Brown Lopez, P (2013). **Disparities among male and female in Developing Belize: Opportunities for Open and Distance Learning to address urgent social, academic, and gender inequality**

Priscilla Brown-Lopez EdD
Interim Dean
Faculty of Education and Arts
University of Belize, Belize C.A
Tel: +501-822-3680 ext. 358
Fax: +501- 8221107
plopez@ub.edu.bz

ABSTRACT: Historically in Belize, Central America, women are perceived as child bearers, teachers, nurses and those who assume less dominant roles. Even as women are expected to assume traditional responsibilities, national data indicates that at the primary level of schooling which caters to children in the 5 to 14 age range, there were 56,454 women graduates compared to 56,182 men. The Secondary Level of education which provide for education beyond the Primary Level revealed that 25, 963 women were successful in comparison to 25, 103 men. Furthermore, at the tertiary level, 14,476 women have completed higher educational training in comparison to 12,592 men. Shown is that women are more qualified and more poised to enter the labour market. Even as there are more qualified women, 9.2% (8,083) of men were unemployed in comparison to 22.3% (13,287) women. Apparent is that increase educational training for women fail to result in dominance in the workplace. To examine the extent to which the core secondary and primary curriculum addressed the increasing needs of women and men and the extent to which the needs of indigenous groups are addressed, historical research methods was used to review core educational curriculum to respond to the following three questions:

1. Does the core Science and Mathematics Secondary School Curriculum cater to social, economic, and academic needs?

2. Are there specific employable skills for male and female within the secondary or tertiary school curriculum?

3. Are there specific contents and activities to empower males and females to achieve potentials?

Revealed from the annual review of course specific training materials and Instructional resources is no conscious effort to address needs of learners. Also revealed is need for: increase training opportunities for males and females and opportunities to use Open and Distance Learning to cater to the needs of indigenous people who ordinarily would not seek further educational training. Even as there are existing opportunities for women, interviews conducted with a

random selection of employers suggest preference for male employees. Revealed in this study is that unless conscious efforts is made to address traditional roles and increase educational opportunities for both sexes, gender disparity and lack of opportunities will continue to prevail.

Key terms: gender equity, core needs, traditional and contemporary roles

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Introduction

Discourse about gender equality and sensitivity are not common in Belize. More recently, there has been discord and refusal to respect sexual preference and rights for same sex unions. In addition to public outcry against rights for persons in same sex relationships, there is continuous discord on the National Gender Policy launched March in 2013. The aim of this new policy is to promote:

"a society in which all men and women, boys and girls are able to achieve their full potential through the enjoyment of their human rights; live together in mutual respect, dignity and harmony; and are equal partners as they participate in services and resources for realizing and sustaining their economic, social, political, and cultural development for equal enjoyment of all."

This policy is also guided by principles which indicate that state policies, regulations, programmes and allocation of resources must be based on the realization of human rights for all. This includes recognizing that women's right are human rights and that woman, men, boys and girls have a right to live free of discrimination and violence and enjoy full participation in, and benefits from, all aspects of social, economic, and political life. Identified in this document is that state policies, regulations and programmes should explicitly identify and eliminate discrimination. If people are to truly excel and become self sufficient and productive members of society, their individual rights must be respected and their needs must be addressed.

As efforts to establish policies to cater to gender needs are developed in Belize, there is ongoing discord among many religious groups and concern citizens. This occurs even as it has been noted that from 2009-2010 there was 8.4 % repetition for males and 5.7% for females at the primary level of schooling. From 2010 – 2011, the repetition for males was 7.9% and 5.6% for females. Also noted is that at the secondary level of schooling from 2011-2012 was 9,465 for males and 10,200 for females. At the tertiary level from 2011-2012, the enrolment for males was 2,951 and 4,490 females. Further noted is that the percent of males to females in the national university is 35% males to 65% females (University of Belize, 2013). This shows that there are

also increasingly more females at the secondary level with further gaps at highest level of education in Belize. Undoubtedly, there is need to identify how to motivate boys to remain in school and to pursue high education. It also calls on citizens to reflect on how to effectively address gender needs.

