Scientific Research Publishing

Comparative Performance of Senior Secondary School Agricultural Science Students in Zaria and Sabon Gari Local Government Areas of Kaduna State, Nigeria

M. R. O. Onwunali*, H. B. Muhammad, B. I. Balogun

Department of Agricultural Education, Federal College of Education, Zaria, Nigeria
Email: *martinroyal2002@yahoo.com, muhammadashir51@gmail.com

Abstract

The study focused on the comparative effect of enrolment, school types, and gender on the achievement of Senior Secondary Agricultural Science students in West African Senior Secondary Certificate Examination (WASSCE) results in Zaria and Sabon Gari Local Government Areas of Kaduna State. Twelve public and private schools were randomly but purposefully selected based on location and certification by the West African Senior Secondary Examination Board. Data were subjected to simple descriptive statistics, chi-square and analysis of variance at $p \leq 0.05$. Results showed that of the 3663 candidates, 52% comprised 30.1% male and 21.9% female, and 48% made up of 28.5% male, and 19.5% female enrolled in Sabon Gari and Zaria, respectively. The high significant X^2 value of 158.5 between location and school type indicated bias in enrolment. The significance difference ($p \leq 0.05$) in school types showed that, although general performance was poor, Sabon Gari out-performed Zaria students with mean grade of 46.59 and 43.36 corresponding to D_7 and E_8, respectively. However, quality of performance revealed that private schools in Sabon Gari were better (29.05%) than public (19.87%) while public schools in Zaria out-performed (22.04%) private schools (21.75%). Results also showed that gender was not a determinant factor to performance as there was no significant difference in the interaction between male and female students in both locations. However the quality of performance and mean scores were high in Sabon Gari (46.10%) compared to Zaria (44.52%). Therefore, location and school types had a strong influence on the performance of agricultural science and not gender. Hence efforts should be geared towards providing facilities, trained and qualified teachers, regular and sincere supervision and monitoring to facilitate students' interest, attitude and performance in the subject.

1. Introduction

Knowledge comes from learning and reading. According to Shastrri (2015) knowledge enables holding, retrieval, attainment, and efficient usage of accomplishments, power, and competencies through different methods, objectives, speed, levels, areas, frequencies, and conditions. Therefore, continuous studying elicits knowledge (Birch et al., 2015) and enhances mental capacity, self traits, information acquisition, understanding, and knowledge (Clark & Rumbold, 2006). Similarly, Bashir and Mattoo (2012) reported that reading habit and achievement are dependent on each other and are mostly influenced by the environment. A favourable learning environment creates favourable reading atmosphere and improves performance while poor home and school settings result in poor reading and weak performance of students (Aldridge, Mcchesney, & Afari, 2017). Implicitly, the ability to acquire or gain knowledge in school varies among students with a good habit of reading and those with low habit depending on location. However, training is *sine qua non* to learning, which creates permanent change in behaviour, interpretation or emotional status of an individual(s) that have learnt techniques and skills (Isangedighi, 2007). According to Denga (2002), training reflects positively on the degree of academic performance during and after graduation.

Education, therefore, is an inevitable tool for the development of student's expected reasoning and expression of good and innovative ideas, achieved through a continuous reading of qualitative published hard and e-books, magazines, journals and pamphlets of different kinds, particularly in agriculture and related subjects. Such materials are available in libraries and/or may be downloaded online using computers and mobile phone devices at the convenience of the students. Good reading habits no doubt propel students' confidence and performance in any assessment for knowledge gained, but unfortunately, Issa et al. (2012) reported that the act of watching video-CDs and unnecessary programme on television and movies and listening to audio-CDs, are the priorities of most students, resulting in poor performance.

Agriculture remains an indispensable industry for developed or developing nations (Muchiri et al., 2013; Ekezie, 2020). It provides the basic needs of food, clothes and shelter, supports over 75% of the rural populace in developing countries and less than 3% - 5% in developed countries (Nwanosike, 2010; Yaro et al., 2016), as well as generates income through different businesses (Iwena, 2017; Ndomi, 2018). However, the practice and results from school trained professionals are relatively low despite the huge amount expended by the government

on different programmes since independence. Consequently, Nigeria is enlisted as a developing country whose average populace feeds on less than $1 per day (Olukosi, 2007), mostly due to lack of interest on the side of the students, incompetent teachers, inadequate facilities and non-compliance to policies *inter alia* (Onwunali, 2020). As a field of study, agriculture is a *sine qua non* in the understanding and utilization of scarce environmental resources towards the production of food for Nigeria's ever-increasing population.

