable insights into learning in both academic and other settings, therefore investigators have described it in various ways such as: distinctive behaviors which serve as indicators of how a person learns from and adapts to his/her environment, and provide clues as to how a person’s mind operates (Gregorc, 1979); an individual’s preferred approach to organizing and presenting information (Riding & Rayner, 1998) and a reflection of concern with the application of cognitive style in a learning situation (Riding & Cheema, 1991). Additionally, learning styles refer to how individuals
process, focus, make information meaningful, and gain new information in order to translate it into building new skills (Dunn & Griggs, 2000; Wooldridge, 1995). Fardon (2013) further views learning style as a stable preference that is used by individuals to effectively organise, then process and develop their understanding of any learning challenge, task or situation thus adding an element of “stability” in his definition. The general consensus here is that there exists a multitude of learning styles.

Similarly, just as the learners learn in different ways, so also teachers teach in different ways. In fact effective teaching requires flexibility, creativity and responsibility in order to provide an instructional environment able to respond to the learner’s individual needs (Tulbure, 2012) and the attainment of good academic achievement and educational outcomes (Fayombo, 2014). Moreover, most students learn best when the style of presentation is aligned with their preferred learning style. It is important for teachers to understand the students’ learning styles and also for students to understand their own learning styles. By understanding different learning styles, teachers may gain insights into ways of making academic information more accessible to diverse groups of learners and an increased awareness of individual learning styles can help educators impart new information in a memorable way (Brady, 2013). Likewise, if students are aware of their preferred learning styles they will be able to recognise their strengths and weaknesses, by doing this, they can then develop strategies for effective learning.

However, one of the persistent challenges and problems that university teachers are facing is related to matching the teaching strategies with the students’ learning styles for effective learning. Though teaching is a useful means of transmitting and sharing knowledge, it does not however always result in learning; this can be seen clearly in the painful disparity between what we think we have effectively taught and what students indicate they have learned on the examination papers. Is it possible to identify the most appropriate teaching strategies for each learning style? If yes, can matching these two learning-related concepts result in improved student academic achievement and learning outcomes? These and more are the concerns of the present study. It is expected that instructions developed with an awareness of different learning styles may help improve the information assimilation and learning experiences of the students.

Learning styles, theories and teaching strategies
The preferred way in which an individual approaches a task or learning situation, the learning/cognitive style or approach or strategy, has been characterised and explained in several ways based on a variety of theoretical models. Riding and Cheema (1991) proposed a broad categorisation of style according to two fundamental dimensions representing the way in which information is processed and represented: wholist/analytic and verbaliser/imager; Riding and Rayner (1998) considered learning style within the framework of personality-centred, cognitive-centred and learning-centred approaches; two additional examples of specific theories founded in the approaches to learning style model are Kolb’s Experiential Learning Theory which focuses on grasping and transforming experiences (Kolb & Kolb, 2009) and the Perceptual Learning Styles Theory which deals with multiple modality preferences and how individuals interact with information and conduct learning tasks (Davis, 2007). Other theorists commonly provide an overview of various models generally referred to as VAK Visual-Auditory-Tactile/Kinesthetic (or Kinaesthetic); but alternatively by extension referred to as VAP (Visual-Auditory-Physical), VARK (Visual-Auditory-Reading-Kinesthetic) or VACT (Visual-Auditory-Kinesthetic-Tactile) (Felder, 1996; Felder & Brent, 2005; Fleming, 2001; Wooldridge 1995). These authors offer a composite view of several approaches and at the same time provide simple ways to explain and
understand learning styles; that we process information through our sensory modalities – visual, auditory and kinaesthetic; most people possess a dominant or preferred learning style; however some people have a mixed and evenly-balanced blend of the three styles and finally that no-one has exclusively one single style or preference. The present study adapted the VAK Visual-Auditory-Tactile/Kinesthetic (or Kinaesthetic) to assess the participants’ learning styles and categorise them into the different modes of learning styles.

A thorough examination of the aforementioned models reveals the multiplicity and complex nature of learning styles thereby necessitating varieties of teaching strategies to address this wide array of behaviours involved in processing information when learning.

Teaching or instructional strategies are techniques teachers use to help students become independent, strategic learners. These instructional strategies become learning strategies when students independently select the appropriate ones and use them effectively to accomplish tasks or meet goals (Alberta Learning, 2002). In the past, research on learning and teaching in universities has focused on the teacher's behaviour rather than the learners’. However, some studies indicate that what the students do in order to learn such as adopting different methods of interacting with the learning materials is of greatest importance (Dunn, & Griggs, 2000; Shuell 1986). As a result, educators have developed "learner-centred" or "student-centred" pedagogy that has significantly influenced our understanding of university learning and teaching (Fayombo, 2014; Felder & Brent, 2005; Yoder & Hochevar, 2005). These strategies include: brainstorming, case studies, debates, discussions, flipped classroom/blended learning, group work, questioning, simulations, role plays, games, video simulations among others utilised to actively engage learners in the learning process and achieve educational outcomes.

**Learning styles, teaching strategies, student learning outcomes and academic achievement**

Some investigators confirmed that the alignment of teaching strategies and learning styles has a positive impact on the academic achievement of students. For example, Tulbure (2012) found significant differences between the achievement scores obtained by three categories of learners (convergers, divergers and accommodators) from two faculties of a Romanian University after the cooperative learning strategy was implemented. Similarly, Damrongpanit and Reuntragru (2013) reported significant differences between different matching conditions of students’ learning styles and teachers’ teaching styles after comparing the academic achievement of 3,382 ninth-grade students. In addition, Al-Saud (2013) revealed a significant difference in the mean values of GPA in relation to the first-year dental students’ learning style preferences with students who have a single learning style preference having a lower mean GPA than those with multiple (quad-modal) learning style preferences. Evidence also abounds that matching teaching strategies and learning styles has a positive impact on the academic achievement and learning outcomes and that the match of teaching and learning styles in tertiary learners’ second language acquisition can effectively improve students’ achievement (Arthurs, 2007; Liu & He, 2014); motivation (Bell, 2007) and attitudes toward learning (Felder, 1996). On the other hand, a number of studies have revealed that matches between students’ learning styles and instructional strategies did not affect the students’ learning performance (Akdemir & Koszalka, 2008; Fardon, 2013; Massa & Mayer, 2006).

Thus, the issue of matching learning styles with teaching strategies and the effect on academic performance continues to be inconclusive, hence there is need for further investigation. Previous research findings suggest that the match of teaching and learning styles will promote the learning and educational effectiveness. “If the two types of styles are consistent, it’s obvious
that the teacher’s teaching styles match with the students’ learning style, otherwise, they mismatch or unmatch” (Liu, 2007). Despite the fact that these academic-related variables have received a considerable degree of attention within the educational literature over the past two decades, not much was done to find out the learning styles of the Psychology students at the UWI, Cave Hill Campus, and the influence that this may have on their academic achievement and learning outcomes. It is against this backdrop that this study was conducted.

**Present Study**
The purpose of this study therefore was to investigate the learning styles, teaching strategies and their influence on academic achievement among some undergraduate Psychology students at the University of the West Indies, Cave Hill Campus. The researcher is also interested in finding out whether any particular teaching strategy style will match a particular learning style more so when previous research findings have shown that the match of teaching and learning styles can improve tertiary education students’ academic achievement (Arthurs, 2007; Felder & Brent, 2005; Rogers, 2009) and exert positive influence on their motivation of and attitudes toward study (Bell, 2007; Tulbure, 2012). Hence the researcher’s choice of active learning strategies to ensure that the different learning styles were addressed for academic achievement and the attainment of Student Learning Objectives (SLOs). An SLO according to this study refers to a statement of what a learner is expected to know, understand and/or be able to demonstrate at the end of a period of learning (Kennedy, Hyland, & Ryan, 2012).

**Research Questions:**
The following research questions were addressed in this study:

- i) **What are the teaching strategies utilized during the Psychology lecture?**
- ii) **Which learning styles exist among the students?**
- iii) **Which teaching strategies will be preferred by visual, auditory and kinaesthetic learners?**
- iv) **What are the mean differences in the academic achievements of the visual, auditory and kinaesthetic learners?**
- v) **Are there statistically significant differences in visual, auditory and kinaesthetic learners’ academic achievements?**
- vi) **To what extent will teaching strategies and learning styles predict the student’s academic achievement?**

**Method**
**Participants**
The participants were 171 Psychology undergraduate students who enrolled in a Learning Theory and Practice Course at The University of the West Indies, Cave Hill Campus. Their ages ranged between 18-60 years ($M = 39$ years, $SD = 1.68$). There were 25% ($n = 43$) males and 75% ($n = 128$) females, 58% ($n = 99$) were from the Faculty of Social Sciences; 42% ($n = 72$) from the Faculty of Humanities & Education; Pure & Applied Sciences.
Measures

Three instruments were used for data collection in this study:

1. VAK test (Visual/Auditory/Kinaesthetic) was administered to the learners to categorise them into different learning styles and to give each individual an idea of their perceived favoured learning-style and to encourage them to think on a broader level than simply passing exams as previously suggested by Fardon (2013). The main reason the VAK was chosen was because it is well recognised, straightforward and quick to perform, and its results are easily understood (Businessballs.com, 2012; Liu, 2007). The instrument consists of 54 items; 18 items on each of the three learning styles.

2. Active Learning Strategies Questionnaire was the second instrument and it was used to measure the teaching strategies.

This instrument was chosen because earlier research findings have proven the teaching strategies in the instrument to be effective in promoting student engagement, student learning outcomes and academic achievement (Fayombo, 2014a; Fayombo, 2014b; Felder & Brent, 2005). It has three sections: Section A comprises the demographic variables such as gender, faculty/department, year of study, nationality, age, etc. Section B consists of seven close-and-open-ended questions designed to find out whether the students participated in the different classroom and online activities. Items include:

- Did you role play during the lectures? Yes/ no
- If yes how many times? ______________
- If no, why not? ______________________________

Section C consists of ten subscales with 60 items designed to measure the different active learning strategies (Power Point presentation, videos, discussion, games, clarification pauses, role play, one-minute-paper, group work, glossary activities and discussion forum); nine out of the ten subscales (videos, discussion, games, clarification pauses, role play, one-minute-paper, group work, glossary activities and discussion forum) were selected for this study; there were six items in each subscale with three positively and three negatively worded items thus:

Videos
(i) Videos create mental images of the topics taught
(ii) Watching videos during lectures is a waste of time

Discussion Forum
(i) Discussion forum is engaging for me online
(ii) Discussion forum is a repetition of class activities

All the items were measured by a modified 4-point Likert scale response anchors ranging from strongly agree to strongly disagree with corresponding scores of 4, 3, 2, and 1. All the negative items were reversed during analysis. The items were generated during the review of literature and the initial versions were given to experts for suggestions and comments before coming up with the final version. The reliability of the instrument was ascertained by carrying out a pilot study among some psychology students. The instrument yielded the following Cronbach’s Alpha reliability coefficients for the different subscales as shown in Table 1:
Table 1

<table>
<thead>
<tr>
<th>Sub Scales</th>
<th>Alpha Coefficients</th>
<th>No of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Videos</td>
<td>0.84</td>
<td>6</td>
</tr>
<tr>
<td>Role Play</td>
<td>0.77</td>
<td>6</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>0.72</td>
<td>6</td>
</tr>
<tr>
<td>Glossary</td>
<td>0.74</td>
<td>6</td>
</tr>
<tr>
<td>Group work</td>
<td>0.75</td>
<td>6</td>
</tr>
<tr>
<td>Games</td>
<td>0.85</td>
<td>6</td>
</tr>
<tr>
<td>Discussions</td>
<td>0.83</td>
<td>6</td>
</tr>
<tr>
<td>Five-minute-paper</td>
<td>0.70</td>
<td>6</td>
</tr>
<tr>
<td>Clarification pauses</td>
<td>0.81</td>
<td>6</td>
</tr>
</tbody>
</table>

These alpha reliability coefficients of the nine subscales ranging from 0.70 to 0.84 indicated that the instrument has high internal consistency and the validity was ascertained by the choice of items which were subjected to internal consistency analysis (Cronbach’s Alpha), which is an index of item homogeneity and an indication of construct validity.

The third instrument is the Academic Achievement Scale which has three components:

i) Students’ grades in coursework

ii) Students’ grades in semester examination

iii) Students’ Learning Outcomes

Grades were obtained from the students’ knowledge of the topics covered in PSYC 2009: Learning Theory and Practice Course during the semester. The validity of the grades was ascertained by ensuring that the questions in the three components measured what they purport to measure. The initial version of the examination questions was given to the internal examiner who is an expert in the field for vetting before coming up with the final version. The Student Learning Outcomes Assessment Scale was used to assess the SLOs specified to be achieved using active learning strategies in the classroom. SLOs are statements of what is expected that the student will be able to do as a result of learning the activity (Jenkins & Unwin, 2001) and it is important to define outcomes as clearly and explicitly as possible. Thus, the learning outcomes in this study were specific and were stated in measurable terms, they were specified to measure the students’ knowledge of the theories discussed during the lectures.

Procedure and ethics

Informed consent of the students to participate in the survey was obtained. The students were briefed of the purpose of the research and that they were free not to participate in the study. The students filled out the VAK Learning style survey and the Active Learning Strategies Scale in their lecture hall with the help of three research assistants who were tutored in the administration of the instruments which lasted for approximately 10 minutes. The researchers took time to brief the participants on the process for answering the items in the questionnaire and they were told that it was not for examination purposes but for research and that the information would remain confidential. The researchers ensured that all of the items in the instrument were properly completed and the questionnaires were collected immediately after the participants had finished.
Grades were obtained from the students’ knowledge of the topics covered in PSYC 2009: Learning Theory and Practice Course during the semester.

**Method of Data analysis**
The data collected were entered into SPSS; Descriptive Statistics, ANOVA and Multiple Regressions Analysis were conducted.

**Results**

*Research Question 1: What are the teaching strategies utilised during the lecture?*

Table 2

*Descriptive Statistics showing the teaching strategies utilised during the lecture (N = 171)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>12.00</td>
<td>24.00</td>
<td>20.25</td>
<td>2.57</td>
</tr>
<tr>
<td>Groupwork</td>
<td>5.00</td>
<td>20.00</td>
<td>14.19</td>
<td>3.12</td>
</tr>
<tr>
<td>Role play</td>
<td>12.00</td>
<td>24.00</td>
<td>19.16</td>
<td>2.79</td>
</tr>
<tr>
<td>Video</td>
<td>14.00</td>
<td>24.00</td>
<td>20.30</td>
<td>2.58</td>
</tr>
<tr>
<td>Games</td>
<td>10.00</td>
<td>20.00</td>
<td>16.95</td>
<td>2.42</td>
</tr>
<tr>
<td>Five-minute-paper</td>
<td>9.00</td>
<td>20.00</td>
<td>14.44</td>
<td>2.38</td>
</tr>
<tr>
<td>Clarification pauses</td>
<td>11.00</td>
<td>20.00</td>
<td>16.35</td>
<td>2.30</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>10.00</td>
<td>20.00</td>
<td>14.94</td>
<td>2.72</td>
</tr>
<tr>
<td>Glossary Activities</td>
<td>10.00</td>
<td>20.00</td>
<td>15.37</td>
<td>2.56</td>
</tr>
</tbody>
</table>

The results in Table 2 reveal the different learning strategies utilised during the lectures with video and discussion having the highest mean scores while group, five-minute-paper and the discussion forum have lower mean scores indicating the students have higher preference for some strategies when compared with others.
Research Question 2: Which learning styles exist among the students?

Table 3

Descriptive Statistics showing students’ learning styles (N = 171)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percent</th>
<th>Mean</th>
<th>Standard Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>89</td>
<td>51</td>
<td>64.90</td>
<td>10.78</td>
</tr>
<tr>
<td>Auditory</td>
<td>37</td>
<td>21</td>
<td>66.69</td>
<td>9.95</td>
</tr>
<tr>
<td>Kinaesthetic</td>
<td>25</td>
<td>14</td>
<td>64.72</td>
<td>7.95</td>
</tr>
<tr>
<td>Bimodal: Visual &amp; Auditory</td>
<td>9</td>
<td>6</td>
<td>66.89</td>
<td>11.66</td>
</tr>
<tr>
<td>Bimodal: Visual &amp; Kinaesthetic</td>
<td>2</td>
<td>2</td>
<td>66.93</td>
<td>6.36</td>
</tr>
<tr>
<td>Bimodal: Auditory &amp; Kinaesthetic</td>
<td>7</td>
<td>4</td>
<td>75.75</td>
<td>6.56</td>
</tr>
<tr>
<td>Multimodal: Visual, Auditory &amp; Kinaesthetic</td>
<td>2</td>
<td>2</td>
<td>65.58</td>
<td>9.99</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>100</td>
<td>65.83</td>
<td>10.27</td>
</tr>
</tbody>
</table>

As shown in Table 3, seven types of learning preferences emerged from this study: visual learning style topped the list with 51%; followed by auditory (21%); kinaesthetic (14%); three types of bimodal preferences also emerged: visual and auditory (6%); visual and kinaesthetic (2%); auditory and kinaesthetic (4%); and finally multimodal visual and auditory and kinaesthetic (2%). This result indicates that students have learning preferences and that half of the sample size is visual learners.
Research Question 3: Which teaching strategies will be preferred by the visual, auditory and kinaesthetic learners?

Table 4

Descriptive Statistics showing the mean scores for students’ preferred teaching styles (N = 171)

<table>
<thead>
<tr>
<th>Learning Styles</th>
<th>Discussion</th>
<th>Group role play</th>
<th>Video</th>
<th>Games</th>
<th>One minute paper</th>
<th>Clarification pauses</th>
<th>Discussion forum</th>
<th>Glossary Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual (n=89)</td>
<td>19.67</td>
<td>14.31</td>
<td>18.93</td>
<td>20.00</td>
<td>16.45</td>
<td>14.31</td>
<td>16.17</td>
<td>14.67</td>
</tr>
<tr>
<td>Auditory (n=37)</td>
<td>21.08</td>
<td>13.81</td>
<td>19.78</td>
<td>20.68</td>
<td>17.35</td>
<td>14.54</td>
<td>16.65</td>
<td>14.65</td>
</tr>
<tr>
<td>Kinaesthetic (n=25)</td>
<td>20.76</td>
<td>14.28</td>
<td>19.28</td>
<td>20.52</td>
<td>17.68</td>
<td>14.76</td>
<td>16.64</td>
<td>15.80</td>
</tr>
<tr>
<td>Bimodal: Visual &amp; Auditory (n=9)</td>
<td>20.11</td>
<td>14.56</td>
<td>18.67</td>
<td>20.22</td>
<td>17.11</td>
<td>13.78</td>
<td>15.78</td>
<td>15.11</td>
</tr>
<tr>
<td>Bimodal: Visual and Kinaesthetic (n=2)</td>
<td>21.00</td>
<td>15.00</td>
<td>20.50</td>
<td>22.00</td>
<td>16.50</td>
<td>15.00</td>
<td>15.00</td>
<td>14.50</td>
</tr>
<tr>
<td>Multimodal: Visual, Auditory &amp; Kinaesthetic (n=2)</td>
<td>23.00</td>
<td>12.50</td>
<td>19.50</td>
<td>21.50</td>
<td>19.50</td>
<td>15.50</td>
<td>17.50</td>
<td>15.00</td>
</tr>
</tbody>
</table>

Table 4 displays students’ preferences for the different teaching strategies thus: visual learners have highest preference for video (n=89; M= 20.00); auditory learners have highest preference for discussion (n= 37; M= 21.08); interestingly, kinaesthetic learners prefer discussion most (n= 25; M=20.76); bimodal - visual and auditory learners prefer video most (n=9; M= 20.22); bimodal - visual and kinaesthetic also prefer video most (n=2; M= 22.00); bimodal - auditory and kinaesthetic learners have greatest preference for both discussion and video; (n=7; M= 20.57); finally, the multimodal learners – visual, auditory and kinaesthetic learners prefer discussion most (n=2; M= 23.00).

These findings indicate that students have preferences for teaching strategies as well.
Research Question 4: What are the mean differences in visual, auditory and kinaesthetic learners’ academic achievements?

Table 5

<table>
<thead>
<tr>
<th>Learning Styles</th>
<th>Total (Coursework &amp; Exams)</th>
<th>Coursework</th>
<th>Exams</th>
<th>SLOs</th>
<th>Overall (C/W, Exams &amp; SLOs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual (n=89)</td>
<td>64.90</td>
<td>25.22</td>
<td>39.69</td>
<td>19.71</td>
<td>84.61</td>
</tr>
<tr>
<td>Auditory (n=37)</td>
<td>66.69</td>
<td>25.99</td>
<td>40.70</td>
<td>20.59</td>
<td>87.28</td>
</tr>
<tr>
<td>Kinaesthetic (n=25)</td>
<td>64.72</td>
<td>25.96</td>
<td>38.76</td>
<td>19.36</td>
<td>84.08</td>
</tr>
<tr>
<td>Bimodal- Visual &amp; Auditory (n=9)</td>
<td>66.89</td>
<td>26.22</td>
<td>40.67</td>
<td>20.33</td>
<td>87.22</td>
</tr>
<tr>
<td>Bimodal-Visual and Kinaesthetic (n=2)</td>
<td>65.00</td>
<td>28.00</td>
<td>37.00</td>
<td>19.50</td>
<td>84.50</td>
</tr>
<tr>
<td>Bimodal - Auditory &amp; Kinaesthetic (n=7)</td>
<td>66.93</td>
<td>23.36</td>
<td>43.57</td>
<td>23.29</td>
<td>90.21</td>
</tr>
<tr>
<td>Multimodal- Visual, Auditory &amp; Kinaesthetic (n=2)</td>
<td>75.75</td>
<td>30.75</td>
<td>45.00</td>
<td>26.00</td>
<td>101.75</td>
</tr>
<tr>
<td>Total (n=171)</td>
<td>2.57</td>
<td>25.57</td>
<td>40.00</td>
<td>20.10</td>
<td>85.68</td>
</tr>
</tbody>
</table>

The findings in Table 5 reveal the mean differences in the academic achievement of the visual, auditory and kinaesthetic learners. Interestingly, the multimodal learners scored the highest means in all the different components of academic achievement and overall indicating that multiple ways of processing information can enhance learning. It is also very amazing to see the mean scores of the visual, auditory and kinaesthetic learners are very close for all the components of academic achievement indicating that all the three learning preferences are equally important in learning.

Research Question 5: Are there statistically significant differences in the visual, auditory and kinaesthetic learners’ academic achievements?