Purpose of the Study

To assess the extent to which Belize is poised to embrace gender equity, the lower secondary mathematics and science curriculum at the first two levels of secondary schooling have been re-examined by a team of experts to assess whether:

1. the teaching learning strategies cater to the diverse needs of learners,
2. the teaching and learning strategies are interactive and can potentially motivate boys and girls to remain in school

Literature

The term curriculum refers to aims and specific objectives to be achieved by learners; the knowledge, understanding, skills and attitudes learners must develop; possible strategies, and activities for successful teaching and learning (Goddard, 2000). The curriculum is indeed a crucial component of any educational process (UNESCO, 2013). According to EFA Global Monitoring Report (2005), quality school curriculum is important because quality education is rooted on how well pupils are taught which impacts whether they are motivated to remain in school and the extent to they are skilled to function effectively in society.

While it must be acknowledged that children should experience personal satisfaction and remain in school, the curriculum should focus on three global contexts:

1. movement for gender equality as supported by the UN Millennium Development Goals,
2. the movement for global citizenship education, and
3. global economic outcomes of schooling (Moore, 2000).

If these contexts are infused within a school curriculum, then decisions must be made about what constitutes legitimate knowledge, good teaching, and just society (Kliebard, 2004). These are

deep rooted in on- going dialogue about equality, race, class, gender justice (Apple,1996, 1999, 2000, Apple, 2006). Even as it important to ensure that the content of the curriculum cater to students needs, Whitty (1997) cautions that current views about what should be taught in school are rhetoric amidst the realities within various cultural groups. In fact,

Atomized decision-making in a highly stratified society may appear to give everyone equal opportunities, but transforming responsibility for decision-making from the public to the private sphere can actually reduce the scope of collective action to improve the quality of education for all. (p. 58)

Implied in Whitty's description is for careful assessment of educational plans and possible impact on the students. Despite varying views about the content to be included in a global school curriculum, schools in developed and developing countries are responding to new trends in cross-cultural and distance education. Distance education described as instruction in which the student and instructor are separated by physical distance is the mode of instruction in many universities (Power et al., 2003). This mode of delivery which allows for courses and programs of study to become available to anyone at any time and place requires significant investment including use of a reliable platform, strong internet access, technicians to support the delivery of the courses and skilled instructors (Ibid.05)

Methodology and Data Collection

To assess whether the current mathematics and Science curriculum implemented at the lower secondary level in Belize catered to gender needs, use of historical data and focus groups sessions were utilized. Use of research procedures aligns to Schutt (2010) systematic qualitative comparative process which calls for:

1. Development of the premise for the investigation.

This included use of the 2010-2012 Educational Statistics in Belize which denotes that there is increasing more male than females enrolled at the secondary level of schooling. With the gap widening at 35% males and 65% females enrolled at the tertiary level of education in Belize.

2. Choosing the case to examine.

   The current mathematics and science curriculum were reviewed in small groups by 18 in service teachers during the months of May and June 2013. The teachers in training were assigned segments of the curriculum and worked in combined pairs to cross examine strategies to assess the extent to which they catered to the needs of males and females. To verify the quality of the data, portions of the curriculum were crossed checked by different groups and conclusions generated.

3. The Theda Skocpol or the" Interpretive historical sociology" was used to examine similarities and difference in the teaching and learning strategies in the Mathematics and Science curriculum. These two critical areas were chosen due to their importance in the school curriculum and the current trend toward increase knowledge for the sciences, Mathematics, and Technology. These areas of the curriculum were explored by categorizing and tallying activities which catered to use of social learning groups and meaningful teaching activities as well as those which promoted the application and use of critical thinking skills.

In addition to the data represented in Table 1, focus group session was conducted with head of service areas to assess how gender needs were addressed and to examine services required by male and female students.

