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The Influence of Junior Secondary School Students' Attitude Towards Gender Role Stereotypes on Their Performance in Basic Science and Technology in Nasarawa Local Government Area, Nasarawa State, Nigeria

[1]Prof. Denga, D.I.; [2]Umar, Usman Sani & [3]Samuel, Ruth I.

[1]Faculty of Education,
Benue State Uniiversity, Makurdi, Nigeria

[2]Guidance and Counselling Unit, Department of Education Foundations, Faculty of Education,
Nasarawa State University, Keffi, Nigeria
maruus1959@gmail.com

[3]Department of Science, Technology and Mathematics Education,
Faculty of Education, Nasarawa State University, Keffi, Nigeria
ruthsa124@gmail.com

ABSTRACT
This study considered the influence that secondary schools students' attitude towards gender role stereotypes has on their performances in Basic Science and Technology in Nasarawa Local Government Area (LGA) of Nasarawa State, Nigeria. The study was based on Erik Erikson's theory of psychosocial development. The study adopted purposive sampling to select the schools that were involved in the study, while random sampling was used to select the 210 students that formed the final sample size comprising of JSS III students with equal representation for boys and girls. Raw scores of the respondents were acquired from the schools' academic records as well as questionnaires designed by the researcher to form the study instrument, Descriptive statistics and inferential statistics were applied in data analysis. The result of the study showed no difference in expression of attitude between boys and girls towards gender role stereotypes and no relationship between attitude held toward gender role stereotypes and performance in Basic Science and Technology. The study recommended that the Ministries of Education and Special Education should arrange special training for their teachers and school counselors to address the gender based attitudes of students so as to curtail the existing gender biases held by teachers towards the teaching of Basic Science and Technology. Similarly, schools should encourage teachers to reduce gender stereotyping while teaching the two subjects in their schools. This would help reduce the gender syndrome prevalent among students.
Keywords: Basic Science, Gender Role, Performance, Junior Secondary Schools, Stereotypes, Students' Attitude, Technology.

1.0 INTRODUCTION

1.1 Gender Role Stereotypes

Gender role stereotypes start from young age where children are given toys for play and rewarding their activities that signify gender compliance. They also learn that girls should cook, rear children and go to farm to cultivate foodstuffs that they would cook at home, while boys are trained to acquire traits of

leadership, power and dominance so that they would grow to fend for their families and protect their self-esteem and self-identity (Berk, 2000). Through such experiences, children acquire cognitive identities of their gender roles and are able to attend to issues affecting them and their environment. These processes ensures conformity with cultural statutes of socialization (Carter, 2014). Oncu and Unluer (2012) found that the educational commitment of parents had positive repercussions on their children's achievement especially, their academic and health development. It was also discovered that mothers' roles in the total upbringing process of children played significant roles in the children's ways of behaviour. There was total alignment between the parents and their children's perception and attitudes.

Stereotyping has culturally worked to the disadvantage of women especially religious practices in some countries (Ossai, 2017; Ofoha, 2013; Ifegbeson, 2010). Some studies on gender role stereotypes have revealed that social learning and cultural impacts play prominent roles in gendered behaviours (Zosuls, Miller, Ruble, Martins & Fabes, 2011; Francis, 2000;). Socially, children acquire gender stereotyping from their parents and socio-cultural environment. Therefore, these learning processes often lead to equal rights for the gender type or severe disadvantages and discrimination (Moghadam, 2004). Guledani (2011) had observed that men are stereotyped as independent and goal-oriented, while women are stereotyped as interdependent, communal and oriented toward others. These stereotypes affect important life outcomes such as job performance and academic performance (Berdahl, 2007). The contents of gender stereotypes are thus, accepted as pervasive and universal as well as being endorsed by both men and women across culture.

A number of studies in Africa have provided data that illustrated gross under representation of girls in Basic Science and Technology. At a conference organized by the Federation of African Women Educationists in 2017, it was acknowledged that in many African countries, girls are still restricted to studying in schools due to child marriages that hinder their advancements in education.