In order to find out whether the mean differences in the academic achievement of the students are statistically significant, one way ANOVA was conducted. The results are shown in table 6.
Table 6

ANOVA table showing the differences in students’ academic achievement (N = 171)

<table>
<thead>
<tr>
<th></th>
<th>Sum Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coursework</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>124.758</td>
<td>6</td>
<td>20.793</td>
<td>.632</td>
<td>.705</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5398.218</td>
<td>164</td>
<td>32.916</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5522.977</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exams</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>226.782</td>
<td>6</td>
<td>37.797</td>
<td>.858</td>
<td>.527</td>
</tr>
<tr>
<td>Within Groups</td>
<td>7221.195</td>
<td>164</td>
<td>44.032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7447.977</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (Coursework &amp; Exams)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>340.302</td>
<td>6</td>
<td>56.717</td>
<td>.560</td>
<td>.762</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16623.382</td>
<td>164</td>
<td>101.362</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16963.684</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall total (C/W, Exams, &amp; SLOs)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>945.214</td>
<td>6</td>
<td>157.536</td>
<td>1.486</td>
<td>.186</td>
</tr>
<tr>
<td>Within Groups</td>
<td>17386.096</td>
<td>164</td>
<td>106.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18331.310</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SLOs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>178.298</td>
<td>6</td>
<td>29.716</td>
<td>3.106</td>
<td>.007</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1569.012</td>
<td>164</td>
<td>9.567</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1747.310</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The findings displayed in Table 6 revealed non-significant difference in the students’ coursework, exams, total (coursework and exams), overall total (coursework, exams, SLOs). However, the difference was significant for SLOs.
Research Question 6: To what extent will teaching strategies and learning styles predict the student’s academic achievement?

Table 7

Multiple Regressions table showing teaching strategies and learning styles as predictors of academic achievement (N = 171)

<table>
<thead>
<tr>
<th>Variables</th>
<th>SE(B)</th>
<th>β</th>
<th>t</th>
<th>Sig.(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Styles</td>
<td>.016</td>
<td>.226</td>
<td>3.27</td>
<td>.001</td>
</tr>
<tr>
<td>Teaching Strategies</td>
<td>.012</td>
<td>.369</td>
<td>5.55</td>
<td>.000</td>
</tr>
</tbody>
</table>

RSq = .200; (20%)
(F (2,168) = 21.04, p < .00)

The result displayed in table 7 shows that overall, the teaching strategies contributed more (β = .369, p < 0.05) to the variance in academic achievement (SLOs) than the learning styles (β = .226, p < 0.05) and this result was significant (F (2,168) = 21.04, p < .00). This result indicates that both the teaching strategies and the learning styles are important in the attainment of student’s academic achievement and learning outcomes.

Discussion

This study examined the learning preferences (visual, auditory, kinaesthetic), the teaching strategies (videos, games, role-play, discussion, group work, clarification pauses, five-minute-paper, discussion forum and glossary activity) and their influence on the academic achievement of some Psychology undergraduate students at the University of the West Indies. One of the research questions was to find out which learning styles exist among the learners. Interestingly, seven types of learning styles emerged from this study: visual, auditory, kinaesthetic, bimodal-visual and auditory, bimodal - visual and kinaesthetic, bimodal - auditory and kinaesthetic, and finally, the multimodal learners - visual, auditory and kinaesthetic. This finding though interesting and at the same time was expected because like other learners around the globe, the sample of this study also processed incoming information in multifarious ways and as Gregorc (1979) earlier suggested, they exhibited distinctive behaviors which serve as indicators of how they learn from and adapt to their environment. The results in Table 3 also revealed 51% visual, 21% auditory, and 14% kinaesthetic learning preferences in the sample of this study. This result contrasts with that of Fardon (2013) who found that 38% visual, 35% auditory and 73% kinaesthetic learners existed among his sample of military students. This discrepancy in the results of the two studies may be attributed to a number of factors. First, the nature or the requirements of learners’ careers in the two studies are different; the sample of the present study are psychology students who are likely to process information via visual mode as they study human behaviours whereas the military sample in Fardon’s study may prefer to do things and get involved in different activities which will make them learn effectively in their vocation. Secondly, the sample of this study consisted of more females than males (m =43; f = 128); while Fardon’s sample of 160 participants consisted of just 5.63% females. It is noteworthy here that gender is a determining factor in learning styles thus suggesting further studies of the influence that gender may have on students’ learning styles.
Similarly in this study, just as the students revealed their preferences for learning styles, they also chose their learning strategies as displayed in table 4. A close look at the results revealed that the learners’ choices of learning strategies were consistent to a greater extent with their learning modalities: visuals learn best with videos, auditory with discussion method while kinaesthetic deviated a little bit by preferring discussion strategy. These teaching strategies become learning strategies when students independently select the appropriate ones and use them effectively to accomplish tasks or meet goals (Alberta Learning, 2002). It is also interesting to find that in addition to the visual learners who prefer videos most, all the students with multiple learning preferences indicated their choices for videos along with other teaching strategies. This may not be surprising because videos were stimulating and motivating for this sample when utilized during the lectures and it was like bringing a guest lecturer into the classroom to avoid the monotony of listening to just one instructor throughout the semester as earlier reported by Poonati and Amadia, (2010). Thus, the answers to the first question posed initially is yes, it is possible to identify the most appropriate teaching strategies for each learning style.

Another major finding of this study was that generally, the students scored above average in the measure of academic performance irrespective of their learning styles (Table 5) however, the learners with multiple learning preferences scored the highest in all the components of academic achievement and overall while the visual, auditory and kinaesthetic learners’ mean scores were very close for all the components of academic achievement indicating that no learning style is superior to another. A probable reason for this result may be due to the fact that the students’ learning preferences were consistent with their choice of learning strategies as discussed earlier.

This corroborates the assertion that when the teachers’ teaching styles are consistent with the students’ learning styles, they will promote the learning and educational effectiveness (Liu, 2007). Additionally, these results were quite expected among this sample because the active learning strategies were well integrated into the learning activities, therefore learning was fun, interesting, captivating, motivating and inspiring for the students in this course (Fayombo, 2014). The answer to the second question posed earlier is also yes, because matching these two learning-related concepts can result in improved student academic achievement and learning outcomes.

The findings in table 6 revealed non-significant differences in the different aspects of academic achievement of the visual, auditory, kinaesthetic, bimodal and multimodal learners except in SLOs. This is not surprising because no learning style is superior to the other as earlier reported by Felder, (1996), Felder & Brent, (2005) and Fleming, (2001). This finding also corroborates Fardon’s (2013) earlier report that matches between students’ learning styles and instructional strategies did not affect the students’ learning performance. However, one reason for the significant difference in SLOs (which assesses students’ knowledge of the course content at the lecture most of the time) may be due to the fact that processing information, remembering and responding to questions immediately and later may vary among the different learners. This finding also lends credence to Al-Saud (2013) who reported that students with a single learning style preference students had a lower mean GPA when compared with those with multiple (quad-modal) learning style preferences.

The final result in Table 7 showed that both learning styles and learning strategies jointly contributed 20% ($R^2=0.200$) to the variance in the academic achievement (SLOs) and this was found to be significant ($F(2,168) = 21.04, p < .01$). A probable reason for this finding could be attributed to the fact that in this study, the student learning styles match their active learning
strategies which were well packaged to enhance their academic achievement in this psychology course. This result amplified the earlier report that agreement between teaching strategies and learning styles has a positive impact on the academic achievement of the students (Damrongpanit & Reungtragul, 2013; Tulbure, 2012).

**Conclusion**
The findings of this study revealed among other things that students learn differently and they also prefer different teaching strategies. The onus is on the instructor to use different teaching strategies including videos, role play, games, discussion, group work and glossary activities as demonstrated in this study to cater for learners’ diverse needs as well as improve the information assimilation and learning experiences. Thus, it is necessary for the instructors to discover their learners’ distinctive behaviours at the beginning of the academic or training session so as to be able to utilise the teaching strategies that will match the varieties of their students’ learning styles for good academic achievement. Additionally, seven types of learning preferences emerged from this study; the visual learning mode was predominant and video simulations as a teaching strategy was most preferred by the students indicating that more emphasis should be on visual mode of learning as well as the use of videos as a teaching strategy although no teaching strategy or learning style is superior to the other as indicated in the result of this study. On the whole, this study had demonstrated that the teaching strategies and learning styles are very important in academic achievement and that matching both learning and teaching styles is achievable and rewarding for the learners and the instructors. However, further studies can be carried out to find out whether gender and some other psycho-social variables such as age, matriculation status, course of study and family background or social economic status will affect students’ learning preferences and their choice of teaching strategy which may impact academic achievement.

**References**


Woodridge, B. (1995). Increasing the effectiveness of university/college instruction: integrating the results of learning style research into course design and delivery. In R.R. Sims & S. J. Sims (Eds.), The importance of learning styles (pp. 49-67). Westport, CT: Greenwood

Developing Teacher Reflexivity and Communities of Practice through the Incorporation of New Literacies in a Content Area Methods Course: A Case Study of Student Teachers’ New Literacies Experience

Angelina Polius

Sir Arthur Lewis Community College, Castries, St. Lucia

Web-based formats are increasingly emerging as 21st Century modalities for effective teacher preparation. In this article, the author draws findings from a larger case study which focused on the incorporation of new literacies in a semester-long content area methods course. Two major questions guided the research: (1) How did student teachers’ participation in electronic-threaded discussions contribute to their understanding of concepts related to content area literacy? and (2) In what way(s) did student teachers’ weblogs serve as an effective tool in promoting their reflective practice? Data were gathered using focus group interviews, reflection logs and discussion transcripts. The findings revealed that participants’ engagement with new literacies created opportunities for collaborative learning, sharing, critical thinking and reflection that led to the development of ‘third space’ knowledge, discourses and communities of practice. The findings further support a socio-cultural paradigm which posits that learning and reflection are interactive, collaborative, technologically-mediated and situated. Based on the findings, the author recommends that teacher education programmes be restructured to foster teacher reflexivity, equip future teachers with new literacies and embrace a disciplinary literacy perspective.

Keywords: New literacies; reflective practice; content area literacy; disciplinary literacy; third space; student teacher; communities of practice.

Context and Background
At the primary and secondary school levels in Saint Lucia, prevailing trends indicate that the availability of computer and internet technologies are outpacing the number of teachers who know how to effectively embed these technologies in instruction. In keeping with its thrust towards lifelong learning and making children increasingly competitive and productive in a burgeoning digital landscape, the Government of Saint Lucia has embarked upon a “One Laptop per Child” programme. The goal of this programme is to equip students in forms three, four and five in all secondary schools island-wide with laptops by the academic year, 2015-2016. Thus, teachers are encouraged to utilize this multimedia resource as an instructional tool to bolster students’ learning across the curriculum and transform the delivery of instruction in classrooms. Although there is a paucity of empirical evidence to ascertain its effectiveness in improving the quality of instruction and learning locally, an evaluation report of the ‘One Laptop per Child’ programme produced by the Ministry of Education underscores the urgent need for more teacher training to support the effective use of laptops for instruction. Admittedly, some form of training has been provided to enhance the schools’ capabilities at implementing this programme,
however, the Ministry hopes that student teachers who, having completed their two-year general teacher training would have developed proficiencies in using new technologies for classroom application. This can more effectively be realized, though, when teacher educators provide student teachers with opportunities to develop new literacies across teacher education courses. Unfortunately, the author’s observation of some educators with new technologies represents what Lankshear and Knobel (2006) termed the ‘old wine in new bottles’ syndrome, where new technologies are used to duplicate old teaching practices. Notwithstanding the constraints of time and course intensity, researchers emphasize that new technologies should be intimately linked to the development of new literacies that student teachers need for effective functioning in today’s classrooms.

Another recent call in the literature, albeit not the primary concern of the study, urges teacher educators to shift their attention from the generic application of reading and writing-to-learn strategies across the curriculum to an emphasis on disciplinary literacy (Carlson 2015; Fang 2014; Shanahan & Shanahan, 2008, 2015). “Reading and Writing Across the Curriculum” formerly termed Content Area Reading and Writing, is a content area methods course that both primary and secondary student teachers are required to pursue as part of their Associate Degree in Education (ADE) programme. The primary goal of this course is to strengthen candidates’ capabilities to teach children reading and writing skills in the various content areas with the ultimate goal of becoming independent learners. While this application of general reading and writing strategies is reasonable with younger children, the same does not suffice for adolescents at the secondary level who study specific subject disciplines such as Geography, Business, and Mathematics. Despite the call to adopt a disciplinary approach to content area instruction, this study is delimited to the content area instruction which involves the application of general reading and writing strategies across the curriculum.

Theoretical Framework
Making a Pedagogical Shift in Content Area Instruction

Over the years content area reading has evolved from a narrow conception of reading-to-learn to a broader dimension suggested by the label ‘content area literacy’ which for many represented a set of goals and tools for teachers to employ for bridging the achievement gaps while helping all students learn in more powerful ways in content areas (Lesley & Matthews, 2009; Manzo, Manzo & Thomas, 2009; McCormack, 2008). More recently, the Shanahans (2008, 2015) among other researchers have made a compelling case for a disciplinary approach to literacy instruction. A review of the literature suggests that disciplinary literacy is not another term for content area literacy but rather represents a conceptual shift in the way educators approach literacy instruction in content area classrooms (Pytash & Ciecierski, 2015). Unlike content area literacy which focuses on general strategies that are applicable to all subject areas, disciplinary literacy refers to literacy practices that are valued or promoted by each discipline. This disciplinary approach emphasises the specialised knowledge and abilities possessed by those who create, comment and use knowledge within each of the disciplines (Shanahan & Shanahan, 2008). This means therefore, that adolescent learners must be taught how to think, speak, read or write like a historian, businessman, mathematician or scientist. These learners will demonstrate disciplinary habits if they are taught by secondary teachers who have been exposed to disciplinary literacy practices in their teacher preparation courses.
New Literacies and Teacher Education

As new technologies proliferate, educators (Guzzett, Elliott & Welsch, 2010; Moss & Lapp 2010; Risko & Walker-Dalhouse 2007; Roe, Stoodt-Hill & Burns, 2011) have recognised the need to equip student teachers with new literacies, new technologies and a wide variety of text types. To accomplish this goal, teacher education programmes must design curricula that reflect a socio-cultural and multiliteracies approach (Cope & Kalantzis, 2000) for secondary teacher candidates. What constitutes new literacies, however, is not the same for everyone. For instance, Willinsky (1990) conceptualises new literacies as ‘those strategies in the teaching of reading and writing which attempt to shift the control of literacy from the teacher to the student’ (p.8). In recent times, pioneers of New Literacy studies have shifted the focus to include skills and strategies for enhancing reading and writing using internet technologies. In a review of work done by Coiro, Knobel, Lankshear and Leu (2008) the authors conclude that new literacies:

i) include the new skills, strategies, dispositions and social practices that are required by new technologies for information and communication;
ii) are central to full participation in a global community;
iii) regularly change as their defining technologies change;
iv) are multifaceted and our understanding of them benefits from multiple points of view (Baker & Leu, 2010).

For a literacy practice to be considered “new” it must have both new ‘technical stuff’ or digitality (exemplified in the creation of hyperlinks between documents and uploading images from a digital phone or camera onto the computer or YouTube); and new ‘ethos stuff’; that is, it must be highly participatory, collaborative and distributive (Knobel & Wilber, 2009; Lankshear & Knobel 2006, 2007). Therefore, using PowerPoint for instance, with slides containing copious notes to replace the long standing practice of “chalk and talk” is not considered new.

Equipping novice teachers with a wide range of new literacies to effectively exploit their potential for reading, writing, and communication (Lankshear & Knobel, 2006; Leu, Coiro, Knobel & Lankshear, 2004; McVee, Bailey & Shanahan 2008) is central to effective teacher preparation programmes. Related research evidence suggests that educators who model the use of internet technologies in their practice not only help their student teachers build confidence and competence as technology users (Mathew, Calloway, Letendre & Kimbell-Lopez, 2002) but more importantly, provide them with a model to emulate as they strive to embed new technologies in their own classroom teaching (Fleming, Motamedi & May, 2007; Larson, 2008). Two web-based formats that have been found to have powerful potential for developing new literacies and enhancing student teachers’ collaborative learning and reflexivity are blogs and threaded discussions.

Weblogs or blogs have become popular tools for teacher trainees to publish their own ideas, reactions and reflections on concepts and theories regarding learning and teaching. The interactive and collaborative nature of blogs provide student teachers an opportunity to receive feedback from others thus promoting deeper reflection in a non-threatening environment (McPherson, Wang, Hsu & Tsuei, 2007; Yang, 2009) across space and time. By blogging, student teachers think critically about their past, current and future practice (McPherson et al., 2007; Wassell & Crouch, 2008); develop blogging competencies and learn new strategies for embedding the tool in their own teaching. Similarly, the discussion board promotes critical reflective thinking, encourages participation as well as provides opportunities for course instructors and students alike to share their understandings and perspectives, and construct
knowledge through shared meanings (Birch, 2004). The asynchronous nature of the threaded discussion makes it possible for teacher educators to extend the conventional classroom thus promoting student participation at their own convenience. Furthermore, it provides an opportunity for students to ‘author the self’ as it makes it possible for them to develop voice and identity as teachers within a specific content area (Kajder, 2007). Despite their potential, it is important to be aware of possible barriers that may hamper interaction and learning on the board and in the blogosphere. A major limitation relates to the lack of motivation and reduced interaction resulting from lengthy messages and limited or no feedback from peers or tutors.

The pervasive use of internet technologies among young adults often results in many candidates bringing into teacher education classrooms a range of literacies that teacher educators need to validate and explore to determine how these multiliteracies can help to create opportunities for ‘third space’ knowledge (a space which allows for the amalgamation of knowledge and discourses from home - first space, school or community - second space, to develop new forms of learning (Cook, 2005; Pane, 2007; Risko & Walker-Dalhouse, 2007; Sheridan-Thomas, 2007). A third-space perspective also acknowledges the knowledge and Discourses that shape teachers’ everyday and disciplinary literacy practices (Gee, 1990; 2000). Student teachers’ ways of knowing, thinking, speaking, and interacting with adolescents during instruction are influenced and shaped by general theories of literacy and learning, their past teaching experiences, observations of their colleagues, their own school days as students, and their everyday funds of knowledge – all of which they bring in and develop during teacher preparation years (Lee, 2008). These experiences not only help in the construction of new knowledge about teaching and learning but also play a significant role in fostering critical reflection in, on, and for practice.

Reflection and Communities of Practice
The construct of reflection has not always meant the same in all contexts. Whatever the interpretation, there lies one fundamental theme; that of inquiry resulting in improved practice and ongoing professional development. Lyons’ (2006) definition of reflection:

involves a deliberate and intentional act of interrupting, or suspending, one’s teaching practices to interrogate or inquire into them systematically and to heighten one’s conscious awareness of one’s practices and of one’s students and then using that consciousness to redirect one’s practice and actually acting to change (p. 166).

Through this systematic inquiry it is believed that student teachers better understand and extend their professional activity, and as they reflect on teaching problems and methodologies either individually or collaboratively they will develop new insight to improve their practice (Marcos, Miguel & Harm, 2009). A synthesis of the literature suggests that teacher reflection has focused on three notions of reflection. Firstly, reflection in action involves student teachers drawing on their knowledge, skills, thinking and acting in the midst of action. Secondly, reflection on action involves inquiring into or thinking about practice following the teaching experience (Dymoke & Harrison, 2008; Zeichner, 1994; Zeichner & Lipston 1987). A third type of reflection – reflection for action (Killion & Todnem, 1991) is undertaken not so much to revisit the past or monitor one’s metacognitive processes during the teaching event, but more practically, to guide and inform future practice.

Reflection in teacher education embraces a socio-constructivist view that emphasises the active construction of knowledge through interaction with the social environment. From this
standpoint, reflection is seen as a social process that is developed through various opportunities, activities and in different contexts over time (McLean 1999; Ottesen 2007; Pedro 2005). Similarly, Lave and Wenger’s (1991) communities of practice model as cited in Smith (2003); Wenger, Mc Dermott and Snyder (2002), describes a process of social learning that occurs when groups of people with a shared interest interact and collaborate with ideas, strategies and activities over time to develop a repertoire of resources for practice. At the Division of Teacher Education, there may exist in any cohort, several communities of practice. These may include student teachers who are interested in developing strategies for Foreign Language teaching, Technical Vocational Education, Social Studies, Business and Science. Through student teachers’ participation in a myriad of shared and collaborative activities they develop a unique perspective as well as a body of knowledge, practices and approaches that help to enhance content area pedagogy. Such evidence coupled with Gee’s work points to the need to view reflection as a socially and historically situated practice that is embedded in Discourses. Thus, the ability to engage in critical reflection can be developed through the infusion of new literacies in methods courses.

Methodology
A qualitative case study approach was employed to investigate student teachers’ new literacies experience in a content area methods course. The design was deemed suitable as it investigated and reported the complex interactions of students during their collaboration and sharing of knowledge, understandings, and teaching experiences as they occurred in their natural environment thus, enabling a more comprehensive understanding of ideas in ways that are otherwise not always possible through numerical analysis (Cohen, Manion & Morrison, 2000). The use of Lankshear and Knobel’s (2004) three general principles (epistemological, ethical and procedural) assisted in obtaining sufficient and valid data, as well as ensuring that issues of power and ethics were adequately addressed prior to and during data collection.

Time Frame, Setting and Participants
This research project was carried out over a semester-long content area methods course. I met with the registered students for 3 hours each week. Students photocopied course materials that I prepared and sourced relevant articles from scholarly journals. At the beginning of the semester, eight first-year female teachers (Phoebe, Jenny, Laura, Elsa, Denissa, Clara, Tessa, and Wendy – all pseudonyms) were registered for the course. Lindy, a second year student had been asked by the Dean to audit the course. During the semester however, Clara withdrew from the programme. The remaining seven (7) students who completed the course participated in the research. All participants specialised in the teaching of English Language either as a major or minor and one subject/content area. Participants had taught at the primary or secondary school level prior to their teacher training.

Data Collection Methods and Procedures
Three methods were used to obtain data in an effort to produce interesting trends or patterns and generate plausible claims in understanding the research questions investigated. This crystallisation approach (Ellingson, 2008) offered opportunities for cross referencing as well as provided a detailed set of related data that were used to build a rich analysis.

Reflection Logs: Five tasks were designed to provide a stimulus for reflection and to allow student teachers to make decisions about their practice in ways that would contribute to
their personal development as well as improvement in classroom pedagogy. Students kept and
maintained in their personal blogs detailed accounts of their previous teaching experiences and
how their prior knowledge and assumptions influenced their classroom practice. Students’ micro
Teaching video clips were also uploaded to facilitate collaborative learning, peer evaluation and
deeper reflection. These reflexive thoughts offered valuable insights into students’ critical
thinking and their new learning (as evidenced by their implementation of reading and writing-to-
learn strategies during micro teaching, and more accurate ideas related to misconcepts that they
previously had.