Limitations of the Study

The data was collected using a systematic review of the teaching and learning activities in the mathematics and science lower secondary school curriculum in Belize. The data collected from focus groups sessions were limited to secondary school teachers from each of the six districts of Belize who, on a daily basis, teach using the lower secondary curriculum. The focus group sessions were conducted with key representatives affiliated with the University

of Belize and the Ministry of Human Services and Poverty Alleviation in Belize. Since the data was drawn from actual sources and key players who are cognizant of the curriculum content in Belize, it can be used to develop action plans to ensure that policies and procedures are developed to address gender needs. While this data can be used to inform curriculum review and program development, there is need for additional consultations to further assess other areas of the curriculum and whether educators are cognizant of the dire need to cater to and address diversity.

Findings and Analysis

The National Association for Single Sex Education are of the view that best practices for teaching **math** differ significantly for girls and boys - particularly in arithmetic, algebra, and number theory. With boys, you can stimulate their interest by focussing on the properties of numbers *per se.* With girls, you want to tie what you're teaching into the real world. Keep it real and keep it relevant. ..(2012:01).

To assess whether the lower secondary curriculum provide opportunities for interaction and application in Math and Science, a page by page review of the documents were assessed as follows:

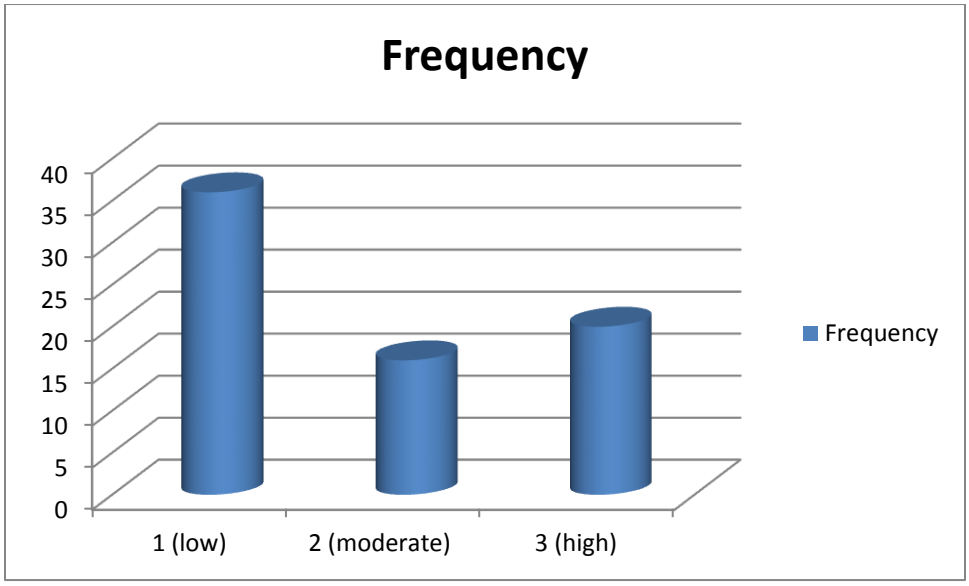
1. Activities where students were required to randomly provide direct responses such as to simply provide an example of a concept, was rated 1for low
2. Activities where students were required to interact in small group settings with limited opportunities to share or demonstrate the outcomes of the group activities, was rated 2 for moderate
3. Activities were students were asked to reflect, interact, and to apply skills in mathematics and science was rated 3 for high

This rating is consistent with the scale used over the past three decades to assess quality of teaching and learning as documented in the Handbook for Practical Curriculum Review and Teaching Experiences (August, 2012)

To examine the relevance of the teaching learning activities in the science and mathematics curriculum, the results of the review process is presented in Graphs 1 to 4.

