Location and Gender as Determinants of Students' Academic Performance in Agricultural Science in Zaria Education Zone, Kaduna State

Yohanna, J.[1] and Muhammad, H. B.[2]
Department of Agric. Education, Federal College of Education, PMB 1041, Zaria

Abstract:- The research established the influence of location and gender on students' achievement in WASSCE Agricultural Science in Zaria Educational Zone from 2014 – 2018. The ex-post facto design was adopted. Data on students' performance was obtained from 10 randomly but purposefully selected schools and confirmed from the Kaduna State Ministry of Education. Such data were subjected to simple descriptive statistics and an independent T-test. Results revealed that 51.57 % and 48.43 % of the 2612 students that sat for the examination were from rural and urban areas, respectively, while 62.75 % and 37.25 % were male and female students respectively. Results also revealed significant difference between the performance of male and female students (t=3.99), and performance of urban and rural students (t=2.76). Furthermore, the mean scores of rural students (43.69 and female students (43.21) were relatively higher than urban students (39.19) and male students (40.50) comparatively. The study concluded that location and gender are factors influencing academic achievement in Agricultural Science and therefore recommended equal educational rights for all students irrespective of their sex and provision of adequate facilities, trained and qualified teachers, supervision and monitoring should be ensured for improved female students' interest and performance of students in Agricultural Science.

Keywords:- Academic Achievement, Agricultural Science, Gender, Location, Secondary School.

I. INTRODUCTION

Education remains instrumental in the actualization of most nations development and potential for technological adoption, which is key to economic growth, increased human achievements and competitiveness (Agrawal and Teotia, 2015; Sheehan, 2012), which is why most nations invest their resources in education (Kpolovie, Ololube and Ekwebelem, 2011). Agriculture remains the oldest industry known to man and an indispensable industry most nations (developed or developing) cannot afford to relegate its practice, as it provides the basic needs of life (food, cloth and shelter), supports 75 % of the rural populace in developing countries and less than 4 % in developed countries (Onwunali, 2020; Yaro, Gadu and Pev, 2016). Agricultural science education as a broad multidisciplinary field deals with the selection, breeding, production and management of crops, animals and forest resources to meet human necessities (Ndomi, 2018). Until 2004, it was a core subject taught at both junior and senior secondary schools in Nigeria secondary schools as a means for self-reliance through the inculcation of necessary skills for the practice of agriculture, preparation for further studies geared towards effective citizenship and contribution to food security for national sustainability (Otekurin, 2014).

School is a social and learning agent that provides the environment upon which a child may be formally educated in order to attain educational goals (Oredein, 20l6), likewise, an institution responsible for the training and development of man, in order to prepare him for the challenges of the larger society (Awodun & Oyeniyi, 2018). The senior secondary school education is recognized as the cornerstone of educational systems in the 21st century, as it serves as a bridge between primary and university levels of education, lays the foundation towards higher knowledge in tertiary institutions and also an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in a country (Ogunjinmi, Salami, and Oyedare, 2015).

Academic performance of students is the centre around which the whole educational system revolves which is why the success and failure of any educational institution is measured in terms of academic performance of students (Narad and Abdullah, 2016). In today's world, much effort is made to identify, evaluate and encourage the progress of students in schools which is why in Nigeria most parents care about their child's academic performance, as it is seriously regarded as parameters for recruitment, selection of candidates for admission into tertiary institutions and colleges, placement and advancement in both public and private organizations, which is why individuals do lots of things possible to obtain excellent results (Ibrahim, Okeh & Ayorinde, 2019).

Students' poor performance in senior secondary school has been a contemporary issue amongst educationists, which has led to lots of speculations. Many studies have over the years been carried out from various perspectives, all in efforts to identify the etiological cause of poor students' performance. Notable studies have been able to identify key factors such as attitude (Ayodele and Adebiyi, 2013), school environment (Ntibi and Edoho, 2017), parents' socio-economic status of parents (Osonwa, Adejobi, Iyam and Osonwa, 2013), gender (Adigun, Onihunwa, Irunokhai, Sada and Adesina, 2015; Agbaje and Alake, 2014), school type (Ibrahim *et al.*, 2019) and educational funding (Ugwulashi, 2012) amongst others and the conclusions arrived at from

these studies are varying based on the individual perspective their studies focused on.