Discussion Transcripts: Students’ discussion transcripts were used to gauge their
learning of key concepts and issues emerging from electronic journal articles and other reading
assignments. The quality of responses was examined for evidence of new learning, ideas
gleaned from the collaborative sharing of practices and inclusion of empirical evidence to affirm
the importance of the strategies discussed. Participants were assigned an electronic ID and
password that gave them access to the discussion board that was set up for the course. Students
responded to discussion topics at least twice a week.

Interviews: Focus group interviews were conducted at the end of the course to help
crystallise and complement other qualitative data. It was considered useful as it enabled
participants to interact with each other so that their views regarding their new literacies
experience could emerge. Prior to conducting the interviews, participants were reminded of the
overall purpose of the research and the purpose of the interview session was explained. I also
reminded them that their identities would be masked in the research report and that their grades
would not be affected by their responses. Interview data were recorded digitally following
students’ approval. At the end of the interview participants were thanked for their time and co-
operation.

Data Analysis
The ultimate goal of the data analysis was to provide a ‘thick description’ (Geertz, 1973:10 in
Lankshear & Knobel, 2004) of the data collected. To obtain an overall sense of the data, the
different methods of data collection were first examined in search of emerging themes, trends
and meaning. Samples of discussion and blog transcripts were compiled, printed and reviewed to
facilitate comparison of related topics and to identify emerging themes or patterns in response to
the research questions. Interview data were transcribed verbatim and coded according to
predetermined categories and emerging themes. Findings were presented through descriptive
writing, authentic samples and visual representations.

Results
How did student teachers’ participation in electronic threaded discussions contribute to their
understanding of key concepts in content area literacy?

The discussion board was perceived by students as effective in contributing to their
understanding of concepts related to the course. Additionally, students’ discussion transcripts
crystallised the views expressed in the interview. Coding of the data revealed that threaded
discussions contributed to student learning of content area related concepts in several ways:

Critical Thinking & Reflexivity - Students’ critical thinking and reflection were fostered
through their interaction on the board. Moreover, they felt that the topics and comments forced
them to take an introspective look at their prior practice, spurring them into reminiscence and bringing to the fore some of their “bad” practices. Two of the topics as perceived that caused them to do so most conscientiously were ‘Miss Brown’s Dilemma’ and ‘Every Teacher a Teacher of Literacy’. Undoubtedly, ‘Miss Brown’s’ scenario provided a stimulus for deeper reflection of previous teaching practices and to identify those that are considered ineffective in light of new methodologies and student-centred theories of learning they had been exposed to in the course.

**Construction of New Learning** - Students constructed new knowledge as they interacted and shared ideas, perspectives and content area methodologies. Clearly, participants’ initial perception that the English teacher was solely responsible for developing students’ literacy skills is now something of the past. Now, student teachers view this role as a shared responsibility regardless of the subject matter being taught. Furthermore, students’ ability to read, understand and learn concepts and issues from different viewpoints contributed to a deeper understanding and construction of their own knowledge. This new learning was observed in the quality of responses posted to various discussion prompts. A review of the discussion transcripts revealed that responses were more cogent than before and incorporated empirical evidence from their readings to substantiate their ideas. For instance, Laura's suggestion regarding the need for Miss Brown to adopt an authentic and differentiated pedagogy demonstrated her application of her new learning following one of her PowerPoint presentations as well as views expressed by others in the forum. Other suggestions included adopting a more constructivist approach to teaching and learning, activating students' background knowledge, incorporating reading and writing to learn activities, and using various strategies to facilitate comprehension and retention of concepts. The suggestions made were reflective of some of the best practices they hoped to incorporate in completing their assignments, micro teaching, and future practice. Another critical evidence of new learning was observed during micro teaching. During this practical component, students employed several strategies such as the anticipation guide, graphic organizer, two-column notes and RAFT to more actively engage their peers and facilitate their understanding of the content taught. It is interesting to note that the strategies employed during micro teaching are similar to those participants had suggested to ‘Miss Brown’ in the scenario presented in one of the discussion threads.

**Co-operative Learning & Concept Clarification** - The discussion board facilitated collaborative learning as well as provided clarification on various concepts covered in the course. Unlike the traditional face-to-face discussion, the discussion board provided everyone with a chance to respond to the topics in her own space and time. The asynchronous nature of the board increased the possibility for students to participate thus creating a cooperative learning environment. For Phoebe and Denissa, the discussion board provided an environment for seeking clarification from their colleagues, and using these comments to correct their misconceptions as well as organize ideas. This active engagement with content area related concepts on the board provided students with a greater sense of empowerment and confidence, which ultimately led to a more interactive discussion and rewarding experience.

**Safe Learning Environment** - Students reported that the discussion board, unlike the traditional formal classroom provided them with a safe learning environment that catered to some of their learning styles. It provided them with an interactive and informative forum for expressing their
ideas and thoughts without fear of criticism or intimidation as Wendy indicates: … I do not exactly like to speak out in class neither or participate even if the ideas are in my head. I found it so much easier to express what I was thinking, whereas I don’t have to do it in a classroom, you know, it is more intimidating.

Evidently, participants found the electronic discussion forum a less threatening modality for delivering effective instruction.

In what way(s) did student teachers’ weblogs serve as an effective tool in promoting their reflective practice?
The blog provided a forum for student teachers to present their reflective thoughts in an interactive, less intimidating and authentic way. They felt that blogging helped them recognise similarities in their previous teaching practices thus making them more willing to come to terms with what they had done previously and to view the exercise as a collaborative learning process. Analysis of the data gathered from the coded reflection transcripts revealed three different facilities peculiar to blogs that effectively promoted teachers’ reflexivity.

Archiving Facility - Monitoring Progress and Comparing Practices
The very nature of the archive facility available in blogs made it easier for students to track their reflective thoughts and see areas of growth as Elsa points out in her comparison with traditional paper journaling: The fact that the reflection is posted on the blog and whenever you open the blog you would see the reflection in completing another reflection, it will probably cause you to go back to what you had already done and you would see probably where you are now, whether you... have different thoughts, how much you have grown as opposed to probably when it is on paper.

Students’ reflective logs were used to compare practices on two levels. First, the blog served as a text repository for students to access and identify similarities and differences in perceptions regarding their role as content area teachers, and how these views informed their prior teaching practices. A review of the blog accounts revealed that content area reading and writing was a relatively new concept for all students. However, how they viewed their role in developing their children’s literacy skills differed according to the subject area, which in turn influenced their teaching practices. Students, who had previously taught subjects other than English or Literature for instance, perceived the English Language teacher as solely responsible for developing children’s reading and writing competencies, while their primary objective entailed teaching subject-specific content. Conversely, those who taught English or Literature like Elsa for example, viewed content area reading and writing instruction as grounded in constructivism and that their primary role entailed providing learners with authentic learning experiences which through their active engagement would facilitate the construction of their own learning. Therefore, the enactment of strategies such as role play, discussions and drawing that Elsa mentioned in stimulating her children’s interest and active engagement in her Literature lessons confirmed her perception and role in providing student-centred learning experiences.

Additionally, participants’ reflective accounts provided a means by which their colleagues gauged their teaching performances, identified similar practices and evaluated the effectiveness of their prior teaching methodologies. This feeling of shared experiences and understandings allowed participants to empathise very strongly with each other throughout the exercise. On the second level, the blog provided yet another opportunity for students to reflect on the new strategies, ideas or content area methodologies learned and to become increasingly
aware of their previous practice and perceptions of and assumptions about content area instruction. This continuous reflection and increased awareness was particularly important in bringing about new learning and change in practices. A review of the blog transcripts showed evidence of professional growth in the various posts, published, as well as the comments and suggestions they offered to their colleagues. Through this reflective process students developed what I term ‘pedagogic consciousness’ that caused them to evaluate their practices, identify strengths and weaknesses, and recognize the need to change some of their practices, all of which are imperatives to becoming reflective practitioners.

**Comments Facility:** One way in which blogs have been seen as an effective tool in promoting teacher reflexivity relates to the facility to leave comments. An examination of the blog transcripts revealed that Elsa, Jenny and Wendy were the only participants who acknowledged and responded to comments received by their colleagues and course lecturer based on the posts they had previously published. Students looked forward to feedback as the lack of it would have inevitably affected interaction and collaboration in the blogosphere as well as motivation to keep on blogging. Students felt that feedback received was extremely encouraging as the comments forced them to take an introspective look at their previous practice and to find ways to improve as Tessa notes:  

*...Comments help me find ways of improving our teaching strategies and caused us to reflect on what we did and how we can make it better.*

Students indicated that questions posed to them forced them to think more critically about their prior teaching methodologies and the content of the various posts they had previously published. Although student teachers were not provided with a second opportunity to teach, their reflection on and in practice and feedback received yielded suggestions for improvement.

**Facility to Embed Videos:** Micro teaching was an opportunity for students to put into practice some of the newly learned methodologies as well as providing an event for engaging in reflection on practice. Students generally concurred that the facility to upload or embed videos (Figure 1) in their blogs was phenomenal as it facilitated repeated viewings of their lesson thus contributing to their ability to engage in deeper reflection.

![Figure 1. Denissa’s Micro Teaching Video Clip](image)

This was an illuminating experience for all participants since it was the very first time they were using their own teaching video clips as a tool to promote their reflexivity. While Elsa and Tessa expressed concerns about criticisms that may be levelled at them should others view
their video clips, the other five participants however, viewed the possible criticisms as windows for growth and repeated viewing would definitely help them engage in continuous self evaluation. For Laura, embedding the video was useful as it provided teachers who were absent during the lesson an opportunity to view it and provide feedback. The use of the video and the comments made by their colleagues and the course lecturer provided an opportunity for student teachers to verify the strengths and weaknesses identified in the lesson, resulting in increased pedagogic awareness and new learning. Moreover, the (re)viewing of each other’s teaching videos allowed students to look back at and think more deeply about their lessons enabling them to learn vicariously as they endeavour to find ways to make their teaching experience more engaging for their students. In sum, the micro teaching exercise created an excellent opportunity for student teachers to evaluate the effective application of new knowledge and discourses in their selected content area. As such, participants paid attention to the way they expressed themselves, wrote on the board, classroom management strategies and questioning techniques employed, the quality of feedback given to students, and the nature of interaction among students, all of which are important in understanding and developing new teaching discourses.

Discussion
The incorporation of new literacies in a content area methods course provided future teachers with multiple opportunities to learn with technology-based media in an effort to enhance their capabilities at implementing effective instruction in today’s multimedia classrooms. Consistent with previous research evidence (Birch, 2004; Yang, 2009) the students in this study felt that the discussion board and blogs provided them with a novel format for discussing and learning concepts related to the course as well as fostering their reflexivity. Moreover, these formats fostered student-student and student-teacher interaction which became extremely useful as students developed and broadened their own understandings, constructed their own knowledge of concepts and strategies, and developed insights from different viewpoints. Although a limited number of topics were posted on the board, one important finding of this study amplifies claims made by Peterson and Slotta (2009) and Teo and Webster (2008) regarding the effectiveness of the board in promoting depth and breadth of discussions. The discussion board was also found to be effective as it afforded greater participation by most students particularly since problems related to shyness, time, and power relationships (Peterson & Slotta, 2009) were significantly reduced. In light of this, there is evidence to suggest that the tutor’s input can influence the quality of students’ learning and interaction that occur in web-based learning environments. The findings of this study like Thibodeau (2008) suggest that the creation of opportunities that foster collaborative interactions in online communities was an effective way for secondary teachers to develop a thorough understanding of content area related concepts and issues and for developing their reflexivity.

The incorporation of new literacies demonstrated the development of a community of practice (Wenger & Langer, 1991; Wenger, Mc Dermott & Snyder, 2002). Through this online community of practice, students were able to share their knowledge, understandings and teaching experiences; learn from multiple perspectives; help each other identify their strengths and weaknesses; reflect on these experiences and form meanings that informed their theoretical and pedagogical practices related to content area literacy. Through their engagement in shared activities, not only did students develop a different perspective of their role as content area teachers but also developed a repertoire of strategies (Killion & Todnem, 1991) that they endeavoured to implement in their practice, some of which were evident in their microteaching
The development of such instructional strategies to inform and improve future practice constitutes a key component of communities of practice (Lave & Wenger, 1991). The narrow focus of the study to the application of reading and writing strategies across content areas, to some extent, might have short-changed participants particularly those who were interested in developing strategies that are more unique to their subject disciplines. They were not afforded opportunities in the discussion forum or through blogging to develop disciplinary ways of thinking such as reading and writing about a range of disciplinary texts. Such focus was beyond the scope of this study.

Despite this limitation, the personal experiences and knowledge about teaching and learning which students brought into the Methods course were useful in creating a ‘third space’ (Cook, 2005; Moje et al; 2004; Sheridan-Thomas, 2007) which enabled the integration of their funds of knowledge and discourses to develop new meanings, understandings and knowledge regarding effective content area instructional practices. The findings of this study add to existing literature on a ‘third space model’ which suggests that teachers who construct third spaces in their classrooms understand literacy as a complex social and cultural practice.

The use of blogs as a repository for students’ reflective accounts throughout the semester exposed them to the practices and experiences of their colleagues. It allowed participants to become more aware of their previous practices and the need to adopt research-based instructional strategies and new methodologies. Students became more aware of their roles as content area teachers and the need to enact student-centred strategies to develop strategic and independent learners. The constant (re)viewing of micro teaching videos provided several opportunities for student teachers to reflect on their practice and articulate their pedagogical beliefs. The findings confirm Marcos, Miguel and Harm’s (2009) assertion that teacher reflection is indeed a collaborative problem-solving process in which students analyse and evaluate their teaching practices. The new insights that students gained through their collaborative reflective activities further confirm the need to view reflection, like literacy, as a social practice (Pedro, 2005), thus, strengthening the socio-cultural theory of learning.

Implications and Recommendations
The findings of this study give an indication of the kinds of restructuring that are necessary in order for teacher education programmes to foster teacher reflexivity, equip future teachers with new literacies and adopt a disciplinary perspective to more effectively prepare secondary student teachers who will be more capable of meeting the literacy and learning needs of adolescents in their respective disciplines. First of all, teacher educators need to make a paradigm shift. Such a shift is essential if teacher educators are to incorporate in teacher education courses student teachers’ multiliteracies and the knowledge and teaching experiences they bring into teacher education classrooms. This suggests that at the college level, the Dean and heads of department need to demonstrate a commitment to learning and teaching that is mediated by web-based environments; understand that this innovation is worthwhile, and be prepared to provide support to staff who are either technophobic or reluctant to integrate these web-based tools into instruction. Secondly, the current ‘Reading and Writing Across the Curriculum’ course should be revised and redesigned to reflect a disciplinary approach to instruction for secondary teacher candidates. While this course is adequate for primary teacher candidates, there is a need to design one that will more adequately prepare secondary student teachers to better meet the advanced literacy demands of students in their respective disciplines. The course will expose
candidates to literacy practices that are unique to their subject disciplines and not limited to application of a set of generic reading and writing strategies across content areas.

References


Reframing Transformational Leadership for Education and Nation Building in the Caribbean

Phillip A. Smith*, André Harper & Dennis G. Francis

Teachers College, Columbia University, New York, USA and University College London, Institute of Education, London, UK

Educational leadership has hitherto played a subdued role within the domain of education improvement in the Caribbean. It now needs to assume a more explicit and interventionist role in that domain in order to transform educational delivery, produce better educated and skilled individuals, and place Caribbean citizens at the heart of international competitiveness. A delimitation of improvement to the teacher and local level has curtailed discourses on the critical importance of educational leadership in the arena of education and country-wide amelioration. This article examines the pivotal importance of educational leadership as an integral part of a broader transformational change programme, viz. educational improvement and economic development for nation building opportunities. The article draws on the work from three separate yet related studies, and seeks to reframe the notion of transformational leadership to encompass social justice, diversity, and spiritual values as part of leadership praxis, thus concretizing their applicability to educational leadership in the Caribbean. Traversing scholarship, research and professional practice from the USA, UK, and Caribbean, the article presents a new perspective of transformational educational leadership and innovative strategies to support leadership preparedness, applicable to the Caribbean founded on a moral imperative of social justice, spiritual values, and diversity.

Keywords: Transformational leadership, diversity, social justice, spiritual values, school improvement, Caribbean nation building

Then I heard the voice of the Lord saying, "Whom shall I send? And who will go for us?" And I said, "Here am I. Send me!" Isaiah 6:8

Introduction
The changing context of globalization, and an inter-connected world, has altered the very landscape and context within which educational institutions operate. Within the realms of schools, and other educational institutions, there is an increasing need for the improved delivery of education to ensure that nations have effective human capacity, educated and trained citizens to source new international economic opportunities. To achieve this objective the development of transformational leadership of all education institutions is critical – schools through to higher education and their personnel must be players in developing each individual into an effective and economic-contributing citizen. Notwithstanding the increasing complexity and unprecedented change in the range of skills, expertise, and required professional attributes of effective education leadership, many educational professionals are not being adequately prepared to lead transformation and change in diverse contexts (Merryfield, 2000).

*Corresponding Author. Email: pas2185@tc.columbia.edu

ISSN 1727-5512
©School of Education, The University of the West Indies Cave Hill Campus
http://www.cavehill.uwi.edu/fhe/hum/publications/EducationCERJ.htm
While there has been substantive research on the notion of enhancing leadership competencies for urban education leaders located in “global city” schools in North America and England in particular, there is a paucity of literature and attention pertaining to transformational educational leadership in the Caribbean. Specifically, there has been limited discourse on potential ways in which countries in the Caribbean region may utilize new paradigms of transformational educational leadership as part of broader education public policy debate and reform to secure an amelioration of education delivery, student performativity and 21st century knowledge and skills, leading to the creation of citizens who can compete effectively in the international economic market place. One of the contentions of this article is that within the context of enhancing transformational educational leadership competencies there is a need to revisit contemporary definitions and usage of the term “diversity” and social justice in leadership. There is also a need for a renewed concentration on student achievement, skills, and national objectives to provide the basis viz. economic growth. Further, we contend that in moving towards a stronger, more effective, and expert educational leadership profession, necessitates a nuanced rethinking of the paradigm of transformational leadership. We propose a model of transformational leadership that incorporates the utility of spiritual values as part of leadership praxis.

This article considers the potential ways that educational leadership links to national policy objectives of economic development. The authors explore how a synthesised model of transformational educational leadership, informed by diversity components, social justice, and application of spiritual values, may affect the leadership praxis in the Caribbean region.

The article draws on the results from three separate and related studies (Francis, 2015; Harper, 2015; Smith 2015). The first, a research study focuses on the effects of redefining the term diversity in educational institutions, and in particular how contemporary [re]definitions of diversity have veered away from the original meaning in an effort to become more “inclusive”, which provides a disservice to students, instructors, and administrators (Harper, 2015). The second study consists of an analysis of literature and theory and explores the central importance of educational leadership, its links to student achievement and adds the dimension of ‘success’ to express the need for a particular function of leadership in the Caribbean, which speaks to the notion of nation building (Francis, 2015). The third study explores the notion of a phenomenon of transformational educational leadership informed by critical spirituality and spiritual consciousness that improves understanding of how leadership is enacted, as well as the development of leadership competencies in Caribbean schools (Smith, 2014, 2015). This study offers a range of innovative strategies and approaches to support leadership preparedness and leadership development of educational and senior level leaders.

Against the backdrop of the areas aforementioned, this article delineates a synthesised model of transformational educational leadership, which is underscored by diversity, social justice, and spiritual values.

**Theoretical Framework**
The theoretical framework, applicable to the research inquiry, draws on connected and interrelated bodies of literature from across three domains – (i) diversity, (ii) educational leadership and social justice, and (iii) transformational leadership through spiritual values. The framework informs the conceptualisation of a theoretical model of transformational educational leadership and nation building in the Caribbean.
Diversity
Over the past two decades the term diversity has taken on several different definitions within the institutional context and become more inclusive. According to Morrison (1992) diversity is not only confusing and controversial it is viewed as an alternative to affirmative action, which has a negative connotation in many institutions because of its association with governmental enactment of quotas. In an effort for organisations to make diversity more appealing, the term is being viewed as nothing more than an appreciation of differences that improve institutional performances (Morrison, 1992). Thomas (2001) describes diversity as a limitless number of similarities and differences that contribute to individuals’ uniqueness.

Diversity can also be defined as “a process or a set of actions that typify how an organization and institution responds to diversity” (Maltbia & Power, 2009, p.41). Indeed, diversity can be defined in many ways and there does not appear to be a distinct definition of the term. There was a time when race stood at the forefront of diversity; however, the current context of its original meaning has veered in another direction. Sealey-Ruiz (2010) posits that race and racism are topics that have the unique power to join us together and tear us apart which is endemic and permanent in our society. Although, race may not be mentioned in academic or institutional contexts of diversity slogans, race is deeply embedded in our psyche and eventually spills over into the conversations we have with one another and how we treat each other. The spillage to which Sealey-Ruiz (2010) refers appears to be in line with racial stereotyping in institutions, and may be a contributing factor to the ways in which diversity is now defined. However, in the case of the Caribbean and leadership, there is a pressing need for diversity to hold on and reclaim its ‘original’ meaning of embracing difference. In so doing, there is recourse to the guiding principles of social justice, spiritual consciousness, and acknowledgment that each person is nurtured and supported to make a contribution to the betterment of community and society overall.

Educational leadership and social justice
Like the term leadership where there is no agreement on its meaning (Bass, 2008; Gamage & Pang 2003; Leithwood, Jantzi & Steinbeck, 1999; Spillane, 2006), though consensus of the important relationship between leaders and followers (Mendonca & Kanungo, 2007; Spillane, 2006), educational leadership (variously referred to as principal leadership and school leadership) is an equally nuanced term (Bush, Bell, & Middlewood, 2010; Hallinger, 2003; Newman, 2013; Shields, 2004). Those who comprise the cadre of educational leadership, viz. principals (head teachers), vice principals (deputy heads teachers) teachers, senior teachers (Miller, 2013a) not excluding assistant principals/assistant head teachers, have an extensive role portfolio and respond to a myriad of internal and external exigencies. Ultimately it is this group of leaders who are responsible for school effectiveness and student achievement (Shields, 2004; Miller, 2013b). Like the overarching concept of leadership, educational leadership has evolved over time with shifts of leadership enactments reflecting current social ‘trends’ (Bass, 2008; Coleman, 2005; Grint, 2011; Hallinger, 2003). In fact, social justice is one of the new areas which has recently penetrated educational leadership research. This is reflected in the prominent position it now holds within scholarly conferences (Shields, 2014). An overview of the term is presented in light of the discourse within this article.