Graph 1:

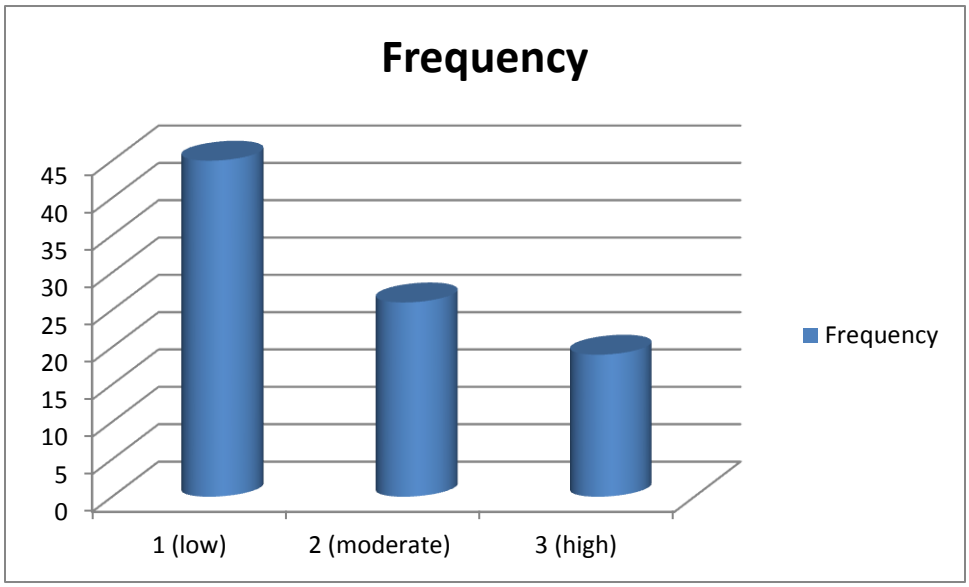
Level of interactivity within the Mathematics Curriculum Yr. 1 (Lower Secondary)



Of the 70 strategies observed through cross group examination of the year 1 mathematics curriculum in Belize, shown is that 36 or (51.4%) of the strategies reflected minimal interactivity. 20 or (28%) were moderate and only 16 or (22.5%) were highly interactive, facilitating critical thinking and application of concepts. Revealed is that the curriculum, in many instances, lack activities to consistently engage students in enriching learning experiences. What must be borne in mind is that when teaching focuses on students and challenges their perceptions, students report a deeper involvement and conceptual understanding (Trigwell, Prosser, & Waterhouse, 2004). Furthermore, when teachers immerse students in meaning learning experiences their mathematics and science scores increase. Identified is need for the current school curriculum to cater to the needs of students and to ensure that they are exposed to motivating learning experiences (Ibid: 21). Clearly strategies which suggest that students sit and listen to the information, fail to promote the requisite life skills or to motivate students to attend and remain in school.

Graph 2:

Level of interactivity within the Mathematics Curriculum Yr. 2 (Lower Secondary)

