CRISIS IN SCIENCE CLASSROOM: GENDER-GAP AND SCIENCE TEACHERS' MANAGEMENT PRACTICES

By

M. I. Simeon
Department of Science and Environmental Education,
University of Abuja,
Abuja

And

I. A. Ojelade
Department of Science and Environmental Education,
University of Abuja,
Abuja.

Abstract
The paper identified the meaning of gender and some associated terms with it. It went further to observed the unfortunate incidence of crises in science classroom which is due to gender-gap. Besides, implications of gender-gap in science classroom for teachers and professional school managers for optimal science achievement in school was also served. Conclusion and relevant recommendations were nevertheless made.

One of the millennium development goals (MDGs) is the promotion of equality of gender and women empowerment by the year 2015. ERIC Digest (2003) affirmed that the effort to provide an equitable education to all students had led to extensive research on the effects of racial and ethnic differences and of gender on learning and achievement. Indeed, across the entire globe, there is the challenge of gender disparity which inevitably has affected the enrollment and achievement in science related fields.

Until recently, gender discrimination has been the least emphasized and the most widespread antagonism to development asides its impact on learning, achievement and classroom management practices. It is on this note that this paper intends to ascertain the implication of bridging gender-gap on learning science and teachers’ management practices for successful achievement in science for national development.

Gender-Gap: The Crises in Science Classroom
Okeke (2000) in Nwagbara (2003) defined gender as a term which refers to many socially and culturally constructed characteristics, quality behaviour and role which different societies ascribe to females and males. Besides, Nwagbara (2003) confirmed that gender is an associated construct which represent the social relationship between men and women and in which women have been subordinated. She further asserted that discrimination in girls' access to education still persists in many places in
Nigeria due to many socio-culturally ascribed roles like early marriage, home-making and early child birth.

The term "gender-gap" according to Skelton, Francis and Valkanova (2007) is most often used to refer to the differences in performance between girls and boys in standard assessment tasks and other examinations but it is also used to describe differences in the take-up of particular subjects and choice of careers.

In fact, the challenge of gender-gap in science education was observed by Science Daily (2007) as it affirmed in its report on the research findings at the university of Colorado, Boulder by saying that there is complexity and challenge of reducing gender-based disparities in science education for different population and circumstances. Eric Digest (2003) further affirmed this continuing challenge by saying that lack of conclusive findings about gender-gap in achievement as measured by standardized tests, suggests that there is no systematic disenfranchisement of students of either sex, although traditional gender differences in both course selection and subject achievement still persist.

Several studies carried out in the Nigerian's context have shown that boys outperformed girls in many science skills with the exception for girls in some areas. For instance, Eriba and Ande (2006) reported in their studies that boys performed better than girls in chemistry problem solving. Furthermore, Ukwangwu (2002) reported a modest gender difference in favor of boys that the girls need great attention during integrated science classes. In a study reported by Feminist Daily News (2008) on gender-gap, study revealed that there are no gender-gaps in mathematics scores. The report of the study disputes the stereotype that men are innately better than women in mathematics. It established that for over 7.2 million students in grade 2 through grade 3 that girls and boys performed equally in standardized mathematics tests. The study so reported affirmed that the gender-gap in mathematics achievement has closed for high school student but there still exist a disparity in the field of physics and engineering.

**Basis for Gender-Gap in Science Classroom**

Skelton, Francis and Valkanova (2007) enumerated as follows some main explanation that accounts for gender-gap in science classroom achievement:

- **Natural Differences Between The Sexes**

  Boys and girls are naturally different and this explained discrepancies in achievement. In fact, Council for Exceptional Children (2007) established in its report that males tend to be right----- brain dominant and female left--- brain dominant. Therefore girls excel in verbal skills like reading and writing while boys trump girls in spatial learning maintain advantages in science and mathematics. Also, Kimura (2005) in his research on the biological explanation of gaps in performance suggested that differences in brain structure, hormone production and maturation rates may account for girls’ greater advantage in school related tasks. Findings revealed that the parts of the brain responsible for processing verbal
information and permitting the exchange of information between hemispheres were more highly developed in girls.

- **Feminization of Schools**
  Most frequently the phrase is used simply to refer to the fact that there are more female teachers than male in schools as well as the delivery of the curriculum, assessment practices, the arrangement and organization of the classroom in a 'feminine' nature Skelton, Francis and Valkanova (2007). Moreover, Skelton (2002) in Skelton, Francis and Valkanova (2007) observed that the notion of the feminized schools, assumes that women teachers do act in 'feminine' ways for example women teacher using non-competitive teaching and learning styles, favouring group work. The presumption inherent in the feminization of schools is the possible assumption that assessments produced are bridged in favour of girls.