The notion of social justice is open to number of interpretations (Dantley & Tillman, 2006; Fraser, 1997; Larson & Murthada, 2003; Ryan, 2006) and central to this concept is the exposure and confrontation of any form of marginalisation. Embedded within the notion of
social justice are respect, care and equity. The concept can be analysed from a number of diverse standpoints including race, gender, sexual orientation or disability (Dantley & Tillman, 2006; Shoho, Merchant & Lugg, 2005; Theoharis, 2007). Relatedly, diversity as delineated by Daft (2008) is viewed as the “difference among people in terms of dimensions such as age, ethnicity, gender, race or physical ability” (2008, p.333). Coleman & Glover (2010) opine diversity to mean “many and different” (2010, p.6). Therefore, the common thread attaching the notion of social justice to diversity is that abhorrence of marginalisation of any groups and the promotion and acknowledgement of all individuals where their absence is visible or recognised. What is often overlooked, however, are some of the benefits that leaders from ‘diverse groups’ bring to the leader terrain viz. increase in ‘employee engagement, motivation and performance . . . access to a wider talent pool’ (Jones, 2006, p.21) and a greater knowledge resource which ameliorates the quality of decisions taken (Coleman & Glover, 2010).

In considering a paradigm of social justice educational leadership, Larson and Murtadha (2003) remind us that the main components of social justice were borne out of a movement that sought to question the traditional view of leadership. Dantley and Tillman (2006) assert that leadership for social justice analyses the circumstances that propagate injustice within society. One of the foci of this leadership is an examination of the practices and leadership power enactments, which recreate inequity for some groups as well as pursuing interventionist action to demonstrate commitment to social justice. Bailey and Charles (2010) contend that it is imperative to explore how male and female role assignment is reproduced and that this must take place at a macro level. It is, therefore, pertinent for all leaders to use the principles underlying leadership for social justice for self-examination, reflection and ‘regulation’. Shields (2004) articulates the need for moral discourse, importance of breaking silence, and acknowledging difference in schools, to be incorporated in the approach adopted by leaders (educational and national policy makers) when re-evaluating their own leadership. Ergo, social injustice within educational leadership structures, viz. intra leadership praxis, must be addressed as it may compromise the quality of leadership enactments, stymie the effectiveness of economic development and change and ultimately transformational leadership in the Caribbean. The starting point for social justice must commence with leaders who expound the virtue of that justice which is underscored by the spiritual value of “practice what you preach”.

**Transformational leadership through spiritual values**

Northouse (2013) defines transformational leadership as a process that changes and transforms individuals. It is concerned with values, ethics, standards, and long-term goals. An assessment and understanding of follower’s motives, satisfying their needs, and treating them as full human beings are all essential prerequisites of the transformational leadership phenomena (Northouse, 2013). The change agenda marshaled by the transformational [educational] leader is one that not only challenges the status quo, but also extends to and is evidenced by a transformed change and improved conditions (Livingston, 2013). This is pertinent to educational leadership in the US, UK, and Caribbean, as the ultimate aim is to make a seismic change to the countries of the region, and the ability of schools and other education institutions to successfully prepare their student communities as global citizens. This cannot occur without leaders being willing to engage in fresh and innovate paradigms of educational leadership. Transformational leadership through spiritual values and practice is considered an appropriate approach. Fry (2003) defines spiritual leadership as: “the values, attitudes, and behaviours necessary to intrinsically motivate
one’s self and others so that they have a sense of spiritual survival through calling and membership” (p.694-695).

These aforementioned attributes of effective leadership are almost synonymous with the attributes of the transformational educational leadership phenomenon. Dantley (2010) also draws parallel associations between transformational leadership and spiritual leadership within the context of educational leadership. Further, in considering transformational educational leadership through spiritual values forms a race-conscious perspective, Dantley (2005) wrote: “the transformative [transformational] educational leader, grounded in African American spirituality and critical theory will examine carefully the dissonance between what presently happens in schools that perpetuates the status quo and what could happen in schools that would bring about marked change in these institutions” (p.14).

Smith (2014) further explores the nature of transformational leadership through spiritual values and practice as an attribute of effective leadership and particularly in defining race-conscious, culturally relevant paradigms of leadership, and adds to the body of scholarship in this domain of leadership (Dantley, 2003a, 2003b, 2005, 2010; Fry, 2003; Reave, 2005; Tisdell, 2003). In so doing, Smith (2014) provides a paradigm of leadership that is applicable to transformational leadership as described and understood by male African-Caribbean heritage secondary school leaders. Looking at the phenomena of transformational leadership through spiritual values and practice more broadly adds a fresh layer onto the landscape of educational leadership.

Methods
The conceptual contribution and inquiry within this article present a new perspective on the praxis of transformational educational leadership, diversity, social justice, and spiritual values, and how combined they are applicable to the Caribbean, as key elements in nation building. The empirical studies that informed each of the authors’ respective studies were conducted within a qualitative tradition, with the use of secondary quantitative statistical data, and policy briefs, as appropriate, for triangulation purposes.

The first study, titled The Effects of Redefining Diversity in Education (Harper, 2015) draws on previously conducted research (Harper, 2013). This study [study one] focused on the effects of redefining the term diversity in education. The study explored how diversity has veered away from its original meaning in an effort to become more “inclusive” for higher educational institutions, and the need for transformational leaders to address this as an emerging issue. In essence, the term diversity has been diluted and used as a revolutionary vehicle for further exclusion. The study examines various institutional terms attributed to redefining diversity. It then takes a deeper look into statistical data, which illustrates a continuing disparity amongst African American employment despite the existence of advanced degrees.

The second study, titled Inclusive Educational Leadership for Success (Francis, 2015) consists of an analysis of literature and makes a significant contribution to the paucity of literature and attention pertaining to educational leadership in the Caribbean and particularly in Jamaica. This study explores some of the critical factors, including social justice, which stymie educational leadership capacity and by consequence educational improvement, the key to the amelioration of a skilled and educated workforce which is able to produce economic growth and stimulate national building. The study proposes redefined educational leadership praxis. A conceptual methodological approach was adopted through a review of academic literature and national educational documents of the Caribbean countries.
The third study, entitled *Transformational educational leadership through spiritual values and practice* (Smith, 2015), draws on previous substantive research examining the nature of experiences and leadership approaches of men of African-Caribbean heritage in a headteacher (principal) or senior leadership position in English secondary schools, who had largely succeeded in their professional careers (Smith, 2012). For this study [study three], eight participants, male secondary school leaders of African-Caribbean heritage located in London schools were identified through the use of purposive, criterion sampling. The research which was conducted as a life history narrative study used in-depth phenomenological interviews and provides evidence that for the majority of participating male African-Caribbean heritage secondary school leaders, leadership is motivated by a sense of a spiritual-centred moral purpose and commitment to providing an equitable education to students, families, and communities (Smith, 2012, 2015).

**Findings**
The composite results emerging from the three individual studies (Francis, 2015; Harper, 2015; Smith, 2015) offer a range of innovative strategies and approaches to support leadership preparedness and leadership development in Caribbean schools through to higher education institutions.

**Diversity – education**
In addition to the “unspeakable” race factor, education is another component of the diversity evolution. Educational obtainment and work experience may have contributed to the slogan of what is considered “highly qualified.” This term appears to apply heavily on marginalized individuals. In Bacchus’s (2004) study he interviewed 200 participants and found that one of the top inhibitors of becoming a corporate executive in America was racial stereotyping (46% of the participants experienced), and the notion of white males looking to maintain the status quo, to which 68% of the participants agreed. Other factors included the lack of advanced education, homicide rates, and general health disparities (Bacchus, 2004; Jones, 1994). In terms of advanced education there appears to be a misguided stereotype. In Bacchus’s (2004) study the African American males held a greater number of advanced degrees than their Caucasian counterparts. This analysis was also evident in a random sample of white males in corporate America (Marquis, 2002). This is relevant to primary and secondary education because African American and Caribbean school leaders are advocates of social change and prepare students to be competitive individuals in the future work environment, particularly so for students of African descent, and those from low socioeconomic communities. It is evident that individuals from these marginalized communities face an uphill battle upon exiting the academy.

To illustrate, the *Journal of Blacks in Higher Education* (2011) revealed that 40% of all education doctorates in America are obtained by African Americans yet very few of them occupy upper administrative roles in higher educational institutions. In Harper (2013) the majority of the participants (community college chancellors) agreed that the lack of diversity at their institutions in top tier executive positions was due to personnel practices (based on preconceived negative stereotypes). There was a time in which a commitment and focus on the term diversity was used to combat racial and gender discrimination in education. However, the focus on particular terms appears to have shifted. In Maltbia and Power’s (2009) book, *A Leaders Guide to Leveraging Diversity: Strategic Learning Capabilities for Breakthrough Performance*, a table with award winning institutions and organisations acknowledged for their commitment to diversity displays
this shift. Bank of America (a corporate organisation) and Cornell University (an educational institution) are two notable organisations cited, one being an exemplar. Their respective ‘definitions’ of diversity, taken from Maltbia & Power (2009, p. 43) are as follows:

- **Bank of America** - Above all, we are about people. A philosophy of inclusion drives our organization every day and helps us win in a diverse, global marketplace.

- **Cornell University** - Open Doors, Open Hearts, and Open Minds. Cornell University’s enduring commitment to inclusion and opportunity, which is rooted in the shared democratic values envisioned by its founders. We honor this legacy of diversity and inclusion and welcome all individuals, including those from groups that have been historically marginalized and previously excluded from equal access to opportunity.

The above entry for Bank of America is a prime example of how diversity is being (re)defined in many organisational and institutional contexts, proffered as an “award winning” exemplar of organisational commitment to diversity. Cornell University is more indicative of tackling the issues of race and other marginalised variables. Conversely, Cornell’s is not the norm slogan in many institutions. In the majority of examples cited in Maltbia & Power (2009), race and gender rarely display at the forefront of the organisations or institutions commitment to diversity. The comparison between an educational institution and an organisations diversity slogan are important factors for preparing our students. Transformational leaders in a sense must transform with the times and introduce students to the realities that await them outside of “school gates”. Furthermore, in the Caribbean, it is important to reclaim the term diversity as instrumental to social justice, spiritually conscious, transformational leadership, and to actively seek to reverse the negative effects of exclusionary practices that unfairly limit the leadership opportunities available to female educationalists, relatively to their often less experienced male counterparts.

**Diversity and Transformation**

Diversity tends to begin or stop short with human resource hiring practices and is often based on consistent stereotyping. The discourse on diversity within educational establishments and institutions is often one that is centered on the nuances, liberal extension, and application of the term “diversity”. It is incumbent on transformational leaders, as organisational change and thought leaders, to counter attempts to dilute the term diversity, and rather persuade the organisations and institutions they lead to, what Sealey-Ruiz (2010) refers to as, unpack their cultural knapsack - an imaginary backpack individuals carry around with them that illustrates their uniqueness indicative of their cultures. One of these intractable problems amongst others resides within the praxis of educational leadership, the topic to which we now turn.

**Educational Leadership in the Caribbean**

Student achievement continues to be a key preoccupation of educational leaders and the scholarly contributions to the debate pertaining to the correlation between leadership and student achievement are extensive, varied and enduring (Gaziel, 2007; Leithwood, Anderson, Mascall & Strauss, 2010; Taylor, 2010; Van de Grift, 1990; Waters, Marzano & McNulty, 2004;). In the Caribbean, student outcomes have received increased trans-regional focus. However, underscoring this focus are common objectives which transcend the aforementioned countries
There is an emphasis on building a robust quality education system, skilled workforce, ‘innovative people’, a fair, caring, cohesive society, and human capital all of which are directed toward ensuring economic growth and hence marking national success (Beepat, 2013; MOE, 2009; MPHE, 2009; MOE, 2012; PIJ, 2009; World Bank, 2013). The solidification of (educational) leadership capacity is identified as vital not only to educational improvement enabling student achievement (Beepat, 2013; MOE, 2012), but also to the edification of an internationally skills-ready citizenry recognized as a crucial contributory factor to economic growth (World Bank, 2013).

Educational leadership, therefore, needs to have a much broader reach in the Caribbean context. It must move beyond the school gates and align with the national priorities in order to produce educational improvement, as well as a more skilled, educated, and knowledgeable workforce, who will be the catalyst for economic growth. Newman (2013) reminds us that policy dictates what will have an effect on the school leadership praxis. Miller (2013b) observes an obsession by legislators, academics and the general public with leadership. The role of educational leadership cannot be overlooked and any blockage, in terms of retrograde aspects of that leadership, must receive attention in the quest for nation-wide transformation. Educational leadership is emblematic of national success.

One of the features of the education system throughout the Caribbean region is that it is a female-dominated profession, namely from early years to the tertiary sector (Bailey, 2003; Miller, 2013a): in Jamaica, 89% of teaching workforce is female (PIJ, 2013). Despite the preponderance of females in the education system and their concomitant stronger educational outcomes, women are over represented in lower status roles and endure higher levels of unemployment (Bailey, 2003; Bailey & Charles, 2010). Within the domain of educational leadership women are well represented, but there is a disproportionate higher level of men in leadership positions (Bailey, 2003; Miller, 2013a). Consequently, a tranche of qualified female professionals are excluded from the decision-making process at leadership level and ‘talent loss’ is being experienced (Bailey, 2003; Livingston, 2013). Miller (2013b) points out that drawing on the expertise of individuals within a school can enhance leadership capacity and effectiveness and particularly this is applicable to female personnel.

Centralisation is another feature of the education system in the Caribbean and impinges on every stratum of educational delivery and education leadership. Evidence reveals a correlation between the quality of education and the level of independence that a school has to respond to the needs of those in the local milieu (World Bank, 2013), viz., centralisation stymies quality education. Further, centralisation results in principal and policy maker level decision-making (Beepat, 2013) and a lack of autonomy for schools (World Bank, 2013). Centralisation in the Caribbean currently permits the exclusion of well-qualified staff from contributing their expertise to influence the quality of education provided.

Gaps in accountability measures are nestled within this centralised education structure and in the case of Jamaica these gaps were identified by Caribbean Policy Research Institute, CaPRI (2009), as a reduced level of stakeholder involvement in educational delivery; lack of surveillance of student performance, teacher performance, standards and underutilisation of leadership hegemony. Resultantly, accountability systems were implemented in Jamaica in 2012 (MOE, 2012). However, in the inspection round of 2013, over 40% of the 205 schools inspected in Jamaica were judged to be unsatisfactory in terms of leadership and management with poor accountability being cited as an issue with respect to principals and school boards (NIE, 2013). Poor accountability is a barrier to creating educational institutions which take responsibility for
the standards of their establishments and the outcomes of the children that they serve. The net of accountability must be widened and centralisation deconstructed to capture critical leadership potential to transform education and produce well-skilled individuals. The exclusion of women from educational leadership roles and professional groups from participating in building that leadership capacity via centralisation and reduced accountability is both an equity and social justice issue. It permits the reproduction of inequity, and stymies creativity and a leadership praxis fully attuned to national priorities.

**Transformation leadership through spiritual values and practice**

Transformational leadership and effective collaboration are integral to successful educational [school] leadership (Leithwood, Harris & Hopkins, 2008). This is particularly true in the exercise of a paradigm of transformational educational leadership through the use of spiritual values and practices, as enacted by leaders of African descent, located in the US, UK, Caribbean, and across the diaspora (Smith, 2014). There is some evidence to suggest that for these leaders, leadership praxis is motivated by the sense of a need to support one’s community, be that geographically located or culturally and ethnically congruent, in order to make a difference (Smith, 2012, 2014). This communal aspect of leadership, and particularly within the notion of transformational leadership, is synonymous with the African proverb, and ideology that “it takes a village to raise a child” (as cited in Beckford & Leluke, 2013, p.162). Leadership that is bounded by a strong correlation between cultural and ethnic identity of senior educational leader and the student and wider communities that they serve is further evidenced as most supportive and effective. This signals the potential strength of a transformational change agenda in support of nation building within a global economy context that is directed by expert educational professionals through a reframed paradigm of transformational leadership that incorporates notions of diversity, social justice, and spiritual values.

**Faith and Spirituality**

The concept of spirituality is very distinct to and differs from religion in that “religion is an institutionalized space where spirituality may be nurtured and celebrated” (Dantley, 2010, p.214). This is an important distinction in understanding the notion of spirituality in leadership and as part of transformational educational leadership.

Faith as an attribute of spirituality - a belief in God or Supreme Being, was identified in study three (Smith, 2012, 2015) as a culturally prominent component and enabling influence in the pursuit of leadership ambitions and leadership praxis by the participating eight male educational leaders of African-Caribbean heritage in London Secondary schools. When asked to describe the key sources of support and encouragement throughout their professional journey most of the participating leaders spoke of the utilisation of faith-based attributes to support and facilitate their personal career pathways and leadership ambitions, with almost one-third of all respondents identifying faith and a belief in God as a key influencing factor.

- **I have a strong faith in God. Not that I would say I was a practising Christian but within myself it is something that I can draw on. (Participant 6)**

One school leader, participant 1, spoke specifically about the role that faith played in his approach to leadership and leadership praxis.

- **If you are going to take time out and think about a supreme being or something like that you need to take time out in your life to do that. Get into a program, going to church or something. (Participant 1)**
The research also provides evidence that participating male African-Caribbean heritage secondary school leaders are intentional in their approach to leadership and leadership praxis. For the majority, leadership is motivated by a sense of a spiritual-centered moral purpose and social justice mandate. These leaders demonstrate a commitment to narrowing the educational opportunity gap through providing an equitable education to students, families, and communities from ethnically and culturally diverse backgrounds (Smith, 2012, 2014, 2015).

**Significance of the Research**

The adage “it takes a village to raise a child” is particularly salient in exploring educational leadership dimensions appropriate for the countries in the Caribbean. Leadership is strongest and most effective through the efforts of many and not the few. This leadership is developed to create a fairer and more inclusive society that provides meaningful opportunities for every individual citizen to have the chance to contribute to the success of society and economic growth of the nation.

This article is significant because it contends that reframing transformational leadership to tackle systemic issues within the education system and leadership itself can deliver educational improvement necessary for economic growth and nation building in the Caribbean. Additionally, the research highlights important implications for the field of education in so far as it: contributes to the discourse surrounding transformational leadership effectiveness; challenges the “inclusive” re-definition of diversity; re-centers the criticality of social justice for all as a moral imperative; enhances the understanding of spiritual values, its applicability, and implementation in education; and offers strategies to deliver Caribbean nation building.

**Conclusion**

Educational leaders need to willingly respond to the call “Whom shall I send?” They are well positioned to become key architects in the formulation and enactment of a vision of transformational leadership for education and nation building in the Caribbean. By incorporating notions of diversity, social justice, and spiritual values within their own leadership praxis, these transformational educational leaders exhibit confidence in their ability, as well as that of their leadership teams, schools and countries to meet high expectations, and to utter a positive affirmative response, “Here am I. Send me!”

**References**


Beckford & Leluke (2013). *Towards a model of educational leadership for the Caribbean: Making the case for distributed leadership principles*, 184:202, University College of Cayman Islands.


Online Education and Academic Performance: The Case of Online Tertiary Students in the Caribbean

Ashford Kerr

University of the West Indies, Open Campus, Jamaica

Online education in the Caribbean provides increased access to education by leveraging the opportunities offered by the Internet. However, high failure rates among online tertiary institutions result in unacceptable levels of attrition, reduced graduate throughput, and increased cost of training for a nation's labour force. Against this backdrop, this study analysed the perceptions of students’ online learning experiences within the Caribbean in order to ascertain the major factors influencing their academic performance, with a view of instituting corrective measures to improve retention and academic performance. Data were gathered via an online survey, focus group discussion, and a learning style assessment. Analysis of the online survey administered to online tertiary students in the Caribbean indicated self-reported perceptions that work and family responsibilities, the pace of courses, quality of online course materials, and timeliness of tutors’ feedback to assignments were some of the major factors impeding learning and academic performance. Other results revealed students’ perceptions of tutors’ effective use of online learning tools and students’ perceived online learning tools that are best suited for improving their academic performance according to their respective learning styles and preferences.

Keywords: Online education, academic performance, online learning tools, learning styles

Introduction

Worldwide, many programmes have been implemented to increase learning through the Internet, however, high failure rates at tertiary institutions result in unacceptable levels of attrition, reduced graduate throughput, and increased cost of training for a nation's labour force (Mlambo, 2011). Studies have proven that attrition is significantly higher for online students than for students attending traditional classrooms (Doherty, 2006; Patterson & McFadden, 2009). Much of the attrition that reduces retention can be attributed to low academic performance in early pre-requisite undergraduate courses (Scott & Graal, 2007). This raises a cause for concern as to the factors influencing low academic performance in the online learning environment and the interventions required to improve retention and academic performance.

Research Questions

Against this backdrop, this study analysed the perceptions of students’ online learning experiences within the Caribbean in order to understand the higher than desired attrition rate and to identify interventions to improve retention and academic performance. By analysing the perceptions of students’ online learning experiences, this study sought to answer the following research questions:
1. What are the factors influencing the academic performance of online tertiary students in the Caribbean?

2. What online learning tools are perceived to be more effective in improving students’ academic performance according to their respective learning style and preference?

3. How do students perceive tutors’ effective use of online learning tools and its impact on their learning and academic performance?

**Significance of the Study**

An investigation of this nature contributes towards unravelling and addressing those major factors affecting the academic performance of online tertiary students in the Caribbean. Based on the factors identified, online tertiary institutions will be better able to tailor their programmes to the students' needs and preferences and utilise the lessons learnt to strengthen and improve the development and delivery of their course offerings. The knowledge gained from this study will be of great benefit to online facilitators, especially in the design of their teaching methodologies and delivery. Online facilitators will be better equipped with the knowledge of key online learning tools that will reap greater results in students' academic performance according to their respective learning style and preference. In addition, the body of knowledge garnered from students' perception of online facilitators’ use of online learning tools will assist in identifying the gaps in effective teaching and engagement and allow online facilitators to better understand the expectations of online students and the ways in which their online teaching delivery can be improved. These efforts will certainly fight the battle of unacceptable levels of attrition in the online learning environment and uncover corrective measures for improving retention, learning, engagement, and academic performance.

**Review of Literature**

**Impact of Learning & Instructional Style on Academic Performance**

Researchers have varied definitions of learning styles. Vorhaus (2010) defined learning style or preference as how an individual learns, perceives, interacts with, and responds to the learning environment. Whereas, Felder and Brent (2005) considered learning preferences or styles as about how the brain works most efficiently to process, comprehend, and learn new information. Varied definitions can point to major agreement that learning style is an individual’s preferred way to learn, a definition that was set early in 1984 by Kocinski. Learning preferences are about the ways that people want to interchange information, and it includes auditory (learning by hearing), visual (learning by seeing), and kinesthetic (learning by doing) (Felder & Brent, 2005; Fleming, 2010).

An understanding of the learning styles and preferences of online tertiary students is very critical in order to design effective instructional strategies that are necessary to improve academic performance. One method that helps in acquiring information about students’ learning styles is a questionnaire called VARK developed by Neil Fleming in 1998 (Murphy et al., 2004). VARK is an acronym for sensory modalities used to present information, V denotes Visual, A denotes Aural, R denotes Read/Write and K denotes Kinesthetic. According to VARK (2015a), visual learners prefer information to be presented on the whiteboard, flip charts, walls, graphics, pictures, and colours. In addition, aural learners prefer to sit back and listen to lessons or find it useful to record lectures for later playbacks and reference. Furthermore, read/write learners prefer to read the information on their own and take a lot of notes. These learners benefit from given access to additional relevant information through handouts and guided
readings. Finally, kinesthetic learners prefer to be actively involved in their learning and thus would benefit from active learning strategies in class. A study conducted by Leite, Svinicki, and Shi (2010) justified the reliability of the VARK questionnaire.