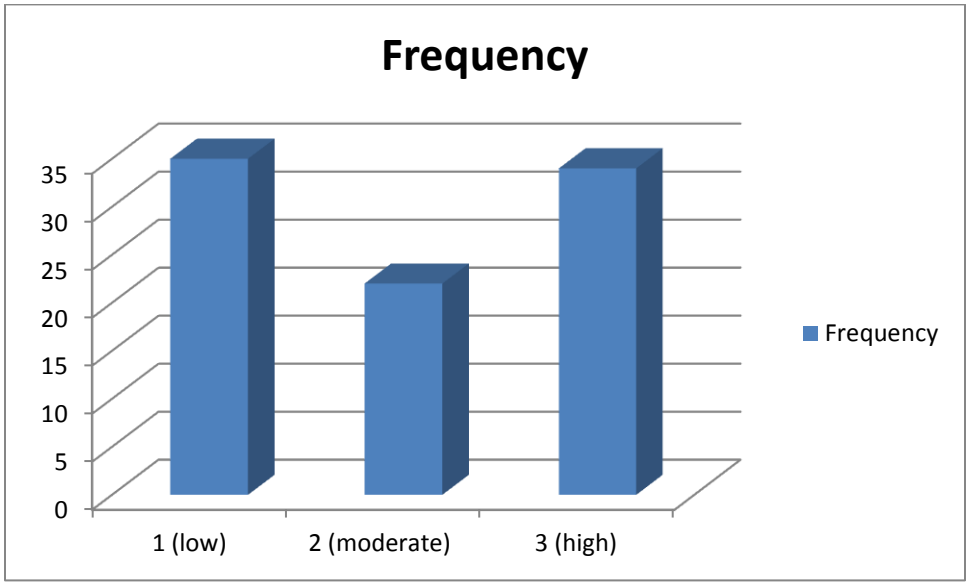


Revealed in the assessment of the 90 strategies identified in the curriculum at the second year of secondary schooling in Belize, is that 45 or (50%) of the strategies were low illustrating teacher centred strategies and students in passive classroom activities. 26 or (29%) of the strategies were noted as moderate with some level of interactivity and discussion and 19 or (21%) were rated as highly interactive. Also illustrated is that as students proceed to the second year of secondary schooling, the activities aimed at promoting application and critical thinking appears less within the secondary school curriculum with more focus on explanation, use of examples, and low levels of interactions.

In addition to a review of the lower secondary mathematics curriculum and the extent to which the strategies addressed students' learning needs, the Science curriculum was also reviewed as illustrated in Graphs 3 and 4.

Graph 3:

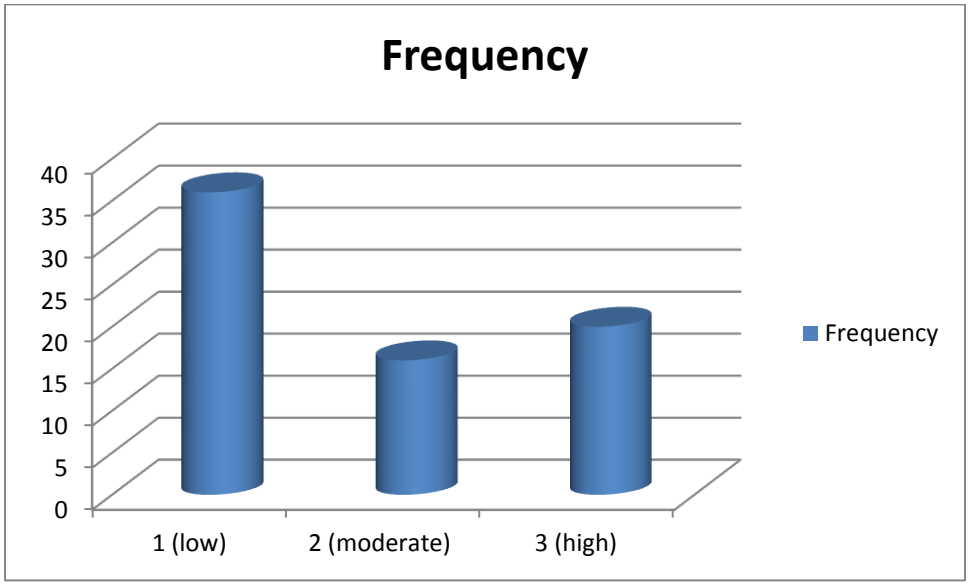
Level of interactivity within the Science Curriculum Yr. 1 (Lower Secondary)



Illustrated in Graph 3 is that of the 90 teaching and learning strategies in year 1 of the science secondary school curriculum, 33 or (37%) reflect use of questions to generate examples with minimal opportunity for interactivity. To also note is that 25 or (28%) of the teaching learning strategies were moderate, and 35 of (39%) were highly interactive with opportunities to discover and apply information. The overall data indicate that less than 50% of the instructional strategies in the curriculum were aimed at high levels of participation. If the proposed mode of instruction within the secondary school curriculum is more prone to teacher centred activities and less opportunities for interactive learning, it may not motivate many students to remain in school. The importance of clearly structured school activities to retain at risks students and to provide a stimulating learning environment is well documented. For example, Bell (2003) noted that for students to successful grasp scientific concepts, they must reflect on their own knowledge and "do science". What is unfortunate is that traditionally, teachers in Belize are more prone to teacher led instruction and in many instances these teachers are involved in the development of the national school curriculum and are key decision makers (Lopez and August 2013).