In Nigeria, women contribute a recognizable percentage to the Gross Domestic Products (GDP), yet their roles are marginalized (Ngoli, 2007). According to Abaa, Eshiet & Nyarks (2017) this trend is however, gradually being reversed due to their access to educational enterprises, government deliberation policies that give women additional quotas in governance and activities of Non-Governmental Organizations (NGO's). Women have been encouraged to form cooperatives and Small and Medium Scale Enterprises (SMCES) which boost their percentage increase in the economy (Aruwa, 2006). They have therefore, raised the levels of employment generation, productivity, revenue generation of the participants and reduced gender economic disparities (Maidugu, 2001; Iloka, 2015). Some families prefer to send their male children for formal education than their female counterparts due to the fact that the girls would belong to another family after marriage, despite huge investments on their educational pursuits by the parents. This has therefore, reduced the number of girls in schools (Okorie, 2017). Similarly, some communities experience male dominance through culture, which is extended to the school environment. In extreme cases, women face greater vulnerabilities in the society due to their relative lack of education, training and the continuous heavy burden of unpaid domestic work, childbearing and childcare, which hinder their ability to gather time and energy for income generation (Tinubu, 2016).

Gender based discrimination is a global phenomenon which has occasioned intense gender inequality in many countries of the world (ADB, 2012). The ADB added that the inequality had existed from the growth of civilization and continues to the present day. It has therefore, created wide gender gaps in many countries with devastating social, economic and health results on the females who have been marginalized and subsumed by the male gender apparatus.

1.2 Gender Role Stereotypes and Academic Performance

Alan (2017) defines gender roles as the set of expectations defined by a particular society that indicate what appropriate behaviours are for men and women. According to Allen (2000), stereotype is associated with the development of beliefs concerning the traits supposedly possessed by most members of a group. Stereotypes are thus widely held beliefs about the character and behaviour of all members of a group. Ramalingam (2006) asserts that stereotyping is the perception, clarification and assessment of social objects and events on the basis of specific notion, while Kauchak and Eggen (2011) believe that a

stereotype is a rigid, simplistic caricature of a particular group of people which in one way or the other can affect individuals by limiting them on their academic achievement.

Stereotype therefore, becomes a problem when forces in school and society collude to limit academic potential of either males or females, which led Francis & Skelton (2005) and Wessel (2005) to conclude that gender stereotype views create negative influence on children in their choice of career choice decision and females in particular, are less likely to study Basic Science and Technology than males. The implication is that, in the process of these changes, the students' self-concept might be affected. Stereotype therefore, serves to justify a student's experiences and anticipations, and is a relatively positive or negative evaluation of oneself, thus suggesting that stereotype that is categorized as ineffective and dull, tend to manifest itself as such (Martin, Cerlson & Buskist, 2007). For instance, if parents and teachers believe that girls are not good in Basic Science and Technology, the tendency is for the girls to lose interest in subjects in order to be with the schema. According to Schmade (2002), the degree to which individuals identify with relevant or irrelevant groups affects how strongly the stereotype influences their academic performance and achievement.

1.3 Gender Differences in Academic Competencies

Technology has become mere ubiquitous in educational settings where the whole systems are being transformed to give educators and students the desired expectations in teaching and learning (Lee, 2003). Chen and Tsai (2005) also reported that males exhibited more favourable attitudes towards web-based learning than females. Their findings suggested that males perceived Information Communications Technology (ICT) as a better tool in reducing the digital divide. Houtz and Cupta (2001) found significant gender difference in the way males and females rated themselves in the ability to master ICT skills. This could explain why few women still pursue careers in Basic Science and Technology due to parental involvements in their children's aspirations, showed ICT-phobia (Kandaswamy, 2005).

1.4 Gender Stereotypes in the School Curriculum

Mugisha (2013) states that boys and girls receive very different education despite the fact that they sit in the same classrooms and use similar learning materials. He associated the problem to the curriculum that shapes the teaching and learning processes in schools. Modernization has replaced the home in bringing up children cognitively where children spend more valuable times in schools rather than their homes, which affects their socialization processes thereby shaping their value systems including gender roles. Teachers are generally unaware of their own biased teaching behaviours because they are simply teaching how they were taught, while overlooking the gender disparities in their teaching techniques (Jones, Evans, Byrd & Campbell, 2000). Unless these disparities are addressed, girls will continue to receive an inequitable education (O'Neill, 2000). According to Masul (2017), until gender disparities are eradicated, teachers made aware of their roles in enhancing gender equity and curriculum developers start to cautiously focus on curriculum that is gender responsive, more children are likely to lose focus in their educational attainment that has to do with Basic Science and Technology subjects.