According to Harb and El-Shaarawi (2006), there is a good match between students’ learning preferences and instructor’s teaching style that has been demonstrated to have a positive effect on students’ academic performance. In support, Omrod (2008) reported that some students seem to learn better when information is presented through words (verbal learners), whereas others seem to learn better when it is presented in the form of pictures (visual learners). Furthermore, Felder (1993) established that alignment between students’ learning preferences and an instructor’s teaching style leads to better recall and understanding. As a result, given that learners have different learning styles or a combination of styles, online educators should design activities that address their modes of learning in order to provide significant experiences for each class participant (ION, 2006). In designing online courses, this can best be accomplished by utilising multiple instructional strategies. Teaching models exist which apply to traditional higher education learning environments, and when designing courses for the online environment, these strategies should be adapted to the new environment (ION, 2006).

**Impact of Online Learning Tools on Student Interaction and Academic Performance**

Today, there are several popular learning management systems (LMS) such as WebCT and Blackboard which are commonly used by educational institutions. A review comparing these two tools suggests that Blackboard’s flexible content management and group work support makes it more suitable for independent and collaborative learning (Noorminshah, Mazleena, & Oye, 2012). On the other hand, WebCT’s tighter structure and fully embedded support tools makes it more appropriate for guided, less independent learning. In general, these tools are tailored more to support class activities than independent research or self-study. Online learning tools may be categorised as synchronous or asynchronous learning tools. The most common types of synchronous online learning tools in a blackboard learning management system include blackboard collaborate, video teleconferencing, instant messaging systems, and text-based virtual learning environments. These synchronous online learning tools promote faster problem solving, scheduling and decision making, and provide increased opportunities for educational development (Noorminshah, Mazleena, & Oye, 2012).

The most common types of asynchronous online learning tools in a blackboard learning management system include discussion forums, online assignment forums, online quizzes forum, tutor-student exchange forums, and e-tutor presentation forums. The discussion forum facilitates learner-to-learner interaction on different subject matter. Furthermore, the online assignment and quizzes forums are designed by online facilitators to assess students’ performance and progress in the course. In addition, the tutor-student exchange forum facilitates learner-to-tutor interactions on different subject matter and to address any issues they may face from time to time. Finally, the e-tutor presentation forums facilitates tutors’ presentations in the form of PowerPoint presentations, case studies, or video tutorial presentations on different subject matter that complements the existing course materials or clarifies any challenging areas identified by students (Noorminshah, Mazleena, & Oye, 2012). Students view the discussion forum as a means of reflection and deem it important in contributing to their success in the learning process (Menchaca, 2006; Owston, Wideman, & Murphy, 2008). Furthermore, they refer to the use of discussion forums as an interactive facility of the online learning community.
where they can express their opinions, comment on their peers’ postings and provide critical feedback (Menchaca, 2006; Owston, Wideman, & Murphy, 2008). While evaluating the work of their peers, the students adhere to collaborative rather than competitive positions and, therefore, they build respect for others’ beliefs and develop a supportive learning community (Wang, Sierra, & Folger, 2003).

Online facilitators’ knowledge and mastery of the competence in effectively using online learning tools significantly influence the perception of their instructional strategies and delivery. This has a direct impact on student interaction, learning, and academic performance. Student performance has been shown to improve slightly when students are given the opportunity to participate synchronously through videoconferencing as compared with students who used only text-based learning materials (Skylar, 2009). Higher learning outcomes have also been shown to occur when students are provided with a combination of asynchronous and synchronous forms of communication (Moallem, Pastore, & Martin, 2011). Furthermore, studies have confirmed that synchronous videoconferencing provide immediate social interaction and co-construction of knowledge while asynchronous text communication allow for reflective thinking. Online video discussions develop group cohesion and affiliation, helping students to feel a part of the group, thereby increasing engagement and participation (Pinsk et al., 2014).

Methods

Research Design
A mixed-method research approach was used to ascertain the major factors influencing the academic performance of online tertiary students in the Caribbean. Quantitative data were collected in the form of an online survey and learning style assessment, while qualitative data were collected via an online focus group discussion.

Population
The population for this study included 82 online tertiary students enrolled in the BSc. Banking and Finance programme at one of the leading provider of online tertiary education in the Caribbean. All students enrolled at this institution undergo a three-week online training workshop prior to the start of their first semester on how to maneuver the different functions and capabilities within the online environment. Furthermore, each student is assigned to a course delivery assistant who assists with any technical challenges or concerns they may encounter during each semester.

This online tertiary institution has approximately 50 physical locations in 17 English-speaking Caribbean countries, offering multi-mode teaching and learning services through virtual and physical locations across the Caribbean region. In addition, the institution has developed a unique approach in the Caribbean region to enhancing the student experience in innovative continuing and professional education, undergraduate, postgraduate, and continuing education study programmes and courses by distance, blended, online and face-to-face modes.

Participants
A sample population of 56 students completed the online survey administered, representing 68.3% of the total student population enrolled in the BSc. Banking and Finance programme. This sample population included students from Anguilla (3.57%), Antigua & Barbuda (3.57%), Bahamas (3.57%), Barbados (1.78%), Belize (3.57%), Dominica (3.57%), Grenada (16.09%),
Jamaica (5.36%), Montserrat (3.57%), St. Kitts & Nevis (5.36%), St. Lucia (17.85%), St. Vincent & the Grenadines (12.5%), and Trinidad & Tobago (19.64%). Seventy-nine percent (79%) of respondents were females and 21% were males. In addition, the majority of the respondents (33%) that responded to the online survey were between the ages of 26-30.

Finally, a sample of ten students enrolled in the BSc. Banking and Finance programme participated in the online focus group discussion. This sample included students from Grenada (40%), Jamaica (20%), St. Lucia (20%), St. Vincent & the Grenadines (10%), and Trinidad & Tobago (10%).

Data Collection Procedure
Online survey & learning style assessment
The online survey was distributed via email to a total of 82 online tertiary students throughout the Caribbean, with a sample of 56 students completing the survey. The online survey instrument was in two parts. The first part consisted of 25 questions that examined the extent to which the factors identified, in the focus group discussions, influenced students’ academic performance. Furthermore, the online survey solicited data on students’ preferred online learning tools and those that are perceived to best improve their academic performance given their respective learning styles and preferences.

The online survey consisted of closed-ended questions, open-ended questions, and questions using various points on the Likert scale. The online survey instrument was selected to collect data due to the fact that it attracts little or no cost, it facilitates automation and real-time access, and it was conveniently accessible by respondents. Responses were able to be electronically stored automatically which allows for easier and effective analysis. In addition, respondents were able to answer questions on their own schedule and pace without fear of their identities being exposed.

The second part of the survey consisted of the VARK® questionnaire, which was used to measure students’ learning preferences (VARK, 2015b). A study conducted by Leite, Svinicki, and Shi (2010) justified the reliability of the VARK questionnaire. Respondents were required to complete the VARK questionnaire and post their results in the online survey instrument. This learning style assessment assisted in evaluating the notion of whether a synergy between students’ learning style and a specific or a combination of specific online learning tools will reap greater results in students’ academic performance.

Online focus group discussions
An invitation was sent via email to the total student population enrolled in the B.Sc. Banking and Finance programme to participate in an online focus group discussion via Blackboard Collaborate (a web conferencing tool). A sample of ten online tertiary students agreed to partake in the focus group discussions. The focus group was conducted to identify the major factors influencing their academic performance in the online environment. Furthermore, the issues relating to students’ preferred online learning tools and perceptions of tutor's effective use of online learning tools were discussed. Blackboard Collaborate was selected to collect data since it provides an enhanced meeting environment with two-way voice over the Internet and instant messaging, complemented with an excellent voice recording system. This web conferencing tool was conveniently accessible by all respondents vested with the capability to connect respondents over a large geographical area.
Data Analysis

This study analysed the online learning experiences of online tertiary students within the Caribbean that have been exposed to the Blackboard Learning Management System (LMS). The data tabulation method via percent distribution was used to organize the results for the different variables in the study. This method of data analysis will allow the reader to have a comprehensive picture of what the data look like, as well as the proportions of respondents who are represented within each variable (e.g. Figure 1). The data were presented in the form of tables, bar charts, and pie charts.

In addition, the data were disaggregated across different variables which allows for deeper analysis necessary for informed recommendations and conclusions (e.g. Figure 4). Furthermore, the online chi-square calculator software was used to conduct the Pearson’s chi-square statistical analysis in order to ascertain if there is a significant difference in students’ preferred online learning tool based on their respective learning styles. The statistical significance of this hypothesis was determined at its p-value being less than the significance level of 0.05 (e.g. Figure 5).

For the purpose of this study, the factors identified that had a cumulative sum of at least 50% were selected for further investigation. The cumulative sums in this study were calculated by summing the percentage of students who ranked an issue as having a medium or high impact on their academic performance (e.g. Figure 1). This reflected the majority of respondents who experienced the impact of a particular issue on their academic performance at a medium or high extent.

Finally, the online learning tools under investigation that are limited to this study include the discussion forum, online assignment forum, online quizzes forum, tutor-student exchange forum, e-tutor presentation forum, and blackboard collaborate. These online learning tools were selected given that these were the most popular online learning tools used within the Blackboard Learning Management System by the student sample in this study.

Results

In the online focus group discussion, students were asked to identify the major factors influencing their academic performance in the online learning environment. The major factors identified include work responsibilities, tuition and school expenses, family responsibilities, poor lecturer/tutor teaching strategies, poor course and library resources, lack of parent/family motivational support, poor learning environment, family feuds, physical/verbal abuse, health challenges, community violence, and peer pressure. In the online survey conducted, respondents were asked to rank these factors that had a low, medium or high negative impact on their academic performance. The findings are summarised in Figure 1.
Figure 1. Major Negative Factors Influencing the Academic Performance of Online Tertiary Students in the Caribbean

For the purpose of this study, the percentage of students (cumulative sum ≥ 50%) who ranked an issue as having a medium or high negative impact on their academic performance were selected for further investigation. Therefore, the issues with a cumulative sum of ≥50% include work responsibilities, tuition and school expenses, family responsibilities, poor lecturer/tutor teaching strategies, and poor course and library resources (Figure 1).

These issues were then categorised into general factors and pedagogical factors in order to present the findings in a more organised, concise and reader-friendly format. In terms of the pedagogical factors, students were asked in the online focus group discussion to identify the pedagogical issues that negatively impact their academic performance in the online learning environment. The major pedagogical factors identified include poor course and library resources, poor course structure and delivery, and tutors’ ineffective use of online learning tools. The online focus group discussion revealed that tutors’ ineffective use of online learning tools was the basis of poor lecturer/tutor teaching strategies and delivery. Therefore, these general factors and pedagogical factors formed the basis for further analysis in this study. The categorisation of these factors is summarised in Table 1.

Table 1

<table>
<thead>
<tr>
<th>General Causal Factors</th>
<th>Pedagogical Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Responsibilities</td>
<td>Poor Course and Library Resources</td>
</tr>
<tr>
<td>Tuition &amp; School Expenses</td>
<td>Poor Course Structure &amp; Delivery</td>
</tr>
<tr>
<td>Family Responsibilities</td>
<td>Ineffective use of Online Learning Tools</td>
</tr>
</tbody>
</table>
General Factors & Academic Performance
This section analysed the general factors that contribute to low academic performance in the online learning environment within the Caribbean. Furthermore, it summarised students’ perceived solutions for some of the general factors identified. Based on the online survey conducted, the major general factors negatively affecting students’ academic performance include work responsibilities, tuition and school expenses, and family responsibilities.

Work & family responsibilities
According to the online survey conducted, the majority of respondents (93.3%) were full-time employees. As a result, it is very important for students to balance the demands of their workplace, family, and school life. Based on the online survey conducted, respondents agreed that flexible deadlines for coursework assignments (42.9%), fewer course work assignments (23.2%), academic advisement (16.1%), and slower pace of courses (8.9%) will assist them in balancing the demands of their workplace, family, and school life. The remaining 8.9% of respondents indicated that the reduction of course content could assist in creating a balance for their respective duties. According to the online focus group discussion, respondents explained that there is too much course content to cover in a short time, as a result, most of the time is used in completing assignments rather than reading course materials.

Furthermore, discussions from the online focus group revealed the need for an increased presence of academic advisement in the online learning environment. These respondents argued that academic advisement will assist students to weigh their strengths, weaknesses, and be guided during their module selection process. Respondents strongly believe that academic advisors could assess students’ readiness for the online environment and utilise different evaluation techniques to ascertain if they are mentally eligible to study online. Furthermore, respondents shared their views in the online focus group stating that academic advisors could guide students as to the potential challenges in the online learning environment and the need to be self-motivated and be independent learners, thus, reducing the occurrence of students enrolling for too many courses beyond their ability to manage given their work and family responsibilities. The perceived solutions gathered from the online survey conducted and online focus group discussion are summarised in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Perceived Solutions for Balancing Work &amp; Family Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue</td>
</tr>
<tr>
<td>Work &amp; Family Responsibilities impeding Academic Performance</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Tuition & school expenses
High tuition and school expenses present a mental distraction to online tertiary students in the Caribbean, which negatively affects their academic performance. According to the online
survey conducted, only 41.2% of respondents were able to finance their education through salary and personal savings. Based on the online focus group discussion, some of their personal savings included borrowed funds from family and friends. The findings of the online survey revealed that the remaining 58.8% of respondents financed their education through the Government Assistance for Tuition Expenses (GATE) programme (11.8%), loans from financial institutions (29.4%), student loans (8.8%), scholarship and bursaries (5.9%) and stocks and bonds (2.9%).

**Pedagogical Factors & Academic Performance**

This section analysed the pedagogical factors that contribute to low academic performance in the online learning environment within the Caribbean. Furthermore, it summarised students’ perceived solutions for some of the pedagogical factors identified. Based on the online survey conducted, the major pedagogical factors negatively affecting students’ academic performance include poor course structure and delivery, poor course and library resources, and tutors’ ineffective use of online learning tools.

**Course structure and delivery**

The online survey conducted revealed that among the pedagogical factors under investigation, that pertains to course structure and delivery, the stipulated deadlines for assignments, the quality of course material, and the pace of courses were rated highly as being satisfactory to very poor (cumulative sum ≥ 50%) in contributing to students’ academic performance by majority of respondents (Figure 2). Although the timeliness of tutors’ guidance and feedback was not rated satisfactory to very poor by majority of respondents, a high percentage of respondents (46.6%) rated it as such (Figure 2). Respondents, in the focus group discussion, argued that not only do they expect timely feedback, but detailed comprehensive feedback that highlights their strengths, weaknesses, and how they may improve. The findings of students’ perception on the quality of these pedagogical factors are summarised in Figure 2:

![Figure 2. Students' Perception on the Quality of Pedagogical Factors in the Online Environment](image)

According to the online survey conducted, majority of respondents (40%) indicated that courses in the online environment are at a fast pace. Furthermore, 33% of respondents indicated that the pace of courses in the online environment is at a very fast pace (Figure 3).
FIGURE 3. Students’ Perception of the Pace of Courses in the Online Environment

**Course & Library Resources**

According to the focus group discussion, respondents argued that some of the course materials, though interesting, can be very bulky. As a result, more attention is placed on completing assignments rather than reading course materials because reading doesn't necessarily provide better assignment marks. In addition, respondents argued that some course materials are too general and vague and should be more reader-friendly. Furthermore, discussions from the online focus group revealed that the online library at times is difficult to use, especially when the need arises to solicit books and resource materials that are related to their course. As a result, respondents highly suggest that recommended textbooks for courses be available via the online library.

**Students’ Preferred Online Learning Tools**

The online survey conducted revealed that a majority of respondent (46.4%) preferred Blackboard Collaborate as their most desired online learning tool. Other respondents were in favour of the discussion forum (17.9%), e-tutor presentation forum (12.5%), online assignment forum (12.5%), tutor-student exchange forum (7.1%), and online quizzes forum (3.6%) (Figure 4).

**Figure 4. Students’ Preferred Online Learning Tool according to their Learning Style and Preference**

<table>
<thead>
<tr>
<th>Online Quizzes Forum</th>
<th>Tutor-Student Exchange Forum</th>
<th>Online Assignment Forum</th>
<th>E-tutor Presentation Forum</th>
<th>Discussion Forum</th>
<th>Blackboard Collaborate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.57%</td>
<td>7.14%</td>
<td>12.5%</td>
<td>12.5%</td>
<td>17.86%</td>
<td>46.43%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Read/Write Learners</th>
<th>Visual Learners</th>
<th>Aural Learners</th>
<th>Kinesthetic Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard Collaborate</td>
<td>12.50%</td>
<td>17.86%</td>
<td>16.07%</td>
<td>0.06%</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>14.29%</td>
<td>6.00%</td>
<td>6.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>E-tutor Presentation Forum</td>
<td>3.57%</td>
<td>3.57%</td>
<td>3.57%</td>
<td>3.57%</td>
</tr>
<tr>
<td>Online Assignment Forum</td>
<td>3.57%</td>
<td>3.57%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tutor-Student Exchange Forum</td>
<td>7.14%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Online Quizzes Forum</td>
<td>3.57%</td>
<td>3.57%</td>
<td>3.57%</td>
<td>3.57%</td>
</tr>
</tbody>
</table>
Students’ preferred online learning tools according to learning styles

The Pearson’s Chi-Square Statistical Test was used to ascertain if there was a significant difference in students' preferred online learning tool based on their respective learning styles. Based on the Pearson’s chi-square-analysis in Table 1, the chi-square (X²) of 37.499 and the degree of freedom (df) being 15 results in a p-value of 0.0011. Given that the p-value is less than the significance level of 0.05, the observed data is inconsistent with the assumption that the null hypothesis is true, thus being rejected (p < 0.05). Therefore, there seems to be a significant difference in students’ preferred online learning tool based on their respective learning styles.

Table 1

Statistical Significance (Chi-square Test)-Influence of Learning Styles on Preferred Online Learning Tools

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>Most Popular Preferred Online Learning Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read/Write Learners</td>
<td>Discussion forum</td>
</tr>
<tr>
<td>Visual Learners</td>
<td>Blackboard Collaborate</td>
</tr>
<tr>
<td>Aural Learners</td>
<td>Blackboard Collaborate</td>
</tr>
<tr>
<td>Kinesthetic Learners</td>
<td>Online Assignment Forum</td>
</tr>
</tbody>
</table>
Overall, the majority of respondents across learning styles that preferred Blackboard Collaborate were visual learners (17.9%), whilst the majority of respondents that preferred the Discussion Forum were read/write learners (14.3%). Furthermore, the majority of respondents across learning styles that preferred the tutor presentation forum were visual learners (5.4%), whilst the majority of respondents across learning styles that preferred the online assignment forum were kinesthetic learners (5.4%). Finally, the majority of respondents that preferred the tutor-student exchange forum and online quizzes forum were read/write learners (7.1%, 3.6%) respectively (Figure 4). Table 4 summarizes these findings.

Table 4

<table>
<thead>
<tr>
<th>Online Learning Tools</th>
<th>Type of Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard Collaborate</td>
<td>Visual</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>Read/Write</td>
</tr>
<tr>
<td>E-tutor Presentation Forum</td>
<td>Visual</td>
</tr>
<tr>
<td>Online Assignment Forum</td>
<td>Kinesthetic</td>
</tr>
<tr>
<td>Tutor-Student Exchange Forum</td>
<td>Read/Write</td>
</tr>
<tr>
<td>Online Quizzes Forum</td>
<td>Read/Write</td>
</tr>
</tbody>
</table>

**Students’ perceptions on tutors’ effective use of online learning tools**

According to the online survey conducted, the online learning tools that were perceived to be mostly ineffectively used were the tutor-student exchange forum, discussion forum, and Blackboard Collaborate. A high percentage of respondents rated tutors’ use of these online learning tools as being satisfactory to very poor (cumulative sum ≥ 40%). The findings were summarised in Figure 6.

![Figure 6. Students' Perception of Tutors effective use of Online Learning Tools](image)
According to the online focus group discussion, respondents argued that online facilitators could improve the use of the tutor-student exchange forum by providing weekly reminders and guidance necessary for the successful completion of a course. In addition, respondents argued that there is room for improvement in the timeliness of tutors’ feedback to students’ queries and concerns. In terms of the discussion forum, participants of the online focus group suggest that tutors provide a summary or review at the end of a discussion topic and make reference to students’ contribution that may be deemed vital to the overall learning process. Respondents strongly believe that this will stimulate a higher sense of motivation and interest for online tertiary students, as well as serve to clarify any uncertainty on any subject matter being discussed. Finally, respondents in the online focus group suggest that discussions on subject matter could periodically be held via live chat messaging, Skype or other social media, rather than solely in text-format in the discussion forum. Respondents strongly believe that these activities will boost students’ motivation, interest, and academic performance.

According to Figure 6, it is evident that there is room for improvement in the use of Blackboard Collaborate, especially given the fact that it is the most preferred online learning tool among online tertiary students in the Caribbean (Figure 4). The discussions from the online focus group revealed that tutors should host these sessions more frequently, especially for quantitative courses. In addition, respondents argued that these sessions should not be too long given that most students normally lose interest in a session that lasts for more than one hour. According to the online focus group discussion, respondents argued that synchronous presentations via Blackboard Collaborate should engage more visual attractions and allow more time for explanation and student discussion, rather than solely a lecture most of the times. Furthermore, respondents suggest that these sessions should involve more detailed explanations of course materials and their application to real-world scenarios.

As it relates to the technical components of Blackboard Collaborate, discussions in the online focus group revealed that some tutors demonstrate little or no knowledge in maneuvering key features in the system that could stimulate a higher level of learning, student engagement, and student interaction. Some of the features include application and desktop sharing, break-out rooms, and web tours (See Figure 7).
The application sharing feature allows tutors to share any application software (Microsoft Word, Excel etc.) with students in order to facilitate interactive learning. Respondents, in the online focus group, argued that tutors’ effective use of this feature will allow them to interactively demonstrate their understanding on a subject matter and be guided where they may fall short. Break-out rooms are used to facilitate small group activities or private meetings. The break-out room is equipped with audio, whiteboard, application sharing, video, polling etc. According to discussions from the online focus group, tutors’ effective use of break-out rooms will allow students to perform better when given task-based assignments. This allows for greater interactive learning among respective group members making way for a final product to be presented by the entire class. Finally, the web tour feature allows tutors to take participants to any website during the web conferencing session. Respondents, in the online focus group, explain that tutors’ effective use of the web tour feature leads to another level of creativity in their presentation that will boost students’ overall engagement and interactivity.