School location refers to a school site, type of buildings, usage, capacity, teachers, students, environment and other parameters for rationalization of both rural and urban school map (World Bank Guidelines, 2014). School location greatly influences the available facilities, number of teachers and students as most teachers prefer schools in urban areas with available social amenities to the detriment of rural schools where population is low and only subsistence livelihood prevails. Similarly, in Africa socio-cultural differences between boys and girls is till date extended to educational setting, as some careers are still sex stereotyped. The resultant effect of these factors on secondary schools is that qualified teachers refuse posting to rural locations, rural dwellers refuse sending their children to schools because they rely on them for subsistence living and help, while some parents hesitate to entrust their daughters to male teachers, fearing promiscuity (Mhiliwa, 2015; Wordu and Iwok, 2018).

➢ *Statement of Problem*
Most studies examining the influence of school location on students' performance mainly focus on urban and rural locations whereas some schools are located neither in urban or rural settings but in interaction zones between urban and rural, where activities are intertwined. In an attempt to ensure that students perform better in the Senior Secondary Certificate Examination (SSCE) and consequently, gain admission into universities, parents and guardians make a choice of the type of secondary school that can offer them just that, not minding the location and the cost implication of the school chosen (Adepoju & Oluchukwu, 2011).

Furthermore, part of the goals of the United Nations Sustainable Development Goals (SDGs) come 2030 is the achievement of gender parity in education, however gender inequality in favour of the male child still persists despite the enormous contribution of females to national development. So also, the importance of Agricultural Science for achievement of food security, human and national development cannot be overemphasized. However, speculations are, most students only apply for Agriculture as a course in tertiary institutions only when they can't make their preferred course of study such as medicine and engineering amongst others. Similarly, the declined performance of students' at SSCE has become worrisome to most educationists, due to its importance in bridging primary and tertiary education. This rationale positions why researchers have delved into studies of finding out causal factors responsible and most studies are in agreement with exploring students' achievement from a multi-causal perspective (Adigun *et al.*, 2015). It is against this background, the need to examine influence of location and gender on students' performance in West African Senior Secondary Certificate Examination (WASSCE) Agricultural Science became necessary.

➢ *Objectives of the Study*
Specifically, the study sought to:
- Assess the influence of environment on the academic performance of students in Agricultural Science
- Assess the influence of gender on the academic performance of students in Agricultural Science

➢ *Hypotheses*
The study tested the following null hypotheses at 0.05 level of significance:
Ho₁: Environment has no significant influence on the academic performance of students in Agricultural Science.
Ho₂: Gender has no significant influence on the academic performance of students in Agricultural Science.

II. METHODOLOGY

Zaria Educational Zone lies between latitude 11.07^0 and 12^0 North and longitude 07.44^0 and 8^0 East (Nwanosike, 2013), comprising Zaria and Sabon-Gari Local Government Area's (LGA's) and hosts various secondary and tertiary institutions.

The study employed an ex-post facto research design due to the fact that it aids in testing differences between two sets of secondary collated data differing in characteristics (Ibrahim *et al.*, 2019). With permission from Kaduna State Ministry of Education Zonal office Zaria, enrolment and performance records of students in WASSCE Agricultural Science from 2014 – 2018 was collated using West African Examination Council (WAEC) gazette records of 10 randomly but purposely selected senior secondary schools. The schools were selected based on WAEC certified schools and location (urban and rural). The WASSCE result was both summative and formative using the grading system of $\mathbf{A_1 - F_9}$ where grade A_1 represents **Distinction**, B_2 represents **Very Good**, B_3 represents **Good**, $C_4 - C_6$ represents **Credit**, $D_7 - E_8$ represents **Pass** while F_9 represents **Fail** (**www.waecdirect.org**). Grades between $A_{1 - C_6}$ were tagged 'Quality of Performance' in this study due to the fact that C_6 is the minimum grade required for admission into tertiary institutions. Two thousand six hundred and twelve students comprising of 1,639 and 937 male and female students respectively sat for the examination and were used to determine comparative performance in location and gender.