1.5 Statement of the Problem

Measuring students' academic performance is challenging since it is a product of several factors such as socio-economic, psychological and environment. Similarly, the role of factors such as race, gender and sex are noticeable (Hansen, 2000). Performance by gender at the secondary school level reveals phenomenal outcomes with girls performing better than boys in language subjects and relatively poor in Basic Science and Technology. This disparity of performance by gender has been a point of concern to researchers and educationists in Nigeria. According to Coley (2002); Gorard and See (2009), students from less privileged socio-economic backgrounds are doing less well in Basic Science and Technology classes than their more privileged peers and are less likely to take Science and Technology during post-secondary education in tertiary institutions.

This study had attempted to compare the performance of boys and girls in Basic Science and Technology among Junior Secondary School three (JSS III) students in Nasarawa Local Government Area of Nasarawa State. The two subjects are springboards for modern age advancement into the 21st century where technology plays vital role in the realms of globalization and urbanization. Basic Science subjects

are the roots of science while Technology is the mother of ICT and modernity. In Nigeria, Basic Science and Technology are compulsory for secondary school students at least in the junior classes. This makes them fundamental and significant for all science and/or technology aspiring students. Despite the advancement in the study of these two subjects, girls still perform low, though, they contribute significantly to the overall mean grade. Egan and Perry (2001) observed that in Nigeria, the Constitution of 1999 (as amended) prohibits discrimination on the ground of gender, but customary religious laws continue to restrict women's right.

The Global Gender Gap Index had placed Nigeria 120th out of 135 countries with a score of 0.6011 (World Economic Forum, 2011). This study therefore, sought to find out whether the same holds for students in Nasarawa Local Government Area of Nasarawa State, Nigeria regarding the performance of students in Basic Science and Technology. The study also attempted to find out whether the attitude held towards gender stereotyping by students has any influence in their performance in Basic Science and Technology.

2.0 METHODOLOGY

This study was Ex-post factor research design. The target population involved in this study consisted of all JSS III students in Nasarawa Local Government Area (LGA) of Nasarawa State, Nigeria. Stratified sampling and random sampling techniques were put in place to select the sample size of 384 based on the Morgan's (1970) Table of determining sample size of a known population. Nasarawa Local Government Area was therefore, stratified into the three (3) Zones – Nasarawa, Loko and Udege to reflect the original districts constituting the LGA. Each zone was stratified into Area Inspectorate Offices of Education, which were further stratified into urban and rural settings. From each stratum, a sample from the population was selected using simple random sampling (the lucky-dip method).

The research instrument was the questionnaire comprising 20 items all of the Likert type – 5 point scale, where the respondents were supposed to indicate their level of agreement for each item. In terms of validity, 3 experts in Educational Measurement, Research and Evaluation, affirmed that the entire instrument was suitable for measuring what it purported to measure using the split-half reliability method, the reliability index of the instrument as found to be 0.73. Attitude scores ranging from 60 – 100 points were treated as positive attitude, while scores from 20 – 59 points were treated as negative attitude. Similarly, academic performance was obtained from the school records with the assistance of the school Guidance Counselors. Basic Science and Technology scores for three (3) previous consecutive terms were averaged for each gender. An average above 40% was thus treated as high performance and below 40% was low performance.

Statistical Package for Social Sciences (SPSS) was used to analyze the data. Descriptive statistics such as mean and standard deviations were used to compare performance in Basic Science and Technology scores as well as attitudes towards gender role stereotypes between boy and girls. Inferential statistics was applied to determine the existing differences in performance between Basic Science and Technology as well as attitude towards gender role stereotypes through t-test. The Pearson correlation and one-way analysis of variance (ANOVA) were used to test the relationships between gender role stereotypes and performance.

Research Objectives

The following research objectives were formulated.

- To determine whether there was difference between the attitude of boys and girls towards gender stereotype.
- To investigate the relationship between the performance of boys and girls in Basic Science and their attitude towards gender role stereotypes.
- To investigate the relationship between the performance of boys and girls in Technology and attitude towards gender role stereotypes.