Discussion & Recommendations

Improvements to Course Development & Design

The online survey and online focus group discussion revealed the major general and pedagogical factors influencing the academic performance of online tertiary students in the Caribbean. Work and family responsibilities, as well as the mental stressors created by high tuition and school expenses were the major general factors impeding students’ academic performance. The increased presence of academic advisement was perceived as a viable means of assisting students to create a balance between their work, family, and school life. This balance may afford students more time to complete course work requirements and be more involved in the learning process that will significantly improve their academic performance.

In terms of the structure of courses, the online survey revealed that the pace of courses was significantly fast for most respondents and the quality of course materials was poorly structured and organised. Furthermore, the stipulated deadlines for coursework assignments were another contributing factor impeding students’ academic performance in the online learning environment. Continuous assessment of the pace of courses in any online environment is very essential in order to ensure that it does not impede the overall online learning process and experience that may negatively affect students’ academic performance. In addition to courses being adequately and timely paced, deadlines for assignments should be appropriately stipulated. Effective pace of courses and appropriate deadlines for assignments will afford students sufficient time to cover both course readings and research for assignments. According to the focus group discussion, respondents argued that given the fast pace of courses, time allows for researching to complete assignments and less to reading course materials. This creates a situation where they may perform very well in coursework assignments and poorly in mid-term or final examinations. Whilst some learners may be faster than others, reasonable consideration should be given to students’ respective situation that may allow them to attain their fullest potential.

Continuous review of course materials is encouraged in order to ensure that course materials stay up-to-date and are relevant to students’ specific area of interest. The philosophy of “quality over quantity” must be embraced so that students may obtain the best educational experience desired. According to the focus group discussion, respondents argued that some of the course materials, though interesting, can be very bulky. Others argued that the content is too general and vague. Quality course materials will create a reader-friendly learning atmosphere
that will stimulate a greater level of critical thinking necessary for students’ educational development and improved academic performance. Furthermore, students will be better equipped to contribute to online discussions and improve their performance in mid-term as well as final examinations. The focus will shift from only acquiring knowledge to the application of knowledge that is vital in developing a competent workforce.

Table 5

Summary of Improvements to Course Development & Design (corrective measures to improve academic performance and retention)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the presence of academic advisement</td>
<td>Such guidance will assist students in balancing the demands of work, family and school responsibilities. This balance may afford students more time to complete course work requirements and be more involved in the learning process that will significantly improve their academic performance.</td>
</tr>
<tr>
<td>Assess and monitor the pace of courses and stipulated deadlines for assignments</td>
<td>This will afford students adequate time to cover both course readings and research for assignments necessary for their educational development and improved academic performance.</td>
</tr>
<tr>
<td>Continuously review the quality of course materials</td>
<td>This will create a reader-friendly learning atmosphere that will stimulate a greater level of critical thinking, thus, shifting the focus from only acquiring knowledge to the application of knowledge that is vital in developing a competent workforce.</td>
</tr>
</tbody>
</table>

Improvements to Course Delivery

In terms of course delivery, the online survey revealed that tutors could be more timely in providing feedback to students’ assignments, general questions, and concerns. Respondents in the online focus group strongly believe that tutors’ feedback is very critical in the learning process and may influence students' academic performance. Respondents, in the focus group discussion, argued that not only do they expect timely feedback, but detailed comprehensive feedback that highlights their strengths, weaknesses, and how they may improve. According to Butler and Winne (1995), instructor feedback intends to improve student performance via informing students how well they are doing and via directing students' learning efforts. Best practices of instructor feedback in the online environment include the simplest cognitive feedback (e.g., examination/assignment with his/her answer marked wrong), diagnostic feedback (e.g., examination/assignment with instructor comments about why the answers are correct or incorrect), prescriptive feedback (instructor feedback suggesting how the correct responses can be constructed) via replies to student e-mails, graded work with comments, online grade books, and synchronous and asynchronous commentary (Butler & Winne, 1995).

Another aspect of course delivery is tutors’ effective use of online learning tools. Online learning tools are the main medium through which online facilitators demonstrate their
instructional strategies in delivering course content in the online learning environment. Therefore, online facilitators’ knowledge and mastery of the competence in effectively using online learning tools creates the perceived quality of their instructional strategies and may determine the level at which they foster student interaction and learning that are critical to improving students’ academic performance. The online survey revealed that Blackboard Collaborate (BbC) and the discussion forum were the most preferred online learning tools among respondents in contributing to their learning and academic performance. However, the majority of respondents perceived that these online learning tools are not being effectively used by tutors.

Respondents, in the online focus group, strongly believe that tutors’ effective use of the discussion forums will stimulate a higher sense of interest in the subject matter being discussed. In addition, respondents argued that tutors effective use of BbC sessions will boost students’ overall engagement and interactivity in the learning process. Overall, respondents view that BbC sessions should be more frequent, adequately timed in length, and foster more student interaction through discussion and analysis of real-world situations. Against this background, it is highly recommended that in addition to existing series of training sessions for tutors, continuous evaluation of tutors’ effective use of online learning tools should be conducted and monitored, thus, addressing any weaknesses identified during the process. This may take the form of a mid-term or end-of-term tutor evaluation by students, as well as an evaluation training workshop that assesses tutors’ knowledge on utilising the many features in the online learning environment. This will strengthen the confidence and competence of tutors in their course delivery and instructional strategies, thus, effectively contributing to improved levels of students’ retention and academic performance.

In order to further institute corrective measures that will improve retention and academic performance, the perceptions of students’ preferred online learning tools according to their respective learning style and preference were analysed. The existing literature reviewed concluded that there is a good match between students’ learning preferences and instructor’s teaching style that has been demonstrated to have a positive effect on students’ academic performance.

Against this backdrop, online facilitators will be better equipped in the development of their instructional strategies that will cater to students’ respective learning styles in the online environment. In addition, online facilitators will be in a better position to assist a student who may experience difficulty understanding a theoretical concept or a certain topic under review. Therefore, if a student faces a challenge understanding a key concept in a course, an online facilitator can instruct the student using the best-suited online learning tool according to his/her learning style. This match is highly significant in order to foster a greater level of understanding in the learning process.
Table 6

**Summary of Improvements to Course Delivery (corrective measures to improve academic performance and retention)**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster a culture of timely guidance and comprehensive feedback (cognitive, diagnostic, and prescriptive)</td>
<td>Instructor feedback intends to improve student performance and contribute to their overall educational development and experience.</td>
</tr>
<tr>
<td>Continuous evaluation of tutors’ effective use of online learning tools</td>
<td>This will strengthen the confidence and competence of tutors in their course delivery and instructional strategies, thus, effectively contributing to improved levels of students’ retention and academic performance.</td>
</tr>
<tr>
<td>Tailor instructional strategies to adopt the best suited online learning tools according to students’ learning style</td>
<td>Applying the best suited online learning tools according to students’ learning style and preferences will reap greater results in students’ academic performance.</td>
</tr>
</tbody>
</table>

**Conclusion**

The recommendations embedded in this study (refer to Tables 5 and 6) will assist in improving students’ learning, engagement, and interaction in the online environment, thus improving academic performance that will lead to improved levels of retention. Overall, students expect timely and comprehensive feedback, increased presence of academic advisement, concise and quality course materials, flexible deadlines for coursework assignments, and adequately-paced courses. Furthermore, online facilitators’ effective use of online learning tools was perceived to be very essential in fostering learning and improved academic performance. The existing literature explains the significant impact of learning style and instructional strategies on students’ academic performance. Whilst all online learning tools may positively contribute to improvements in academic performance, this study revealed that some online learning tools are more effective in reaping greater results in academic performance according to students’ respective learning styles and preferences.

**References**


Retrieved from http://www.vark-learn.com


Gender Bias in the Performance of Trinidad and Tobago Students on PISA 2009

Vivian Alexander* & Yukiko Maeda

Purdue University, Department of Educational Studies, Beering Hall of Liberal Arts & Education, West Lafayette, Indiana, USA

This study aimed to investigate the presence of gender bias in the Trinidad and Tobago sample of the Program for International Student Assessment (PISA) 2009 data (Organization for Economic Cooperation and Development [OECD], 2009a). We analysed the Mathematics, Science, and Reading Literacy items for gender differential item functioning (DIF). Our findings revealed three Mathematics items exhibiting DIF for Mathematics Literacy—two in favour of males and one in favour of females. We found no gender DIF in the Science, but we found one Reading Literacy item that showed DIF in favour of males. We also found that Trinidad and Tobago students did not respond to a substantial proportion of the Reading Literacy items. Further studies of gender differences in academic achievement in Trinidad and Tobago and the wider Caribbean should evaluate the extent to which assessment items show bias towards particular groups of students.

Keywords: Trinidad and Tobago, gender, Differential Item Functioning, PISA

Parents, students, teachers, governments and the general public need to know how well their education systems prepare students for real-life situations (Organization for Economic Cooperation and Development [OECD], 2010a). Educational assessments are one way through which stakeholders and experts measure the extent to which their education systems have met their curriculum goals (Wolff, 2004). Measuring students’ learning is necessary to establish targets, assess the trade-offs of alternative resource allocation strategies, and reward good results (Wolff, 2004). Additionally, developing educational assessments require commitment, adequate financing, technical knowledge, managerial know how and political leadership (Wolff, 2004).

Many countries use educational assessments to evaluate the extent to which their educational systems are preparing students to meet the challenges of the workplace (OECD, 2010a). At the national level, assessments help measure the performance of individual students for the purposes of certification, school completion, determining access to the next level of education, and/or evaluating school/teachers accountability (Wolff, 2004). At the international level, assessments help extend and enrich the national picture by providing a larger context within which to interpret national performance (OECD, 2010a). Past decades have seen an increase in the number of international assessments administered globally such as the International Adult Literacy Survey (IALS), the Trends in International Mathematics and Science Study (TIMSS), the Programme for International Student Assessment (PISA) and the Progress in International Reading Literacy Study (PIRLS) (Brown, Micklewright, Schnepf, & Waldmann, 2007). The data generated from these studies are widely used by governments,
international organizations, and researchers from various disciplines within and outside of education (Brown et al., 2007).

Unfortunately, the participation of Latin American and Caribbean (LAC) countries, particularly Caribbean countries in international tests of achievement has been both limited and poor. For example, in the Program for International Student Assessment (PISA) 2012 assessment of achievement of 15-year old students, the eight participating LAC countries all scored significantly below the average OECD score in Mathematics OECD, 2014). Similarly, in PISA 2006, the six participating LAC countries scored significantly below the average OECD score in Science (see OECD, 2007). Other international studies such as the Trends in International Mathematics and Science Study (TIMSS) corroborate the results found in PISA (Martin et al., 2012). Researchers attribute the limited participation of Caribbean countries in such assessments to factors such as funding, fear of poor performance, and limits to the institutional capacity needed to implement the test and analyze the data collected (Blome, 2013).

To date, Trinidad and Tobago has participated in three international standardized assessments of achievement: the International Association for the Evaluation of Educational Achievement (IEA) 1991 study of reading achievement of nine- and fourteen-year old students; the IEA’s Progress in International Reading Literacy Study (PIRLS) 2006 of fourteen-year old students, and the OECD’s Program for International Student Assessment (PISA) 2009 study. Unfortunately, the country’s performance on these assessments were below the international benchmarks. For example, in the IEA (1991) study of reading, Trinidad and Tobago nine-year old students had a mean score of 451 (79) points which was well below the international benchmark of 500 points (Elley, 1992). In the same study, fourteen-year old students fared better in reading achievement with a mean reading score of 479 (87) points but still scored below the international benchmark. In the PIRLS 2006, another IEA study, students from Trinidad and Tobago again showed overall poor reading performance (Mullis, Martin, Kennedy, & Foy, 2007). The trend of underperformance of Trinidad and Tobago’s students continued in PISA 2009 (OECD, 2010a) where they scored significantly below the international benchmarks for Reading, Mathematics, and Science respectively.

Gender Achievement Gap in Trinidad and Tobago

In addition to academic underperformance, there were some notable gender differences in Trinidad and Tobago students’ performance on these assessments. Trinidad and Tobago females had consistently higher reading achievement. For example, in the IEA 1991 study of reading achievement, females scored significantly higher than males at both ages nine and fourteen. Similarly, in the IEA’s PIRLS 2006 study, fourth grade females scored significantly higher in reading achievement (Mullis et al., 2007). The trend continued in the PISA 2009 study, females again scored significantly higher than males in reading (OECD, 2010a,). The observed gender differences in reading achievement are consistent with those found from industrialized nations. Females also outperformed males in Mathematics and Science (OECD, 2010a) but the score point difference was smaller when compared to Reading.

Gender differences in academic achievement at the national level are also readily apparent. Reports suggest that Trinidad and Tobago females outscore males academically at all levels of the school system. For example, at the primary school level De Lisle, Smith, & Jules (2005) reported females scoring consistently higher in the Secondary Entrance Assessment (SEA) and the national assessment. Similarly, George, Quamina-Aiyejina, Cain, and Mohammed (2009) reported significantly lower mean scores for males in each subtest of the SEA. They also
found greater variability in the score distributions for males on the areas assessed. At the secondary level, George et al. (2009) reported greater enrolment by females in all subject areas evaluated except Physics. They also reported higher achievement by females in all subject areas assessed except Mathematics. Together these studies show a trend of overall greater academic performance by females in Trinidad and Tobago.

Caribbean researchers have posited several explanations for the apparent greater academic achievement of females. Miller (1991) theorized that the marginalization of males, engendered by dramatic transformations within Caribbean society, was the cause of male underachievement (e.g., lower test scores). However, Barriteau (2003) argued against Miller’s marginalization theory stating that it did not address the multifaceted nature of Caribbean masculinity and that researchers must give attention to factors such as changes in the political economy of the Caribbean, changes in the gender identities of Caribbean women, gender justice, and social inequities. Alternatively, Parry (2000) argued that anti-school masculinities, gender-roles socialization in-and-out of school, the existence of coeducational and same sex schools, the lack of male role models, and differences in the development of males’ and females gender/sex identities all contribute to the observed differences in attainment (e.g., years schooling) and achievement (e.g., test scores) between males and females. Nonetheless, researchers acknowledge that not all boys identify with constructions of masculinity which place them at risk (Mills & Keddie, 2010) and that there are still issues concerning girls’ education that need urgent attention (Warrington & Kiragu, 2012).

Researchers have also alluded to the low quality of Caribbean schooling as another possible explanation for the observed gender achievement patterns in the Caribbean (Bailey, 2000; Kutnick, 2000). All of these possible explanations for the pervasive gender gap in achievement have a common socio-economic thread that ties them together. However, the apparent lack of educational achievement and attainment in males is hardly a simple topic of debate. For example, Gosine (2007) found in his study that in spite of greater female course enrolment and educational attainment, there is still persistent gender subject stereotyping and males are over-represented in the Science, Technology, Engineering, and Mathematics (STEM) disciplines while females over-represented in the Humanities and Languages.

**Fairness of Measuring Academic Performance**

Despite the varied reasons for explaining gendered patterns of academic achievement in Trinidad and Tobago, researchers have given little attention to the nature of the test that may engender differing patterns of achievement between males and females. When a test itself or the manner in which it is used results in different meanings for scores earned by members of different identifiable subgroups, that test is said to be biased (American Educational Research Association (AERA), the American Psychological Association (APA), & the National Council on Measurement in Education (NCME), 1999, p. 74). The results obtained from a biased test are not valid and should not be used in the educational decision-making process. Within the Trinidad and Tobago context, bias in evaluation instruments may possibly explain the persistent trend of higher female academic achievement. As mentioned earlier, researchers have theorized varied reasons for the observed gendered patterns of academic achievement and attainment. Moreover, for much of the theories posited the researchers utilized either qualitative or aggregate quantitative data with little attention given to item-level data analyses. Item level analyses will allow test developers to design and implement targeted interventions to improve students’ academic achievement.
Ensuring that an assessment is free of bias is necessary because stakeholders make important educational decisions concerning students’ educational careers that can affect their life outcomes based on educational assessment data. Therefore, it is important that the assessments used to measure students’ are unbiased. Given these points concerning the importance of measuring test fairness, there is need to evaluate the extent to which items on a test may biased towards a particular group of students.

**Purpose of Study**

Previous work by Brown and Kanyongo (2010) examined gender differential item functioning (DIF) in the Mathematics portion of the National Test which is administered annually to Standard 1 (primary school) students in Trinidad and Tobago. The authors found that 17% of the items on the Mathematics portion of the test showed gender-related DIF, but had negligible effect sizes. However, the authors failed to take into account the nestedness of data that may have serious implications on the estimates obtained. Nested (hierarchical) data structures are prevalent in many social and behavioral studies (Raudenbush & Bryk, 2002). The basic premise of nested data structures is that the social group or context, to which persons belong, influences persons in the group and the characteristics of the persons who comprise the group influence the group as a whole (Maas & Hox, 2005). Therefore, the analysis of nested data structures using conventional statistical procedures such as ANOVA and regression will result in biased estimates and can degrade DIF detection (French & Finch, 2010; Raudenbush & Bryk, 2002). Additionally, the Brown and Kanyongo (2010) study utilized primary school data as the focal point of the study. However, it is equally important to examine test bias at the secondary level as well since students’ performance at the secondary level also has important implications for their life outcomes. Finally, there seems to have been very few studies evaluating DIF while accounting for the nestedness of the data.

For the purposes of this study, we focus only on the statistical hypothesis test results since previous studies show that analyzing multilevel (nested data) using standard statistical techniques has the greatest influence on the standard errors of the estimates (Raudenbush & Bryk, 2002). We would like to make it clear to readers that our focus on the hypothesis tests does not imply that we consider effect sizes as an unimportant tool in DIF detection. Indeed, effect sizes provide valuable information concerning the magnitude of the differences between groups. However, given the detrimental impact of ignoring multilevel data on standard errors (used in hypothesis testing), this should be the first aspect of DIF detection to be investigated with respect to multilevel data (French & Finch, 2010). Additionally, there is little, if any, agreement upon criteria or guidelines for interpreting a DIF effect size and its meaningful magnitude making it difficult to interpret any results obtained. This problem is particularly acute because prior research on DIF effect sizes using logistic regression have not examined the impact of correctly modelled multilevel structure or improper models that ignore such structure (French & Finch, 2010). Moreover, in DIF analyses, the statistical test for DIF occurs before or at least in combination with effect sizes. Therefore, for these reasons we focus only on detecting DIF rather than the effect sizes.
Research Questions
Given the points highlighted above this study investigates the following research questions:

1. To what extent do the items on PISA 2009 show differing patterns of achievement for males and females?
2. To what extent do the items on PISA show differential item functioning (DIF)?

Methods
Data and participants
For the current investigation, we derive the item response data on the Reading, Mathematics, and Science literacy items from the OECD’s PISA 2009 study (www.pisa.oecd.org). PISA assesses the extent to which fifteen-year old students have acquired the knowledge and skills essential for their full participation in modern societies, and focuses on Reading, Mathematics, and Science literacy (OECD, 2010a). PISA does not seek to assess if students can reproduce knowledge, but rather how well they can extrapolate from what they have learned and apply it in unfamiliar settings, both in and outside of school (OECD, 2010a).

PISA describes Mathematics literacy as an individual’s capacity to understand the role mathematics in the world, to make well-founded judgments, and to use mathematics to meet the needs of the individual’s life as a constructive, concerned, and reflective citizen (OECD, 2010b, p.14). PISA’s 2009 assessment used 32 dichotomous and three graded response items to measure Mathematics literacy. Science literacy describes an individual’s use of scientific knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence-based conclusions about science-related issues (OECD, 2010b, p.14). PISA used 53 dichotomous items with no graded response items to measure science literacy. Reading literacy is an individual’s capacity to understand, use, reflect on, and engage with written texts, in order to achieve one’s goals, to develop one’s knowledge and potential, and to participate in society (OECD, 2010b, p.14). PISA used 131 reading items: 31 items had completely missing data on all items i.e., none of the students responded to the items; these items were not used in the analyses, 8 items were graded response with three categories (0, 1, 2), and the 92 remaining items were dichotomously coded. For the current investigation, we only focused on dichotomous items to explore the trend. The Trinidad and Tobago sample of students who participated in 2009 data collection consists of 4,778 students (age $M = 15.68$, $SD = 0.29$) from 158 schools. Of the 4,778 students, 2,495 (52.0%) were female and 2,283 (48.0%) were male. Data obtained these 4,778 cases were used for the current investigation.

Analysis
Two methodological decisions guided our data analysis for this study. First, PISA utilised a two-stage cluster sampling design to gather data for the Trinidad and Tobago sample. In the first stage of sampling, schools were selected from a school sampling frame using probability proportional to size (PPS) sampling in which larger schools had a greater probability of being selected. In the second stage of sampling, a random sample of eligible fifteen-year old students were selected from each of the schools chosen in the first stage of sampling. Thus, the sampling design used by the OECD for the study naturally gave rise to a nested data structure and thus a multilevel approach was required to account for the nestedness of the data.

The second major methodological decision guiding our analysis was the use of the IRT framework instead of the classical test theory (CTT) framework for evaluating test bias.
Response theory is a general statistical theory about students’ performance on an item and a test and how their performance relates to the abilities that are measured by the items in the test. Researchers use IRT models to analyze items and scales, create and administer psychological measures, and measure individuals on a psychological construct (Reise et al., 2005). In the IRT framework, a latent trait (usually ability) is a construct underlying and directly influencing a person’s responses to items on a scale designed to measure that trait (Reise, et al., 2005). Overall, the basic goal of IRT modelling is to evaluate item quality and to derive other important psychometric properties of the test or scale (Reise, et al., 2005).

We chose the IRT method over the classical method for several reasons. First, PISA generates student scores using IRT methods. Therefore, we saw it prudent to work within the IRT framework as a matter of consistency. Second, IRT models are considered strong models because the statistical assumptions of the model (unidimensionality and invariance) are more difficult to meet as compared to CTT models. Third, IRT links students’ item responses to their ability, and places the item and the ability parameter on the same scale, which is not the case in CTT. Fourth, the item and person parameters generated in IRT are sample independent and this gives IRT more flexibility in the use of the person and item statistics for practical test development and makes analyses less complicated.

Differential item functioning (DIF) occurs when, accounting for the proficiency measured by the test, the probability of a correct response for one group of interest is not equivalent to the probability of a correct response for a comparison group (DeMars, 2011). Differential item functioning in a test may occur for a number of reasons. The wording of the items on the test may be confusing to some respondents and may introduce a level of difficulty not associated with the item, or the presentation of the test content may prevent respondents from demonstrating their true knowledge of a topic and may introduce a source difficulty (Brown & Kanyongo, 2010). The items may be in a language that is not native to the respondents or the test may be measuring more than one ability.