- **Masculinised School Environment**
  This is almost synonymous to the case of the feminized school mentioned above, but that it is rather male dominant schools system instead of the female in terms of teachers, teaching and learning styles, favouring some group work etc. Here the males are at advantage. When current teaching and school practices are not conducive to girls, in such context the result is low and poor achievement of girls in sciences.

- **Gender-Biased Assessment Procedure**
  Harlen (2004) in Skelton, Francis and Valkanova (2007) in his review of twenty (20) years of research into assessment procedures found amongst other things that teachers' judgment of boys' academic abilities were informed by their behavior and as boys tended to misbehave more than girl.' They were more likely to lose out on good assessment grades. This again is a clear basis for gender gap in science achievement and other subjects and constitutes crisis in science classroom.

- **Different Learning Styles**

**Gender-Gap: Implication for Teachers and Professional School Management Practices**

Indeed, school management practice is a prerequisite to achievement in science classroom. Therefore since every student (male and female) enter into the school or classroom situation with gender controlled life experiences, teachers, professionals
including principals, school administrators and curriculum developers should in a bid to maintain or bridge gender-gap for meaningful national development imbibe the following school management practices.

- Promote and present school or science classroom environment in such a way as to accommodate male and female preferences alike without any discrimination.
- Discriminate against psycho-social school or classroom environment that can threaten both male and female science students during instruction.
- Management practices should involve the selection of science subject matter in the school curriculum such that is relevant and applicable to the life of male and female science students for entrepreneurship and self-reliant for national development.
- Teachers, curriculum developers should maintain gender-fair instructional mode in teacher-student interactions in such a way that both male and female students in science classroom are given equal attention to avoid the crises of gender-gap and its consequences in classroom management practices.
- Professionals, authors of science textbooks and teachers should avoid gender stereotyping of curriculum materials in the usage of language in classroom instructions or textbooks pictorial images which depict only male or only female. In fact, science teachers and administrators should set up programmes, develop teaching materials and textbooks that will sensitize and promote gender equality.
- Besides science teachers, professionals, curriculum developers and school administrators should seek to understand the different learning, strength and weakness of boys and girls. In fact, students should be allowed to know their individual learning styles and teachers should be multifaceted to accommodate a variety of learning styles.
- Teachers and school leadership should in a bid to bridge gender-gap in achievement should not promote androcentrism (male centered) society classes or misogyny (hatred for women) or vice-versa for better achievement and creativity in science.
- From the report from Council for Exceptional Children (2007) on brain research it was observed that boys and girl learn differently and that girl adjust better to school structure. It is on this note that the report further opined that teachers should understand students strengths, weakness, different leaning styles and work with students disabilities, gifts and talents knowing for sure that gender oriented classroom can improve or mar students learning and academic achievement in science.
- School administrators, teachers and school principals should eliminate the injustice and obscene in relation to inheritance faced by the female students so that all students may enjoy their right without discrimination in the class or school environment for better achievement.
- With the assertion of the evidence of gender-gap science classroom achievement, teachers, curriculum developers and education administrators
should avoid gender biased assessment procedures in all their class management practices

- Last but not the least, teachers and administrators should in the light of the existence of gender-gap in science classroom achievement develop and implement comprehensive policies, plan of action and programmes for the protection, support, survival, development and advancement of the female and males alike.

Conclusion

With the glaring existence of gender gap in science achievement, it has been vividly observed that awareness of this can have a far serious implication on classroom and school management practices. Science teachers and school administrators as managers of the school environment and the science curriculum have a consequent role of alleviating the crises of gender imbalance in science classroom which most often than not had resulted from issues of gender-biased assessment procedures, masculine or feminization of schools, different learning styles to mention but few. One of this management as observed is to present the science classroom environment in such a way as to accommodate without discriminate male and female preferences alike.

Recommendation

In a bid to alleviate or control the existence of gender imbalance in science achievement, the following recommendations are therefore given in a bid to avoid the unfortunate gender crises (gender-bias) in science classroom and school setting:

- Teachers, administrators and curriculum developers should endeavour to promote an educational setting that will discriminate against all forms of gender bias such as masculinized school environment or feminization of school.

- Teachers and curriculum developers should develop and adopt curricular, teaching materials and textbook to improve the self-image, lives, achievement and consequently the work opportunities of male and female science students thereby alleviating the crises of gender imbalance in science classroom.

References


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