Research Questions

The following research questions were treated.

- Is there difference between the attitude of boys and girls towards gender role stereotype?
- Is there a relationship between the performance of boys and girls in Basic Science and their attitude towards gender role stereotype?
- Is there relationship between the performance of boys and girls in Technology and attitude towards gender role stereotype?

Research Hypotheses

The following research hypotheses were treated:

- There is no significant difference between the attitude of boys and girls towards gender role stereotype.
- There is no relationship between performance of boys and girls in Basic Science and their attitude towards gender role stereotype.
- There is no significant relationship between the performance of boys and girls in Technology and their attitude towards gender role stereotypes.

3. RESULTS

Table 1: Respondents Attitude towards Gender Role Stereotypes

	Gender	N	Mean	SD	Error Mean
	Male	105	53.5432	10.1143	.9867
Attitude score	Female	105	53.0234	10.9325	1.0547

Table 2: t-test for Attitude towards Gender Role Stereotypes

	t	df	Sig (2 failed)	Mean difference	S. Error Difference	95% confidence internal of the Difference	
	.376	208	.621	.755	1.553	Lower	Upper
Attitude						-2.219	3.634
score	.500	207	.621	.755	1.553	-2.213	3.623

Table 3: Performance of boys and girls in Basic Science and Attitude towards Gender Role Stereotypes Level of score (40 and above) reflects high performance.

Technology score	Negative stereotype	Positive stereotype	Total
Low	62	20	82
High	17	9	26
Total	77	28	105

Table 4: Relationship between Performance of Boys in Technology and Attitude towards Gender Role Stereotype.

Technology score	Negative stereotype	Positive stereotype	Total
Low	46	23	69
High	28	18	46
Total	75	30	105

Table 5: Performance of Girls in Technology and Attitude towards Gender Role Stereotype.

Technology score	Negative stereotype	Positive stereotype	Total
Low	65	18	83
High	13	9	22
Total	74	31	105

In order to test the first hypothesis, the attitude was categorized into two, the positive (60 – 100) and the negative (20 – 50) points attitude. Table 1 indicates the average attitude scores for males and females as in Table 2. The findings showed that there is no difference in attitude towards gender role stereotypes between males and females. (t = 208: 4.99, P = 0.621>0.05). The null hypothesis was therefore accepted.

To test the second hypothesis, the attitude towards gender stereotype was ascertained as either positive or negative while the academic performance was categorized as high (40% - 100%) or low (below 40%). The results as in Table 3 showed that both boys and girls have positive attitude towards gender role stereotypes and scored low in Basic Science, while those with negative attitude cored high in the Basic science. The Pearson's correlation coefficient at 0.05 level of significance was used to test the hypothesis. The result showed r = 0.05, P = .38>0.05 which confirmed that there was no relationship between the performance of boys and girls in Basic Science and attitude towards gender role stereotypes at r = 0.109, P = .264>0.05. The null hypothesis was therefore accepted.

In response to third hypothesis, the findings in Table 5 indicated that boys and girls with positive attitude towards gender role stereotype tend to score low in Technology. The findings further showed that boys and girls with positive attitudes score low in Technology and those with negative attitudes scored high. Using the Pearson's correlation coefficient to test the hypothesis, the results indicated there was no significant relationships between the performance of boys and girls in Technology and their attitudes towards gender role stereotypes at .067>0.05. The null hypothesis was therefore accepted. The foregoing finally revealed that there was no relationship between the performance of boys and girls in Technology and their attitude towards gender role stereotypes.

4. DISCUSSION

The result of the analysis revealed that there was no difference in attitude between boys and girls. The study also found that there was no statistical significant difference (0.618>.05) in the attitude of boys and girls on gender role stereotypes implying that both gender uphold slightly negative attitude towards gender role stereotypes. This finding was not expected because other earlier studies found different outcomes (Mbua & Denga, 2014). Gender role stereotyping begins at home, transferred to the society and school environment. Parents have different expectations for their male and female children and women are not only perceived as inferior to men but are marginalized (Nwosu, I.E.). Karjel, (2015) showed the ways in which school behaviour is inclined towards gender role stereotypes where boys feel that they own monopoly of Basic Science and Technology subjects while the girls are frustrated to queue in the fact that boys and girls have similar attitude towards gender role stereotype.