Data collected were subjected to simple descriptive statistics, while an independent T-test was used to test the stated hypotheses at $p \le 0.05$.

III. RESULTS AND DISCUSSIONS

Table 1: Performance of urban and rural students in Agricultural Science in Zaria Educational zone, 2014 – 2018
N= 2612

GRADES	A_1	B_2	B_3	C_4	C_5	C_6	D_7	E_8	F_9	Total	%	Q%	$\bar{x}$
Urban	5	16	107	61	57	159	165	185	510	1265	48.43	15.51	39.19
Rural	1	5	106	88	109	305	187	192	354	1347	51.57	23.51	43.69

Key: % = Percentage, Q = Quality of performance (A_1 - C_6), N = Total number of student, $\bar{x}$ = Mean

➢ *Influence of location on students' performance*

Results (table 1) revealed that 51.57 % of students that sat for Agricultural Science were from rural secondary schools of Zaria education zone as against 48.43 % from urban secondary schools. Similarly, students from rural areas of Zaria education zone performed better ($\bar{x}$ = 43.69) compared to students from urban area with a mean score of ($\bar{x}$ = 39.19). In terms of quality of performance, students from rural secondary school also performed better (23.51 %) compared to (15.51 %) for urban secondary school students. Performance was poor amongst both students of urban and rural secondary schools, as their average performance ranged between E8-F9 grades. The implication being that, students' performance in Agricultural Science is generally poor in Zaria education zone and requires concerted efforts from both government and other stakeholders to address the issue. This can be attributed to apathy most students have towards Agricultural Science as a subject, as it involves practical field work and the perception that the subject is mostly for low income earners, illiterates and rural dwellers. Students from rural secondary schools performing better is probably due to experience gathered from farming activities they are fully involved with from childhood, as farming is the major occupation of the rural populace and also the availability of vast farm plots for practical agricultural science, which are limited in most urban schools due to lands being developed for urban architectural and infrastructural developments for the teeming urban populace and cost of lands. Ezike (2001) stated that urban areas are those with high population density, high variety and beauty while rural areas are those with low population, subsistence mode of life, and monotonous.

Table 2: Performance of male and female students in Agricultural Science in Zaria Educational zone, 2014 – 2018
N= 2612

GRADES	A_1	B_2	B_3	C_4	C_5	C_6	D_7	E_8	F_9	Total	%	Q%	$\bar{x}$
Male	2	13	138	80	100	274	207	234	591	1639	58.26	23.24	43.81
Female	4	8	75	69	66	190	145	143	273	973	41.74	15.77	46.86

Key: % = Percentage, Q = Quality of performance (A_1 - C_6), N = Total number of student, $\bar{x}$ = Mean

➢ *Influence of gender on students' performance*

Results (table 2) revealed that 62.75 % and 37.25 % of students that sat for Agricultural Science WASSCE were males and females respectively, which points to gender disparity in favour of the male students. This can be attributed to the fact that Agricultural Science as a subject is tied to practical field work which most girls shy away from. Comparatively, female students with mean score of ($\bar{x}$ = 43.21), performed better than their male counterparts with mean score of ($\bar{x}$ = 40.50), although quality of performance was inversely proportional to average performance as male students (23.24) performed better than their female counterparts (15.77), and this can probably be attributed to the higher number of male students that sat for the examinations.

Performance was generally poor, as both gender had their average performance within the E_8 grade, implying that the subject is in jeopardy as the E8 grade falls short of the bar set for admission into tertiary institutions in Nigeria. Gender disparity amongst male and female students arise from deeply fixed prejudices, attitudes, customs and behavioral decisions, as such girls and women stand out clearly as an academic disadvantaged group especially in vocational and technical fields of engineering and agricultural science (Egun and Tibi, 2010). A report by Felix (2018) reported higher enrolment rate of male students in northern Nigeria secondary schools than female students' due to factors like religion, poverty and early child marriage, making girls the last to enroll and the first to drop out.