Graph 4:

Level of interactivity within the Science Curriculum Yr. 2 (Lower Secondary)



Revealed in Graph 4 is that 33 or (44%) of the strategies in the science school curriculum reflected minimal opportunity for in depth teaching and learning experiences. Also identified is that 19 or (25%) of the strategies were rated moderate while 23 (31%) were rated as high. Shown in the review of the science curriculum is that the suggested teaching and learning strategies fail to foster high levels of thinking and for the most part, are not aligned to innovative pedagogical strategies. Curriculum developers in Belize need to examine the effect of the use of the school curriculum on performance and pay keen attention to the fact that when students learn how to "think and work like a scientist", they are motivated, attend school and develop confidence in the subject (Hunter et al., 2007).

Review of Focus group sessions

Focus groups sessions with personnel from lead service areas and with representatives from the Ministry of Human Services and Poverty Alleviation were held. All participants were asked to identify the extent to which their departments catered to gender needs.

Of the seven departments, none had specific strategies to address the needs of males and females. For example, when asked if equal scholarship opportunities were provided revealed is that only males enrolled in sporting programs were granted scholarships. Further identified is that while male security guards were always on duty, female security guards was not placed on night duties. As a result, many female students opted not to access to libraries in a poorly lit areas. Also shown is there are limited use of online training and resources to cater to females living in remote areas of the country.

Response to the question, **do males and females of all ages have equal access and opportunities in your institution in regard to:**

- space for individual or group study
- other audio-visual equipment and learning resources
- Internet – linked computers

Identified is that there are spaces for individual or group study, some students can access audio and visual learning resources, and often students can gain access to internet linked computers; however, there are no measures to ensure equal access for males and females of all ages. Discussion among individuals in focus group session also revealed that there were no specific strategies or plan of action to cater to diverse needs of learners.

Conclusions and Recommendations

The government of Belize invest more than a quarter of the annual budget on education yet, many young men are out of school and unable to gain meaningful employment. There are dismal passes in the areas mathematics, science and use of language, and many students at risks students appear unmotivated to attend school. Amidst multiple challenges, within Belize's

education system, the curriculum fails to address the diverse needs of many males and females who are not motivated to pursue higher education. Also absent in Belize's education system is use of open resources, opportunities for online learning and effective use of technology. This shows that more must be done if students in Belize are to develop competencies and skills for personal development and employment.

What's worse is that there seem to be little or no effort to consciously attend to the needs of boys and girls as identified in a recent learner needs survey. Also identified in a research conducted by professors of the University of Belize is that more than 50% of teachers who are considered as "trained" are not applying skills acquired during their training program and in many instances they have resorted to traditional modes of instruction. Shown is a lack of accountability and in some instances, lack of expertise to restructure the curriculum and to cater to needs. To address the millennium goal to eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education by no later than 2015, much work must be done to ensure that males and females are exposed to positive learning experiences.

Also indicated in this study is that:

1. the core Science and Mathematics Secondary School Curriculum does not cater to the social, economic, and academic needs. Instead, students are expected to participate, in most instances, in low levels of interaction and in passive activities.
2. if a significant portion of the curriculum fails to stimulate thinking, it is likely that male and females may not acquire employable skills or function effectively in society or in the workplace.
3. There are no specific contents and activities to empower males and females to achieve their highest potentials.

This points to the need,

1. to cater to males and females at all levels of the education system (Ashworth, 1996).
2. to establish networks with all ministries of government and with public and private sectors to discuss and identify how best to attend to gender needs (Development Studies Network, 2000).

3. for teachers to acquire skills to mentor and use effective instructional skills to motivate students to remain in school (Goetz, 1995)
4. for use of innovative technology to motivate and to stimulate thinking and retention (Rama, 2001)
5. for integration of gender prospective in all training and at all levels of the education system (World Bank, 1995)
6. to ensure that all services address the specific needs of males and females (MacLeod,1995)
7. Use technology as a tool to address needs and to motivate students to pursue higher education. This includes use of technology to provide access to online learning opportunities for male and females living in remote areas of the country. Programs and or curriculum content should motivate students, cater to their needs and address differences.

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