It was also found that there was no significant relationship between the performance of boys and girls in Basic Science and their attitude towards gender role stereotypes. The findings contradict those of earlier studies which attributed gender disparities in Basic Science performance to gender stereotypes (Shapiro & Williams, 2012). The study found a negative attitude towards gender role stereotypes existed. It is when the stereotypes are positive that they can have an effect on behaviour.

Some studies are in consonance of with the findings of this study, implying that girls can be at par with their boy's counterparts when attending to performance in Basic Science and Technology. This could be achieved when teachers and parents help their children in the subjects by encouraging them to concentrate. The study further used correlation to determine the relationship between the attitude towards gender role stereotypes and performance in Technology and found .132 and 0.65 for male and female

respectively. ANOVA test showed that there was no significant relationship between the attitude held by boys and girls and their performance in Technology.

5. CONCLUSION

The findings of the study showed no relationship between gender and attitude towards gender role stereotypes since the attitude mean scores for the two gender were the same. Similarly, the genders expressed negative attitude towards gender role stereotypes, implying that the attitude held towards gender role stereotypes is not dependent on gender. Another finding was on the relationships between attitude towards gender role stereotypes and performance in both Basic Science and technology, which showed no significant relationship between attitude held and performance in them.

In conclusion, the study found that the attitude held towards gender role stereotypes was not dependent on gender. Another discovery was that gender disparity in the performance cannot be explained by attitudes towards gender role stereotype. A final discover was that the disparity in performance in Basic Science and Technology could not be explained solely by the attitude held towards gender role stereotypes by both boys and girls.

Based on the findings of the study, the following recommendations are put forward.

- The Ministry of Education should organize training for teachers towards helping students, especially those offering Basic Science and Technology.
- Teachers of Basic Science and Technology in co-educational schools should be encouraged to teach girls separately so as to eradicate gender typing.
- School counselors should create awareness on the need to disabuse gender role stereotyping in schools.
- Parents should encourage their wards to study Basic Science and Technology, given their importance in the 21st century globalisation settings.
- The school curriculum should provide equal access to boys and girls in attainment of their educational goals.

REFERENCES

Abaa, A.E., Eshiet, E.E. & Nyarks, I.A. (2017). Motivating and empowering women into entrepreneurial leadership through counseling. The counselor, 26(1), 44-56.

Africa Development Bank (2012). Demographic Dividend or Time Bomb. Tunis, Belvedere, Tunisia.

Allen, B.P. (2000). Personality theories: development, growth and diversity (3rd ed.). Boston: Allyn & Bacon.

Alan, S. (2017). Gender stereotypes in the classroom and effects on achievement. Retrieved at http://www.cecepro.org.

Berdahl, J.E. (2007). The sexual harassment of uppity women. *Journal of Appliied Psychology*, 92, 425-437.

Carter, M.J. (2014). Gender socialization and identity theory. *Journal of Social sciences*, 3(2), 242-263.

Coley, R.J. (2002). An uneven start: indicators of inequality in school readiness. Princeton, N.J: Educational testing service. Educational Research Association New Orleans, Louisiana, April 5, 2000.

Egan, S.K. & Perry, D.G. (2001). Gender identity: A multi-dimensional analysis with implications for psychological adjustment. Departmental psychology, 37, 451-463. Accessed 2 March, 2011.

Ifegbeson, A. (2010). Gender-stereotypes belief and practices in the classroom. *The Nigerian post-primary school teachers' global journal of human social sciences*, 10(4), 29-38.

Fran, U.S.B. & Skelton, C. (2005). Reassessing gender achievement. New York, NY: Routlege Falmer.

Francis, B. (2000). Is gender a social construct or a biological imperatives? Paper presented at the research and policy 7th Australian Institute of family studies conference, family futures issues in research policy, Sydney.

Forum for African Women Educationists (FAWE) (23-25 October, 2017): ending child marriage. Retrieved from http://www.girlsnotbrides.org.

Guledani, K. (2011). Gender influence in educational process. Retrieved from http://www.gwi-boell.com

Hansen, J.B. (2000). "Student performance and student growth as measure of success: An evaluator's perspective". Paper presented at annual meeting of the American

Hapiro, J.R. & Williams, A.M. (2012). The role of stereotype threats in undermining girls and women's performance and interest in STEM. Sex Roles, 66(2-4), 175-183.