➢ *Test of Hypotheses*

Table 3: T-test analysis of rural and urban school students' performance

Variable	N	Mean ($\bar{x}$)	SD	t-calculated	Df	t-critical	Decision
Urban	1265	39.19	17.80	2.76	2610	1.96	Significant
Rural	1347	43.69	15.98				

From table 3, the null hypothesis stating that location has no significant effect on students' performance is rejected, as the calculated t-test value 2.76 was greater than the tabulated t-value 1.96. The implication of the above findings is that location influences students' academic performance in Agricultural Science.

Table 4: T-test analysis of male and female students' performance

Variable	N	Mean ($\bar{x}$)	SD	t-calculated	Df	t-critical	Decision
Male	1639	40.50	17.24	3.99	2610	1.96	Significant
Female	973	43.21	16.55				

Results (table 4) revealed that the null hypothesis stating that gender has no significant effect on students' academic performance is rejected, as the calculated t-test value 3.99 was greater than the tabulated t-value 1.96. The implication of the above findings is that gender influence students' academic performance in Agricultural Science.

IV. CONCLUSION

Findings from this study revealed that school location and students' gender are factors influencing students' academic achievement. Comparatively, rural secondary school students outperformed their counterparts from urban secondary schools, while female students outperformed their male counterparts. However, in terms of quality of performance, female students recorded lower performance and this can be attributed to cultural issues such as early child marriages, poverty and custom believes which are stumble blocks to gender equality in senior secondary school enrolment in most developing countries. The implication being that, girls are last to enroll and first to drop out.

RECOMMENDATIONS

➢ Equal educational opportunity is recommended for both sex in terms of enrolment and training to stimulate the interest of female students towards Agricultural Science. This can be achieved if Government and Non-Governmental Organizations provide tuition subsidy and scholarship for young Nigerians especially girls, as this will further facilitate students from poor background to pursue a career in Agriculture.

➢ Proprietors of secondary schools should endeavour to motivate and encourage re-training of their staffs through workshops and seminars, so as to improve their pedagogic methodologies and also ensure effective implementation of educational policies by the ministry of education.

REFERENCES

[1]. Adepoju, T. L., & Oluchukwu, E. E. (2011). A study of secondary school students' academic performance at the senior school certificate examinations and implications for educational planning and policy in Nigeria. *African Research Review Journal,* 5(6), 314-333

[2]. Adigun, J., Onihunwa, J., Irunokhai, E., Sada, Y., & Adesina, O. (2015). Effect of gender on students' academic performance in computer studies in secondary schools of New Bussa, Borgu Local Government Area of Niger State. *Journal of Education and Practive,* 6(33), 1-7

[3]. Agbaje, R. O., & Alake, E. M. (2014). Students' Variables as Predictor of Secondary School Students'Academic Achievement in Science Subjects. *International Journal of Scientific and Research Publications*, 4(9), 1-9

[4]. Agrawal, M., & Teotia, A. K. (2015). Academic achievement and Self-concept of secondary level students. *International Education and Research Journal,* 1(3), 26-33

[5]. Awodun, A. O., & Oyeniyi, A. D. (2018). Influence of location students' academic achievement in Junior Secondary School Basic Scienece in Ekiti State, Nigeria. *Journal of Emerging Technologies and Innovative Research (JETIR),* 5(6), 125-129

[6]. Ayodele, C. S., & Adebiyi, D. R (2013). Study habits as influence of academic performance of university undergraduates in Nigeria. *Research Journal in Organizational Psychology & Educational Studies,* 2(3), 72-75

[7]. Ezike, B.U. (2001). The effect of resources distribution and utilization on the performance of students in Chemistry. M. Ed. Dissertation, university of Ibadan, Nigeria.