School as a social and learning environment provides an opportunity for a good reading habit to ensure that students are formally educated (Oredein, 2016), and responsible for the training and development of individuals for global challenges (Awodun & Oyeniyi, 2018). In Nigeria, agriculture is taught at primary, secondary and tertiary institutions. Still, senior secondary school education is recognized as the cornerstone (Oti-Aboagye, 2010), that serves as a bridge between primary and tertiary education. Such level of education trains adolescent youths of between the ages of 14 - 18 (Gouri, 2015). They constitute large number of the population, and therefore require quality education to promote sustainable economic growth, good health, skill labour, employment, industrialization as well as improved standard of living among others.

Academic assessment and performance of students determines gained knowledge, compliance of the curriculum and justifies huge amount government spends in education. Student's assessment through test, take home assignments and examinations is a conventional practice, sometimes used to identify and determine gained knowledge and judge the efficiency of schools in Nigeria (Nwanosike, 2015: Narad & Abdullah, 2016). Squire (2010) reported innovative agricultural education assessment strategies as performance-based, process, authentic, portfolio exhibits, demonstrations and profile. Assessment identifies, evaluates, and encourages students' performance in schools. Good academic results are a prerequisite for better career choices and job security (Ibrahim et al., 2019). Nigeria academic attainment is seriously regarded as the parameter for recruitment, placement, advancement and determines the faith of student's admission into tertiary institutions (Ibrahim et al., 2019). However, the high premium placed on academic achievement has generated quest for excellent results with or without study, hence the slogan "miracle centers". Students with good reading and low reading habits pass examinations in such centre. On the assessment and achievement of problems of female participation in agricultural science, Amadi and Eze (2018) identified lack of school commitments, sexual harassment, socioeconomic background and conflict between schools and hosting community as impeding factors to students' performance. Similarly, Amao et al. (2016) established gender bias in performance that favoured male students and private secondary schools in agricultural science, due to lack of qualified teachers with positive attitude and facilities in public schools (Atovigba et al., 2012; Agbaje & Alake, 2014), contrary to the stimulating school environment, available teaching facilities and positive attitudes that are commonly associated with private secondary schools (Amao & Gbadamosi, 2015).

1.1. Statement of Problem

Zaria host two important Local Government Areas (LGAs); Zaria and Sabon Gari. Most studies on students' performance concentrated on urban and rural locations, whereas some schools are neither urban nor rural (semi-urban). Speculations presume that the latter has better secondary schools and better students' performances. However, desperate parents and guardians disregard location and send their wards to schools of their choice in anticipation of good results without hassles, whether the child is good or not (Adepoju & Oluchukwu, 2011). This necessitated the need for comparing performance in the two LGAs.

Secondly, gender inequality where the male dominated enrolment and performance has been documented despite the enormous contribution of females to economic development (Sheehan, 2012). Therefore, there is a need to confirm the status in Zaria to establish results that will assist in the achievement of gender equality for sustainable development.

Again, in spite of the place of Agricultural Science in human and national development, majority of Nigerian youths choose carrier in the subject as a second thought when they fail their preferred course of study such as Medicine, Pharmacy and Engineering (Nwanosike, 2010), possibly why among other factors, they perform very badly. It is against this background that the study tends to establish the performance of students in Zaria and Sabon Gari LGAs, using West African Senior Secondary Certificate Examination (WASSCE) results.

1.2. Objectives of the Study

Sequel to the speculations on dwindling and declining enrolment, massive migration of students from public to private schools and poor academic performance of students in Zaria and Nigeria in general, the study sought to comparatively:

1) Evaluate the pattern of enrolment in public and private schools.
2) Determine performance in public and private school in Agricultural Science.
3) Assess the academic performance of the male and female students.

1.3. Hypotheses

The study tested the following null hypotheses at $p \leq 0.05$ level of significance:

Ho_1: There is no significant difference in the enrolment of public and private schools in the two LGAs.

Ho_2: Location has no significant influence on the performance of public and private schools in Zaria and Sabon Gari.

Ho_3: Location has no significant effect on the academic performance of the male and female.