Iloka, A.M.C. (2015). The role of vocational education in the establishment of small scale enterprises. *Journal of education for Professional Growth*, 5(1), 86-91.

Jone, K., Evans, C, Byrd, R. & Campbell, K. (2000). Gender equity training and teaching behaviour. *Journal of Instructional Psychology*, 2(3), 173-178.

Houtz, L.E. & Gupta, U.G. (2001). Nebraska High School students' computer skills and attitudes. *Journal of Research on Computing in Education*, 33(3), 316-328.

Kandaswamy, D. (2005). Sensitivity in school education brdeepa kandaswamy.htm, in E.I Education Journal.

Kauchak, D., Eggen, P. (2011). Introduction to teaching: becoming a professional (4th ed.). Boston, MA: Allyn & Bacon.

Liaw, S.S. (2002). An internet survey for computers and the world wide web: relationship, predictors and difference. Computer in Human Behaviour, 18, 17-35.

Lee, A.C.K. (2003). Undergraduate students' gender differences in I.T. skills and attitudes. *Journal of Computer Assisted Learning*, 19, 488-450.

Maidugu, A.A. (2001). Gender and economics of power: An appraisal of poverty situation among the Kanuri women of Borno State, Nigeria. Environmental and development issues in sub-Saharan Africa, seminar series, 61-75.

Martin, G.N., Carlson, N.R. & Buskist, W. (2007). Psychology (3rd ed.). New York, NY: Allyn & Bacon.

Masud, H. (2017). Curriculum, textbooks and gender stereotypes. The case of Pakistan. Retrieved from http:///www.worldofeducation.org.

Mbua, A.P & Denga, H.M. (2014). Gender issues, family/societal role, implications for counseling in Nigeria. *Journal of Education and Practice*, 5, 36, 164-170

Mugisha (2013). School curriculum should be gender responsive. New Times of Rwanda.

Ngohi, B.U. (2007). Women in agriculture: contributions and constraints of women farmers in Ngohi, Askira (Uba Local Government Area, Borno State). *Journal of Historic Studies*, 5(2), 115-124.

Nwosu, I.E. (2012). Gender role perceptions and the changing role of women in Nigeria. *Int'l Journal of Agric and Rural Development*, 15(3), 1240-1246.

Ofoha, D. (2013). Gender stereotypes and girl-child education in Nigeria. Retrieved from http://www.oasis.col.org.

Olurode, L. (2003). In the paper titled, state and political participants. Gender analysis of Nigeria, 2011 Elections.

Oncu, E.C. & Uncluer, E. (2012). Parents' attitude towards their children before and after parental education. Procedia – Social and Behavioral Sciences, 40(2012), 5933-5936.

Okorie, M. (2017). An assessment of factors militating against girl child education in Nigeria. *International Journal of Advanced and Multidisciplinary Social Science*, 3(2), 49-54.

O'Neill, T. (2000). Boys' problems don't matter. Report/news magazine (National Edition) 27(15), 54-56.

Ossai, E. (2017). Confronting gender stereotypes in Nigeria and sub-Saharan Africa. Retrieved from http://www.journal.thriveglobal.com.

Ramallingam, P. (2006). Academic's dictionary of psychology (1st ed.). New Delhi: Academic (India) Publishers.

Rathus, S. & Jeffrey, N. (2009). Adjustment and growth: the challenge of life (5th ed.). Harcourt Brace Jovanovich, Orlando Florida.

Raven, B. & Rubin, J. (2003). Social psychology (2nd ed.). Toronto: John Wiley and

Tinubu, U. (2016). Interviewed on gender issues and women empowerment on 15 February 2016 at Abuja.

Wessel, K. (2005). Campus leaders: why this gender discrepancy lessons. *Florida League of Middle School Journal*, 7(1), 16-19.

World Economic Forum (2011). The global gender gap report. Retrieved from http://www3.weforum.org/docs/WEFGenderGap-2011.pat.

Zosuls, K. Miller, C., Ruble, D.Martins, C. & Fabes, R (2011). Gender development research in sex roles: historical trends and future directions. Sex Roles, 64, 826-842.