IRT provides a theoretically useful tool for detecting DIF by estimating item parameters and ability. IRT assumes unidimensionality i.e., that the test measures only one latent trait (ability). Therefore, no other trait should influence the item response, and if DIF is present the item may be measuring more than one trait (i.e. the test is multidimensional). IRT modelling assumes local independence, which means that a person’s responses for any pair of items are independent conditioned on ability. This assumption allows one to study DIF item-by-item. Third, IRT modelling assumes that the item parameters do not vary across sample, i.e., sample characteristics do not have an influence on the item parameters. Therefore, for our study we combined multilevel modelling with IRT in order to account for the nestedness of the data while examining the items for potential DIF.

We analyzed the data using a 2-parameter multilevel IRT model using the flexMIRT statistical software (Cai, 2013). The 2-parameter IRT model assesses the item discrimination and the item difficulty. Within the IRT framework, the discrimination parameter denoted by $a$ represents the extent to which the items distinguishes between students of high and low ability levels (Hambelton & Jones, 1993). Positive values indicate higher discrimination while negative values indicate lower discrimination. Discrimination values greater than 1 are good, and values above 1.75 are excellent. The difficulty parameter denoted by $b$ represents the ability level at which students will have a 50% chance of obtaining the correct response (Hambelton & Jones, 1993). A positive value indicates that a student needs to be at a higher ability level in order to have a 50% chance of getting the item correct the i.e., the item is difficult. A negative value
indicates that students need to be of a lower ability level to have a 50% chance of getting the item correct i.e., the item is easy (Hambelton & Jones, 1993). A $b$-parameter less than -2 is for the bottom 5% of the students (very easy) in the sample, while a $b$-parameter greater than 2 is for the 5% of students in the sample (very hard).

**Results**

Table 1 provides the results of the variance component analysis. The results of the analysis show that schools account for more than 50% of the variation is students’ responses to the literacy items in all three content areas. This means that school context is important for explaining the variations in students’ responses on the test.

Table 1

| Variance Components for the IRT Analyses for Mathematics, Science, and Reading |
|-------------------------------|-------------------------------|
| **Fixed Effect**               | **Between School Mean (SE)**  | **Within School Mean (SE)** |
| Mathematics                    | -0.59 (0.03)                  | 0.02 (0.01)                  |
| Science                        | -0.34 (0.03)                  | -0.01 (0.01)                 |
| Reading                        | -0.11 (0.03)                  | 0.00 (0.01)                  |
| **Random Effect**              | **Between School Variance (SE)** | **ICC**                    |
| Mathematics                    | 1.51 (0.06)                   | 0.60                        |
| Science                        | 1.24 (0.05)                   | 0.55                        |
| Reading                        | 1.26 (0.05)                   | 0.56                        |

Note. Within school variance fixed to 1 for model identification purposes

Table 2 shows the results of the IRT analysis for Mathematics literacy items. The table shows that 74% of the between school items and 63% of the within school items had good or excellent discrimination values. Similarly, the vast majority of items (95%) had good or excellent discrimination for both males and females. The majority of items were difficult for students between schools (21% easy, 79% difficult) and within schools (16% easy, 84% difficult), with 21% and 11% of the items being very difficult for students between and within schools respectively. Additionally, the same proportion of items was easy and difficult for females and males (11% easy, 89% difficult), with 58% and 47% of the items proving to be very difficult for males and females respectively ($b> 2$). We found that Item 5, Wald’s $\chi^2$ (2) = 7.70, $p = .021$ and Item 11, Wald’s $\chi^2$ (2) = 8.20, $p = .016$ had DIF in favor of males. This means that for males and females matched on the ability trait, males had a greater probability of getting items 5 and 11 right. On the contrary, Item 17 Wald’s $\chi^2$ (2) = 15.10, $p < .001$ had DIF in favor of females.
Table 2

<table>
<thead>
<tr>
<th>Item</th>
<th>Between School</th>
<th>Within School</th>
<th>Between School</th>
<th>Within School</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>1.47</td>
<td>1.14</td>
<td>-0.64</td>
<td>-0.50</td>
<td>1.90</td>
<td>2.06</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.80</td>
</tr>
<tr>
<td>Item 2</td>
<td>1.51</td>
<td>1.36</td>
<td>-1.88</td>
<td>1.70</td>
<td>2.54</td>
<td>3.29</td>
<td>1.39</td>
<td>1.24</td>
<td>3.60</td>
</tr>
<tr>
<td>Item 3</td>
<td>1.80</td>
<td>2.14</td>
<td>2.10</td>
<td>2.50</td>
<td>3.67</td>
<td>4.48</td>
<td>1.65</td>
<td>1.49</td>
<td>3.40</td>
</tr>
<tr>
<td>Item 4</td>
<td>1.60</td>
<td>1.20</td>
<td>0.74</td>
<td>0.56</td>
<td>2.62</td>
<td>2.21</td>
<td>0.74</td>
<td>0.71</td>
<td>2.30</td>
</tr>
<tr>
<td>Item 5</td>
<td>1.55</td>
<td>1.28</td>
<td>1.46</td>
<td>1.21</td>
<td>2.28</td>
<td>3.03</td>
<td>1.21</td>
<td>1.00</td>
<td>7.70(^m)</td>
</tr>
<tr>
<td>Item 6</td>
<td>1.27</td>
<td>0.80</td>
<td>-0.39</td>
<td>-0.24</td>
<td>1.59</td>
<td>1.62</td>
<td>0.11</td>
<td>0.18</td>
<td>0.80</td>
</tr>
<tr>
<td>Item 7</td>
<td>2.20</td>
<td>2.11</td>
<td>2.87</td>
<td>2.75</td>
<td>3.57</td>
<td>5.08</td>
<td>1.91</td>
<td>1.84</td>
<td>2.20</td>
</tr>
<tr>
<td>Item 8</td>
<td>0.67</td>
<td>0.68</td>
<td>-0.51</td>
<td>-0.52</td>
<td>1.09</td>
<td>0.92</td>
<td>-0.02</td>
<td>-0.11</td>
<td>2.20</td>
</tr>
<tr>
<td>Item 9</td>
<td>1.17</td>
<td>1.40</td>
<td>0.09</td>
<td>0.11</td>
<td>1.59</td>
<td>1.91</td>
<td>0.36</td>
<td>0.39</td>
<td>3.00</td>
</tr>
<tr>
<td>Item 10</td>
<td>1.67</td>
<td>1.16</td>
<td>1.35</td>
<td>0.94</td>
<td>2.35</td>
<td>2.83</td>
<td>1.00</td>
<td>0.96</td>
<td>1.90</td>
</tr>
<tr>
<td>Item 11</td>
<td>0.95</td>
<td>0.90</td>
<td>0.62</td>
<td>0.59</td>
<td>1.25</td>
<td>1.79</td>
<td>0.73</td>
<td>0.64</td>
<td>8.20(^m)</td>
</tr>
<tr>
<td>Item 12</td>
<td>1.78</td>
<td>1.37</td>
<td>1.69</td>
<td>1.30</td>
<td>2.92</td>
<td>2.91</td>
<td>1.14</td>
<td>1.20</td>
<td>0.80</td>
</tr>
<tr>
<td>Item 13</td>
<td>0.98</td>
<td>0.89</td>
<td>1.29</td>
<td>1.17</td>
<td>1.57</td>
<td>1.45</td>
<td>0.99</td>
<td>1.16</td>
<td>2.20</td>
</tr>
<tr>
<td>Item 14</td>
<td>0.78</td>
<td>0.68</td>
<td>0.25</td>
<td>0.22</td>
<td>1.34</td>
<td>1.07</td>
<td>0.37</td>
<td>0.53</td>
<td>4.40</td>
</tr>
<tr>
<td>Item 15</td>
<td>1.10</td>
<td>0.95</td>
<td>1.88</td>
<td>1.63</td>
<td>2.08</td>
<td>1.62</td>
<td>1.29</td>
<td>1.39</td>
<td>3.00</td>
</tr>
<tr>
<td>Item 16</td>
<td>0.70</td>
<td>0.66</td>
<td>0.56</td>
<td>0.53</td>
<td>0.94</td>
<td>1.14</td>
<td>0.63</td>
<td>0.67</td>
<td>2.60</td>
</tr>
<tr>
<td>Item 17</td>
<td>1.57</td>
<td>1.02</td>
<td>3.01</td>
<td>1.96</td>
<td>3.54</td>
<td>1.74</td>
<td>1.53</td>
<td>1.83</td>
<td>15.10(^f)</td>
</tr>
<tr>
<td>Item 18</td>
<td>1.10</td>
<td>1.72</td>
<td>0.45</td>
<td>0.70</td>
<td>2.14</td>
<td>1.86</td>
<td>0.67</td>
<td>0.63</td>
<td>2.00</td>
</tr>
<tr>
<td>Item 19</td>
<td>2.28</td>
<td>1.26</td>
<td>2.77</td>
<td>1.53</td>
<td>3.07</td>
<td>3.26</td>
<td>1.48</td>
<td>1.40</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Note. $\chi^2$ with superscript \(m\) indicates DIF for males, $\chi^2$ with superscript \(f\) indicates DIF for females.

Table 3 shows the results of the IRT analysis for the Science literacy items. The table shows that 65% of the between-school items and 50% of the within-school items had good or excellent discrimination values. The majority of items had good or excellent discrimination for females (96%) and males (88%). The majority of items were difficult for students between schools (31% easy, 69% difficult) and within schools (35% easy, 65% difficult), with 8% of items between schools and 12% of the items within schools being very difficult for students. There was one very easy item for students within schools. Additionally, the items were mostly difficult for both females (27% easy, 73% difficult) and males (23% easy, 77% difficult) and none of the items were very easy or difficult for students. We found no gender DIF in the science literacy items.
Table 3

The 2-parameter IRT Model for Science Literacy Items

| Item | Discrimination (a) Between School | Discrimination (a) Within School | Difficulty (b) Between School | Difficulty (b) Within School | Female | Male | Female | Male | DIF
|------|---------------------------------|---------------------------------|------------------------------|------------------------------|-------|------|-------|------|------
| Item 1 | 1.16 | 1.02 | 1.09 | 1.24 | 1.79 | 1.52 | 0.88 | 1.05 | 1.90
| Item 2 | 1.11 | 0.95 | 2.00 | -2.34 | 1.15 | 1.53 | 1.75 | 1.55 | 1.90
| Item 3 | 1.47 | 1.21 | 0.59 | 0.72 | 2.07 | 1.98 | 0.57 | 0.64 | 0.30
| Item 4 | 1.20 | 1.08 | 0.25 | 0.28 | 1.49 | 1.92 | 0.47 | 0.31 | 4.20
| Item 5 | 0.68 | 0.72 | -0.15 | -0.14 | 1.09 | 0.99 | 0.08 | 0.06 | 0.30
| Item 6 | 0.83 | 0.78 | 1.33 | 1.41 | 1.17 | 1.21 | 1.05 | 1.15 | 0.80
| Item 7 | 0.65 | 0.80 | 1.68 | 1.36 | 1.14 | 0.94 | 1.06 | 1.37 | 1.70
| Item 8 | 1.36 | 1.19 | -1.30 | 1.49 | 1.98 | 1.87 | 1.22 | 1.05 | 3.50
| Item 9 | 0.83 | 0.90 | -0.86 | -0.79 | 1.26 | 1.29 | -0.29 | -0.43 | 1.20
| Item 10 | 0.83 | 0.81 | 0.54 | 0.56 | 1.11 | 1.31 | 0.64 | 0.52 | 1.30
| Item 11 | 1.11 | 0.90 | 0.59 | 0.72 | 1.52 | 1.58 | 0.66 | 0.59 | 0.30
| Item 12 | 1.23 | 1.22 | -0.25 | -0.25 | 1.93 | 1.88 | -0.03 | 0.07 | 0.80
| Item 13 | 1.55 | 1.48 | 1.05 | 1.09 | 2.72 | 1.98 | 0.87 | 0.93 | 2.50
| Item 14 | 1.15 | 1.37 | -0.50 | -0.42 | 1.76 | 1.95 | -0.17 | -0.07 | 0.60
| Item 15 | 1.37 | 0.87 | 1.36 | 2.14 | 0.97 | 0.93 | 0.61 | 0.86 | 2.50
| Item 16 | 1.67 | 1.76 | -0.84 | -0.80 | 2.73 | 2.43 | -0.35 | -0.37 | 0.50
| Item 17 | 0.87 | 0.94 | 1.59 | 1.47 | 1.35 | 1.31 | 1.33 | 1.14 | 2.40
| Item 18 | 1.86 | 1.57 | 0.47 | 0.56 | 2.39 | 2.78 | 0.53 | 0.55 | 0.60
| Item 19 | 1.45 | 1.18 | 0.85 | 1.04 | 2.16 | 1.80 | 0.74 | 0.86 | 1.50
| Item 20 | 1.58 | 1.10 | -1.20 | -1.73 | 2.03 | 2.13 | -0.78 | -0.68 | 0.70
| Item 21 | 1.33 | 0.90 | 1.71 | 2.53 | 1.56 | 1.66 | 1.68 | 1.53 | 0.80
| Item 22 | 0.98 | 0.89 | 0.72 | 0.80 | 1.28 | 1.53 | 0.73 | 0.70 | 1.10
| Item 23 | 1.01 | 1.27 | -1.71 | -1.36 | 1.94 | 1.36 | -0.81 | -0.94 | 4.60
| Item 24 | 0.64 | 0.69 | -1.25 | -1.16 | 1.07 | 0.88 | -0.59 | -0.70 | 1.10
| Item 25 | 0.95 | 1.25 | 0.83 | 0.63 | 1.62 | 1.51 | 0.69 | 0.66 | 0.50
| Item 26 | 1.05 | 0.76 | 2.11 | 2.92 | 1.40 | 1.30 | 1.80 | 1.85 | 0.10

Note. \( \chi^2 \) with superscript \( m \) indicates DIF for males, \( \chi^2 \) with superscript \( f \) indicates DIF for females.

Table 4 shows the results of the IRT analysis for the Reading literacy items. The table shows that 78% of the between-school items and 61% of the within-school items had good or excellent discrimination values. For females, all of the items had either good or excellent discrimination values, while for males only one item had a discrimination value less than 1.

Unlike Mathematics and Science, the Reading literacy items were mostly easy for students between schools (61% easy, 39% difficult) and within schools (61% easy, 39% difficult), with approximately 10% of the items being very easy and 7% of the items were very hard. Additionally, the items were mostly easy for both females (78% easy, 22% difficult) and males (76% easy, 24% difficult), with none of the reading items being very easy or difficult. We found gender DIF for Item 39 in favor of males Wald’s \( \chi^2 (2) = 9.70, p = .008 \). This means that even when matched on ability, males were more likely to get the item right.
Table 4

The 2-parameter IRT Model for Reading Literacy Items

<table>
<thead>
<tr>
<th>Item</th>
<th>Discrimination (a)</th>
<th>Difficulty (b)</th>
<th>Discrimination (a)</th>
<th>Difficulty (b)</th>
<th>DIF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between School</td>
<td>Within School</td>
<td>Between School</td>
<td>Within School</td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>1.19</td>
<td>1.21</td>
<td>-1.18</td>
<td>-1.17</td>
<td>2.17</td>
</tr>
<tr>
<td>Item 2</td>
<td>1.30</td>
<td>1.08</td>
<td>0.89</td>
<td>1.07</td>
<td>1.71</td>
</tr>
<tr>
<td>Item 3</td>
<td>1.33</td>
<td>1.29</td>
<td>0.41</td>
<td>0.42</td>
<td>2.27</td>
</tr>
<tr>
<td>Item 4</td>
<td>1.60</td>
<td>1.44</td>
<td>0.02</td>
<td>0.02</td>
<td>2.29</td>
</tr>
<tr>
<td>Item 5</td>
<td>1.07</td>
<td>1.01</td>
<td>-1.94</td>
<td>-2.06</td>
<td>1.49</td>
</tr>
<tr>
<td>Item 6</td>
<td>1.35</td>
<td>1.46</td>
<td>-1.66</td>
<td>-1.53</td>
<td>1.78</td>
</tr>
<tr>
<td>Item 7</td>
<td>1.33</td>
<td>1.53</td>
<td>-1.77</td>
<td>-1.54</td>
<td>1.48</td>
</tr>
<tr>
<td>Item 8</td>
<td>1.62</td>
<td>1.54</td>
<td>-1.90</td>
<td>-1.99</td>
<td>1.66</td>
</tr>
<tr>
<td>Item 9</td>
<td>1.00</td>
<td>1.03</td>
<td>-0.81</td>
<td>-0.79</td>
<td>1.26</td>
</tr>
<tr>
<td>Item 10</td>
<td>0.81</td>
<td>0.87</td>
<td>1.73</td>
<td>1.61</td>
<td>1.84</td>
</tr>
<tr>
<td>Item 11</td>
<td>1.08</td>
<td>1.10</td>
<td>-0.61</td>
<td>-0.60</td>
<td>1.87</td>
</tr>
<tr>
<td>Item 12</td>
<td>1.42</td>
<td>1.18</td>
<td>1.42</td>
<td>1.71</td>
<td>2.19</td>
</tr>
<tr>
<td>Item 13</td>
<td>0.97</td>
<td>0.79</td>
<td>1.02</td>
<td>1.25</td>
<td>2.26</td>
</tr>
<tr>
<td>Item 14</td>
<td>0.89</td>
<td>0.82</td>
<td>-0.84</td>
<td>-0.91</td>
<td>2.17</td>
</tr>
<tr>
<td>Item 15</td>
<td>0.88</td>
<td>0.95</td>
<td>-0.99</td>
<td>-0.92</td>
<td>1.49</td>
</tr>
<tr>
<td>Item 16</td>
<td>1.19</td>
<td>0.96</td>
<td>-0.22</td>
<td>-0.27</td>
<td>1.25</td>
</tr>
<tr>
<td>Item 17</td>
<td>1.11</td>
<td>0.87</td>
<td>-0.68</td>
<td>-0.86</td>
<td>2.05</td>
</tr>
<tr>
<td>Item 18</td>
<td>1.45</td>
<td>1.09</td>
<td>0.70</td>
<td>0.93</td>
<td>1.37</td>
</tr>
<tr>
<td>Item 19</td>
<td>1.21</td>
<td>1.55</td>
<td>-1.84</td>
<td>-1.44</td>
<td>1.35</td>
</tr>
<tr>
<td>Item 20</td>
<td>0.78</td>
<td>0.74</td>
<td>-1.76</td>
<td>-1.85</td>
<td>1.02</td>
</tr>
<tr>
<td>Item 21</td>
<td>1.03</td>
<td>0.89</td>
<td>2.43</td>
<td>2.81</td>
<td>1.76</td>
</tr>
<tr>
<td>Item 22</td>
<td>1.04</td>
<td>1.38</td>
<td>-2.74</td>
<td>-2.07</td>
<td>1.76</td>
</tr>
<tr>
<td>Item 23</td>
<td>0.85</td>
<td>1.22</td>
<td>-3.06</td>
<td>-2.13</td>
<td>1.63</td>
</tr>
<tr>
<td>Item 24</td>
<td>1.03</td>
<td>1.16</td>
<td>-0.97</td>
<td>-0.86</td>
<td>2.80</td>
</tr>
<tr>
<td>Item 25</td>
<td>1.14</td>
<td>1.07</td>
<td>-2.14</td>
<td>-2.28</td>
<td>1.83</td>
</tr>
<tr>
<td>Item 26</td>
<td>0.78</td>
<td>0.76</td>
<td>-0.94</td>
<td>-0.96</td>
<td>1.83</td>
</tr>
<tr>
<td>Item 27</td>
<td>1.17</td>
<td>0.93</td>
<td>-1.00</td>
<td>-1.26</td>
<td>1.92</td>
</tr>
<tr>
<td>Item 28</td>
<td>1.03</td>
<td>0.98</td>
<td>-0.07</td>
<td>-0.07</td>
<td>1.91</td>
</tr>
<tr>
<td>Item 29</td>
<td>1.63</td>
<td>1.16</td>
<td>-0.15</td>
<td>-0.21</td>
<td>2.23</td>
</tr>
<tr>
<td>Item 30</td>
<td>1.14</td>
<td>1.11</td>
<td>-0.38</td>
<td>-0.39</td>
<td>1.50</td>
</tr>
<tr>
<td>Item 31</td>
<td>0.81</td>
<td>0.72</td>
<td>0.00</td>
<td>0.00</td>
<td>1.33</td>
</tr>
<tr>
<td>Item 32</td>
<td>1.55</td>
<td>1.24</td>
<td>-0.94</td>
<td>-1.18</td>
<td>1.36</td>
</tr>
<tr>
<td>Item 33</td>
<td>1.15</td>
<td>1.11</td>
<td>-2.28</td>
<td>-2.36</td>
<td>1.84</td>
</tr>
<tr>
<td>Item 34</td>
<td>1.33</td>
<td>1.02</td>
<td>1.22</td>
<td>1.59</td>
<td>1.75</td>
</tr>
<tr>
<td>Item 35</td>
<td>1.33</td>
<td>0.97</td>
<td>0.25</td>
<td>0.34</td>
<td>1.40</td>
</tr>
<tr>
<td>Item 36</td>
<td>1.45</td>
<td>1.03</td>
<td>-0.19</td>
<td>-0.26</td>
<td>2.78</td>
</tr>
<tr>
<td>Item 37</td>
<td>1.37</td>
<td>0.98</td>
<td>0.72</td>
<td>1.01</td>
<td>1.16</td>
</tr>
<tr>
<td>Item 38</td>
<td>1.13</td>
<td>0.81</td>
<td>2.34</td>
<td>3.26</td>
<td>1.54</td>
</tr>
<tr>
<td>Item 39</td>
<td>1.06</td>
<td>0.82</td>
<td>2.78</td>
<td>3.60</td>
<td>2.22</td>
</tr>
<tr>
<td>Item 40</td>
<td>0.74</td>
<td>0.66</td>
<td>0.15</td>
<td>0.17</td>
<td>1.57</td>
</tr>
<tr>
<td>Item 41</td>
<td>1.39</td>
<td>1.00</td>
<td>1.35</td>
<td>1.88</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Note. $\chi^2$ with superscript $m$ indicates DIF for males, $\chi^2$ with superscript $f$ indicates DIF for females
Overall, we found significant variation in students’ responses to the items across schools. We also found the mathematics and science items to be mostly difficult for Trinidad and Tobago students. In contrast, the PISA reading literacy items were relatively easy for Trinidad and Tobago students. We found DIF in three of the mathematics items (two in favor of males and one in favor of females), and DIF in one reading literacy item in favor of males.