[8]. Egun, A. C., & Tibi, E. U. (2010). The gender gap in vocational education: Increasing girl access in the 21st century in the mid-western states of Nigeria. *International Journal of Vocational and Technical Education,* 2(2), 18-21

[9]. Felix, P. U. (2018). Female Education: Gender Discrimination in Northern Nigeria Secondary schools. Accessed on 22nd June, 2020 @ https//www.researchgate.net/publication/322030925

[10]. Ibrahim, A. S., Okeh, B. I., & Ayorinde, M. O. (2019). Comparative analysis of students' academic performance in agricultural science in public and private secondary schools of Kaduna state, Nigeria. *International Journal of Thesis projects and Dissertations,* 1(2), 11-19

[11]. Kpolovie, P. J., Ololube, N. P., & Ekwebelem, A. B. I. (2011). Appraising the Performance of Secondary School Students on the WAEC and NECO SSCE from 2004 to 2006. *International Journal of Scientific Research in Education,* 4(2), 105-114

[12]. Mhiliwa, J. A. (2015). The effects of school location on learner's academic performance: A case of community secondary schools in Makambako Town Council, Njombe. An unpublished Masters Dissertation of Education, Administration, Planning and Policy Studies of the Open University of Tanzania.

[13]. Narad, A., & Abdullah, B. (2016). Academic performance of senior secondary school students: Influence of parental encouragement and school environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities,* 8(2), 12-19

[14]. Ndomi, B. M. (2018). Imperatives for sustainable food security through agricultural education in Nigeria. *Journal of Agricultural education teachers association of Nigeria,* 2(1), 1 – 9

[15]. Nwanosike, M. R. O. (2013). Single and co-education enrolment and performance of students in Agricultural science senior secondary schools in Zaria, Nigeria. *Journal of Continuing Education and Extension,* 4(2), 279-294

[16]. Ntibi, J. E. E, & Edoho, E. A. (2017). Influence of school location on students attitude towards Mathematics and Basic Science. *British Journal of Education,* 5(10), 76-85

[17]. Ogunjinmi, O., Salami, T., & Oyedare, O. (2015). Parents and students interest as determinants of students' academic performance in agricultural science in selected secondary schools in Oyo metropolis, Oyo State. *International Journal of Academic Research in Progressive Education and Development,* 4(4), 11-20

[18]. Onwunali, M. R. O. (2020, Sepetember, 7-9). *Agriculture and Out of School: A Myth or Reality in Nigeria.* [Lead paper presenataion]. 2nd International Conference of School of Early Childhood Care and Non-Formal Education Conference (Virtual), Federal College of Education, Zaria. Kaduna State.

[19]. Oredein, O. (2016). Effects of school variables on students' academic performance in Calabar Municipal Area of Cross River State. Online. Retrieved 09/10/2021.

[20]. Osonwa, O. K., Adejobi, A. O., Iyam, M. A., & Osonwa, R. H. (2013). Economic Status of Parents: a determinant on academic performance of senior secondary schools students in Ibadan, Nigeria. *Journal of Educational and Social Research,* 3(1), 1-11

[21]. Otekurin, O. A. (2014). Students' attitude and academic performance in Agricultural Science: A case study of public schools in Ibadan North Local Government Area of Oyo State. An unpublished PGDE thesis submitted to National Teachers Institute, Kaduna.

[22]. Ugwulashi, S. (2012). Parent Teachers Association (PTA) roles and funding of private school administration in Nigeria. *Asian Journal of Management Sciences and Education.* 1(2), 103 – 110

[23]. Wordu, H., & Iwok, U. (2018). Influence of gender and learning environment on students' academic achievement in mathematics in Akwa Ibom State. *International Journal of Innovative Social & Science Education Research* 6(1), 30-37

[24]. Yaro, A., Gadu, O. I., & Pev, I. (2016). Strategies for Improving the Teaching of Practical Agriculture in Senior Secondary Schools in Taraba State, Nigeria. *CARD International Journal of Educational Research and Management Technology (IJERMT), 1*(1), 16-36. Retrieved from http://www.casirmediapublishing.com.