Discussion
In this study, we sought investigate to what extent do the items on the PISA 2009 assessment show gender differential item functioning (DIF). The results of our study indicate that the PISA items generally functioned similarly for male and female students except for Mathematics literacy and Reading literacy. We found DIF on one item in favor of males in Reading, which was surprising given the dominance of females on Reading. We found DIF in three of the Mathematics items: one in favor of females and two in favor of males. This means that the items on the scales are not free of bias and may affect the scaling of scores used to derive the plausible values for the analyses. This also means that researchers should use caution when making generalizations about students’ performance based on tests/assessments not evaluated for DIF (or item bias). Additionally, the results from our study provide some evidence that when investigating gender differences in achievement and/or attainment researchers need to account for the nature of the test along with the other factors posited by researchers.

Also, it is very important for researchers undertaking large-scale quantitative studies using education data to control for the nestedness of the data, in order to prevent the mis-estimation of parameter estimates. This is vitally important because interpreting information or scores using biased estimates can have serious consequences since policy makers, teachers, administrators and parents use such information when making key educational decisions. Corollary to this, the government and educational administrators must invest in training for teachers concerning test construction. This is particularly important in the classroom setting where teachers may unintentionally develop biased tests that can result, for example, in student retention in the same grade level for an additional year, or placed in remedial classes unnecessarily. Now, while we were able to demonstrate DIF, we were unable to identify the specific domains to which the items exhibiting DIF belonged to due to data restrictions implemented by PISA. As a result, we were unable to go into detail about the nature of the items that exhibited DIF. Without such restrictions, we would have been able to identify precisely to which domains the items that exhibited DIF belonged. This information would have been helpful to researchers, policy makers, and school administrators in identifying academic areas of weaknesses and strengths of students for developing targeted interventions.

Another point of interest is the large proportion of Reading items that Trinidad and Tobago students neglected to answer. Again, due to the restrictions on access to the data we were unable to determine the nature of the items that the students neglected to answer. Another major point to note is that in PISA, the Reading, Mathematics, and Science literacy items were designed to be unidimensional (OECD, 2010b). One question that arises is: are the items actually part of a multi-dimensional construct? An implication of this unidimensionality assumption is that if a second dimension expressed by a small number of items is present, subsequent analyses will likely remove these items resulting in the loss of potentially important information (Blum, Goldstein, & Guérin-Pace, 2001; Goldstein, 2004).

Overall, this study shows the importance of evaluating the extent to which items on assessments function similarly or differently for students in different subgroups. Evaluating bias
in test instruments is a necessary step in ensuring test-fairness. This is especially important in the Trinidad and Tobago context where high-stakes testing is the norm. The need for such evaluations holds for not only international assessments but national assessment as well. Such evaluations will help stakeholders develop assessments that are free of bias.

References


Education for Social Transformation in Nigeria

Akinjide Aboluwodi

Adekunle Ajasin University, Akungba-Akoko

Suspicious and distrust among the various ethnic groups in Nigeria have led to bickering among the various group leaders resulting in their failure to achieve cohesion. The British colonial administration actually laid the foundation for the emerging political crises that followed, since its policy had been designed to favour the North, whose leaders had been programmed to take over from the colonial officials. The crises had led to the first military coup, a situation that re-enforced this mutual suspicion which invariably gave birth to a serious crack within the ranks of the political class. It is imperative to build mutual trust among the different ethnic groups in the country which entails engaging in serious educational reform with a focus on education whose purpose is pluralistic, inclusive and transformative. Adopting the option of social transformation, therefore, is a step towards building trust and social participation among the various ethnic groups in Nigeria.

Keywords: social transformation, social justice, British colonial administration, social capital resources, inclusive education

Introduction

Many factors account for Nigeria’s dysfunctional state; perhaps the most critical ones are institutional problems, structural decay, and suspicion and distrust among its diverse ethnic groups. Signs of dysfunctional institutions in Nigeria began to emerge shortly after the exit of the British officials. It started with serious cracks among the ranks of the political class leading to rivalries and bickering. Individuals and groups soon appealed to ethnic and religious sentiments, a situation that culminated eventually to ethnic bigotry, religious bifurcation (loyalty either to Christianity or Islam) and regional affiliation, which today have become the major obstacles to Nigeria’s cohesive experiment (Lewis, 2006). It is in light of this problem that I intend to argue that Nigeria’s cohesive and sustainable efforts rest on an effective use of education as a resource for social transformation. For the education system to perform this role there may be need to address the issue of access, funding and quality considered to be fundamental to achieving effective results. Above all, efforts may be required to integrate the marginalised and the vulnerable members of the society, through employment policies, for effective social transformation. Deployment of social capital resource is equally desirable in this quest for national integration.

Education in Nigeria

Education started with the Christian missionaries in Nigeria. Their arrival in Nigeria was informed by the need to resettle the freed slaves from America and Britain, and to evangelise them as the situation then required. However, they soon encountered the problem of communication with the natives, a factor which possible engendered the setting up of schools

Email: akinaboluwodi@gmail.com

ISSN 1727-5512
©School of Education, The University of the West Indies Cave Hill Campus
http://www.cavehill.uwi.edu/fhe/hum/publications/EducationCERJ.htm
where interpreters could be trained. There was also the need to train catechists and lay readers who were to assist the evangelists in their activities. The three missions that championed this course, Church Missionary Society (CMS), Wesleyan and Catholic soon engaged in competition especially when the government decided to assist them with grants. Their efforts were, however, limited to an elementary stage with little impact on the communities where they were. Mart’s (2011) argument (citing Omolewa, 2006), is that Christian missionaries “were eager to use literacy training to introduce Christianity and win converts to their religion” (p. 193).

The colonial administration’s decision to establish schools in Nigeria was not borne out of the interest it had for the people, rather it needed some artisans to assist in running the imperial state (Fafunwa, 1995). The same view has equally been expressed by Ajayi (2008), “the missions in the South were interested in education as an instrument of evangelism, while the colonial administration saw the schools as agencies for producing various categories of minor functionaries (such as clerks, junior technicians in public works, sanitary inspectors etc.)” (p.3). It, therefore, means that the colonial administration’s interest, in this regard, was informed by exigencies.

The post-colonial education experience in Nigeria does not differ markedly from that of the previous colonial years. While the colonial education was said to be too theoretical, the post-colonial education’s emphasis on literary development seems to place it on the same level with the former. Akinlua (2011) argues that “the school building, the teacher and the time-tables that operated the grammar schools of fifty years ago are still the same set of instruments that are offered to operate the new system” (p. 96). It will interest Akinlua to learn that emphasis is still being placed on paper certification rather than the development of skills and competencies. Unfortunately, these certificates may sometimes offer little assistance to those who hold them since skills required to perform in the world of work are sometimes located outside the certificates held. It means the system will have to focus on the development of skills and competencies.

Apart from what may be regarded as structural defects in Nigeria’s education system, there is also the problem of inequality in access and attainments across the regions. While it is argued that the emphasis on certificates as a measure of educational attainment looks defective in this age of knowledge economy, the problem of imbalance in educational opportunity in Nigeria seems to offer more challenges. The consequence of this imbalance is aptly expressed by Aminu: “Certain sections of this country will be highly disturbed about their future in a united Nigeria if they study the pattern of higher educational opportunities in the country. It is this kind of disturbance which promotes among the people some actions counteractions, mutual suspicion, nepotism and loss of confidence in the concept of unity” (p. 12).

Education may provide a recipe the country requires to change the prevalent prejudice among the different segments of Nigerian population. Much as education may provide this resource, it appears the system, as constituted at present, suffers from the problem of access, funding, and quality. What seems the relic of the British colonial educational policy in Nigeria, access to education, has been a major problem in Nigeria’s educational policy. This notion is reported by Mustapha (2006) who reasoned that “by 1958, only 9% of the children of primary school age were enrolled in the North; the comparative figure for the South was 80%” (p. 8). Though Nigeria has attempted to reverse this trend, not much has been achieved in this respect as the North is currently still far behind the South educationally. In a release entitled: Nigeria Education Fact Sheet the United State Embassy in Nigeria (2012) makes the following remark: “education indicators are poor nationwide, and the greatest need for assistance is in the
predominantly Muslim north” (p. 1). It goes further to contend that “non-school attendance is highest among states in the Northeast and Northwest zones. 72% of primary age children never attended school in Borno state. This compares with less than 3% in most southern zones” (p.1).

By 1958 the school enrolment in Northern Nigeria was 9%, and now in 2015 it is less than 30% of the primary school age children who attend school in the North. Apparently these differences in educational attainment among the two regions spilled into structural differences, paving the way for social and economic disparities. Demand for equal representation in the state’s public offices sometimes ignores this historical fact. Attempts to create this equal representation, in the past, have led to contraptions such as federal character policy and quota system. Its practice has created tension among the various ethnic groups in the state, since merit is no longer used for appointments into offices in the state.

The South was disappointed with the North as it had the opportunity to redress this imbalance in education, but would rather prefer to re-cycle its elite. For about thirty years, the North ruled the country. The result is the large number of almajiri (itinerant children under Qur’anic instructor) in the Muslim North. The Ministry of Education gives the figure, 9.5 million of almajiri children in Northern Nigeria (Nigeria Education Fact Sheet, 2012). Some attempts to reform the system have failed in the past.

Though Nigeria education system is faced with the issue of quality and inadequate funding, of particular interest is the role of the political elite in the making of the education system. The British administration left behind an education system whose logic is to perpetuate dominance (elitist in form), a system that was heartily embraced by the political elite. Its process is captured by Nyirenda (1996) when he says: “the educative process domesticates people where there exists a dominant culture of silence. In this culture people are taught to accept what is handed down to them by the ruling elite without questioning. Hence their understanding of social reality is limited to what they are taught and told to accept and believe” (p. 9).

The educative process does not provide the individuals with the power to think for themselves, hence the social reality known to them is that which is represented by the political elite. Whereas for Patil (2012) “the educational system of any society is related to its total social system. The goals and needs of (such) social system get reflected in the functions it lays down for educational system and the form in which it structures it to fulfill those functions” (p. 207). How adequate is Nigeria’s education system in meeting the needs of the social system especially in the area of social and political consciousness? Instructional delivery in the system only promotes rote learning, hence it offers no practical value in this age of knowledge economy.

The educative process is that the “knowledge and skills that are required if individuals and countries are to be competitive in the global world” (2007, p.5), get disconnected and the culture of teaching to pass examinations is promoted. Sulaiman (2012) traced this culture of examination in students’ assessments to the colonial education system. According to her, “[t]he colonial education in Nigeria focused strongly on examination. Most schools in the colonial days were ranked and assisted financially on the basis of their examination results.” (p.98). Oyebamiji and Omordu (2011) contended that “this stress on
examinations is still used in the contemporary period to judge results and to obtain qualification for jobs in government and private sector in Nigeria” (p. 101). The persistence of this pervasive education policy in Nigeria is a testimony to the presence of colonial relics in the society. Adding to this policy of “stress on examination” are the “traditions of authority and obedience” and the ethics of respect and humility which define the relationship between students and teachers in Nigerian schools.

The greatest problem that may be associated with Nigerian intellectuals, who are products of Nigerian educational system, is captured in Fowler’s study (as cited in Mekoa, 2005) “I do not wish to imply that no independent African thought exists. It does, and it is encouraging. However, there is too much tendency to depend on Western models in African intellectual, social and economic development” (p. 415). Mekoa is right to have held the view that the intellectual training of the African intellectuals during the colonial era did not create any radical change in their intellectual outlook. Their inability to domesticate their educational needs in their various education policies points to this fact. Apparently the intellectuals who had been educated to think, to behave, to live a way of life like the colonisers, and fashion social and political policies in their countries to model their masters’ try to justify Mekoa’s. Post-independent education policies in Nigeria were inspired by the British colonial education system, the same experience that informed the state’s social and political structure. The elite have made little efforts to change this structure, but the results have remained largely ineffective, and the consequence is that they are in direct confrontation with the masses.

The alienated group requires an adequate educational experience to be able to confront their problems. Steps towards this educational experience demand radical reforms in the state’s educational system which may include conscious removal of obstacles to access education by the vulnerable groups (marginalised and disadvantaged), adequate financial commitment, and quality control among others. Such radical reforms, according to the Commonwealth Consortium for Education (2008), will have to involve strong leadership and imaginative policies emphasizing greater equity and inclusiveness leading inevitably to the removal of obstacles to access for the poorest and most disadvantaged and the pursuit of skills acquisition. The pursuit of inclusive education is imperative in any efforts to arrest obstacles to education and to promote its access and equity in Nigeria. Education is an essential resource that defines individuals’ social relations and strengthens bond among citizens. Trust is embedded in such social relations.

Apart from an educational imbalance which was said to have been created deliberately by the colonial administration, the country had been polarised along ethnic and religious lines. According to Kifordu (2011) “ethnicity and religion have been practically synonymous with Nigeria” (p.21). Besides, the military (which was then under the control of the Northern elite) also went ahead to undermine the federal structure, abolish- the regional control over resources (Kifordu, 2011), centralise- power and promote- political dominance by a section of the country. Social transformation becomes a viable option in this respect and its viability is premised on the inclusion of marginalised groups, devolution of power, strict adherence to the principles of federalism, vigorous attack on the issue of inequalities among social classes and groups, issue of relevance in education and the involvement of social capital resources.

Pre- and post-colonial political structure of Nigeria
The major objective of the colonial administration was basically economic (Goucher, LeGuin, & Walton, 1998). In other to achieve this objective, the administration went ahead to register its presence in the country (Rafiu, Owolabi, & Folasayo, 2009). The structure of the country became
a challenge to the administration; hence it makes some efforts to bring together disparate ethnic
groups for administrative convenience. The result was the formation of Northern and Southern
protectorates and Lagos Colony. According to Mustapha, (2006) the arrangement was intended
“to save the British treasury from direct financial responsibility for the administration of
Northern Nigeria” (p.3). Eventually, the formation of Northern and Southern protectorates
culminated in what Rafiu, Owolabi and Folasayo (2009) called “...a ‘fraudulent’ social contract
and not of ‘negotiated will’ of the welded parts” (p.157), and for Oyeranmi, “the so-called
Nigerian nationhood was founded on absolute fraud” (2007, p.3).

So, Nigeria was created based on what Mustapha contended was “implicit concept of one
country, many peoples, and very little was done to create unifying institutions and processes for
these peoples” (p.11). Perhaps one of the reasons many people in Southern Nigeria still consider
the entity ‘Nigeria’ a fraudulent contraption as indicated above. Akinjide, (2013) did not see how
Nigeria was created with implicit concept of one country where country is defined in terms of
“people”. According to him, “...what the British amalgamated was administration of the North
and the South and not the people of the North and the South...” (p.34). The amalgamation was
initiated basically in the interest of the British administration because “the North is poor and they
have no resources to run the protectorate of the North. That they have no access to the sea; that
the South has resources and have educated people” (p.35). For economic reasons, British
administration joined together two disparate territories to become Nigeria.

The colonial administration was said to have used subtle methods including a divide and
rule system, perhaps that was the only option apposite to achieving its economic objective. The
decision to use the divide and rule system came on the heels of the amalgamation of the Northern
and Southern protectorates which brought together peoples of different cultural and religious
backgrounds. Eventually, Nigeria ended up with three regions, namely, North, West and East.
Each of the regions was dominated by Hausa and Fulani, Yoruba and Igbo. The power play
among the dominant groups over who controlled power and the state’s resources brought to the
fore the weak political structure left behind by the British colonial administration. Mustapha
aptly alluded to this structural defect when he contended that “the structural and psychological
divide woven into the very structure of the colonial state permeated the society and remains
engrained in (the country’s) political life.” (p.3)

In this regard, the post-colonial administration in Nigeria was characterised by
disenchantment filled with anger and resentment, especially among the political groups in the
South. When the British administration disengaged finally it left behind three major ethnic
groups whose political elite did not share the same value orientation. This view was captured by
Kifordu (2011) who had rightly submitted that “value homogeneity as a precondition for social
order seems to be far removed from reality in politics like Nigeria where groups have highly
different social structures, and varying historical and cultural backgrounds” (p.18).

**Education, social capital and social transformation in Nigeria**
The desire for cohesive relations among its diverse ethnic groups must have led to the endless
search for stable polity in Nigeria in recent years. But at this moment there seems to be the need
for social transformation which perhaps promises to be a viable option. The notion of social
transformation suggests that there is at least a problem that requires urgent attention, and in
Nigeria it is the problem of structural defect among others which has engendered suspicion and
mistrust among its different ethnic groups. Meanwhile, let us examine this notion of social
transformation within the Nigerian context, and while doing this we shall endeavour to see how it can further be strengthened through the medium of social capital.

There are different conceptions of social transformation. For Dahal (2007) “social transformation is a process of wide-ranging change in the thinking, nature, structure, institution, rules, technology and cultural patterns of society through human actions” (p. 1). It is about the elimination of class distinctions and the promotion of mass participation in politics. Brennan, King, and Lebeau (2004) contend that social transformation implies some fundamental changes in society’s core institutions, the polity and the economy, with major implications for relationships between social groups or classes.

Transformation in Nigeria should, therefore, be premised on the integration of different segments in the society, inclusion of marginalised ethnic minorities, equitable distribution of the state’s resources, and promotion of secular state and democratic culture. The efforts of the present administration in Nigeria to address what is generally called the ‘national question’ seem to have led to agitation for national conference. There had been two of these conferences convened to address the problems of structural imbalance, security in the state, promotion of sectional interests, agitations by ethnic nationalities leading to mutual distrust, fiscal federalism, marginalisation of minority groups among others. No reasonable results had been recorded. Trust is required to build the bridges needed to forge unity among these groups.

The notion of trust is part of African culture, and has been a strong cohesive force among different African communities. Indeed, this notion is explicitly written in the heart of communal relations in Nigeria where family bond rules the lives of members in a relation. Thus, at every level, in Nigerian communities, an individual is socially connected to his family, associates and friends. Sometimes such a connection is defined in relation to what may loosely be classified as whom we know, a term that can be used to define social capital in the African context. But Nigeria needs an effective education system to be able to sustain social capital among its various groups.

The different conceptions of social capital point to the imperative of trust as an element of social relations. Putman’s explanation is suggestive of this notion. “By social capital,” Putman’s study (as cited in Mikiewicz, Jonasson, Gudmundsson, Blondal & Korczewka, 2011) defines social capital thus: “I mean features of social life - network, norms, and trust - that enable participants to act together more effectively to pursue shared objectives.” These features of social life Siisiainen (2000) identifies as three components of Putman’s concept of social capital, namely, moral obligations and norms, social values (especially trust) and social networks (especially voluntary organisations). Siisiainen goes further to argue that “trust creates reciprocity and voluntary associations” and for Putman in Siisiainen (2000) “association facilitates communication and improves the flow of information about the trustworthiness of individuals” (p. 5).

Trust, for Siisiainen, “helps to build and holds together the relations between the members (of associations)” (p. 6). For Adjargo (2012) “the idea of social capital is that, one’s family, neighbours, friends and associates constitute an important asset that can be called upon during crisis as well as during ceremonies” (p. 219). And Christoforou (2012) “the resources that individuals obtain through their social ties and that allow them to secure social status and social power” (p. 8). These social ties explain the natural world of Africans.

While education, as a resource, may attend to the needs of the alienated groups, social capital should necessarily form the tool to repair the broken bridge which holds together Muslims and Christians, and North and South in Nigeria. Indeed, social capital can conveniently
be used to handle the problems of suspicion and distrust the most critical and divisive elements in Nigerian society. Though efforts to build a social network intended for social ties and relations among Nigerians were undertaken by General Yakubu Gowon (then Head of State) shortly after the civil war in 1973, the efforts have yielded little results. This social network came in the form of the National Youth Service Corps programme which he established to build mutual trust across the different divides in Nigeria, though in principle it was designed primarily to bring back the elusive communal relations destroyed by the war.

The only social practice that has created its social relevance among Nigerians is soccer. It has remained the only game that has achieved a relative integrative force among the citizens, though the complex nature of Nigerian society makes it less viable for social integration. Soccer does not offer what the country requires to create social justice and social participation. Attacking the structural defects and institutional decay in Nigerian society must be pursued with vigour, as this seems to be an issue that can ensure one-ness among the ethnic nationalities. In order words, Nigeria requires radical steps to be able to ensure that common goals are achieved and national cohesion is established among its citizens. In order to ensure a sustainable democratic culture in Nigeria, the political class and the elite must be given an intellectual orientation that is providing them with education that will change their consciousness.

The habit of manipulating the thought of the alienated class for political purposes has to be discouraged. In an effort to achieve equity and social justice the marginalised groups need inclusive education. They require education that will liberate them from what Nyirenda (1996) claims to be “naive acceptance of life and its dehumanizing effects” (p. 10). The notion of social transformation, therefore, is all about the integration of the different sections of the society and the establishment of sustainable democratic culture through engaging both minor and major ethnic groups in nation building. Integration of different ethnic groups requires the citizens’ serious commitment to sustain relations among such groups as Muslims and Christians, indigenes and non-indigenes, and southerners and northerners.

The Nigeria education fact sheet released by the United State Embassy in Nigeria (2012) indicates that “Nigeria has a large number of out-of-school children and young adults with limited literacy and numeracy skills who have little hope of ever joining the formal workforce” (p. 1). A probable solution to this problem may be to involve what Boukary (2014) suggests:

a. improved quality of teaching;

b. strengthened curricula for primary and secondary education to include life skills, and civic...education;

c. higher completion rates at all levels of education, (and)

d. strengthened linkages between educational system and labour market demands (p.3).

Nigeria requires an effective education system to be able to tackle its institutional problems. First, there must be a paradigm shift from an exam-driven approach adopted by the system to skills acquisitions. There may be need to emphasise vocational education in the curriculum as this may assist to stem the tide of the unemployment problem in the country. Second, the country needs education that will enable individuals to be critical in thought, which is education that helps learners to analyse problems and make thoughtful decisions. Individuals with critical thinking ability are more likely to exhibit maturity in handling issues of national interest than those who approach issues ordinarily. Social capital can also be utilised in this age of science when the citizens are reflective in their thoughts.
Conclusion
Nigeria requires an effective system of education with approaches that make it pluralistic, inclusive, just, and transformative (Parajuli, 2014) in order to tackle the problems of suspicion and distrust among the various ethnic groups in the country. At present the system is not making any meaningful impact, hence the need for a reformative approach. First, the destabilising inequality in educational attainment which exists between Southern and Northern Nigeria must be addressed. Second, the vulnerable groups (marginalised and disadvantaged) require access to education in order to be integrated into the mainstream of Nigerian society. Since the greatest challenge confronting the country is its structural defects and institutional decay, a major obstacle behind its oneness, it seems social transformation presents a viable option to adopt. The need for transformation was advocated because the alienated groups must be fully integrated into the society, an effort that must include a sustainable educational experience. Over and above this, suspicion and distrust among the major ethnic groups require a social capital resource, trust, in order to enhance cooperation and unity in the country.

References


Nyirenda, J. E (1996). The relevance of Paulo Freire’s contribution to education and development in present day Africa. *Africa Media Review*, Retrieved from archive.lib.edu/DMC/African%20journals/pdfs/africa%20media%20...