2. Materials and Methods

2.1. Area of the Study

The research was conducted in Zaria and Sabon-Gari LGAs of Kaduna State. Za-

ria as a city lies between latitude 11.07˚ and 12˚ North and longitude 07.44˚ and 8˚ East, and has several primary, secondary and tertiary institutions. Zaria is predominantly Hausa indigenes while Sabon Gari is mixed, but presumed to be dominated by outsiders within and beyond the borders of Nigeria. Inhabitants are farmers while the majority combine civil service work and business/trading with farming (Hassan et al., 2020).

2.2. Experimental Procedure

The Ex post-Facto research design was used to determine differences in the performance of students in the two LGAs with different characteristics (Ibrahim et al., 2019). A total of twelve Senior Secondary Schools comprising of six Public and Private Schools were randomly and purposely selected considering West African Examination Council (WAEC) certified schools, direction and location within the LGAs (Table 1). Data on enrolment and performance from 2014-2018 using West African Senior Secondary School Certificate Examination (WASSCE) results were obtained from each of the 12 schools under permission and confidential supervision of Kaduna State Ministry of Education Zonal Office Zaria and Kaduna State Examination Board. A checklist of questions on family background, parental support and school factors was designed and used to interview students randomly in the selected students.

The WASSCE results were both summative and formative using the grading system of 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). The required grade otherwise known as "Quality of Performance" in the study was A_1 - C_6, as C_6 is the minimum required grade for admission into tertiary institutions. The grading corresponded to the standard subject format of West African Examinations Council published in www.mywaectimetable.com and Otekunrin et al. (2019) as follows A_1 = 80 - 100, B_2 = 70 - 79, B_3 = 65 - 69, C_4 = 60 - 64, C_5 = 55 - 59, C_6 = 50 - 54, D_7 = 45 - 49, E_8 = 40 - 44, F_9 = 0 - 39.

Three thousand six hundred and sixty-three students (3663) comprising of 1756 and 1907 from Zaria and Sabon-Gari LGA, respectively that enrolled and sat for the examination were used to determine performances for location, sexes and school type. Data were subjected to simple descriptive statistics, while chi-square (X^2) and Analysis of variance (ANOVA) were used to test the hypotheses at $p \leq 0.05$.

3. Results

3.1. Enrollment of Students

Results (Table 2) showed a total enrollment of 52% in Sabon Gari and 48% in Zaria, of the 52%, 30.1% and 21.9% were male and female while 28.5% and 19.5% were male and female, respectively in Zaria. Results revealed 58.6% male and 41.4% female of the total 3663 students enrolled for agricultural science

Table 1. Selected agricultural science senior secondary schools and the total number of students that sat for examination from 2014-2018 in 2021 (N = 3663).

Location	Name of School	School Type	No. of Students
ZARIA	G.S.S K/KUYANBANA	PUBLIC	137
	G.S.S DAKACE	PUBLIC	537
	G.S.S TUDUN/JUKUN	PUBLIC	446
	GREAT BRIGHT STAR	PRIVATE	159
	LAWAL ALIYU ACADEMY	PRIVATE	223
	D.S.S NUHU BAMALI POLYTECHNIC	PRIVATE	254
Sabon Gari	G.S.S MUCHIA	PUBLIC	394
	G.S.S CHINDIT	PUBLIC	258
	G.S.S AMINU (SENIOR)	PUBLIC	168
	KAI NEW ERA INTERNATIONAL SCHOOL	PRIVATE	470
	DAGAMA LEGACY SCHOOL	PRIVATE	355
	BUK'S INTERNATIONAL SCH OOL	PRIVATE	262

GSS = Government secondary school, DSS = Demonstration secondary school.

Table 2. Enrolment of students in agricultural science in the selected senior secondary schools in Zaria and Sabon Gari Local Government Areas, 2014-2018 in 2021 (N = 3663).

Location	ST	Number of candidates per year												Total	$\bar{x}$	X^2
		2014		2015		2016		2017		2018		Sub-Total				
		M	F	M	F	M	F	M	F	M	F	M	F			
Zaria	PU	171	145	156	103	219	88	112	44	53	29	711	409	1120	373.3	**158.5**
	PR	93	60	82	101	59	42	49	43	49	58	332	304	636	212.0	
Subtotal (%)		7.2	5.6	6.5	5.6	7.6	3.5	4.4	2.4	2.8	2.4	28.5	19.5	**48.0**		
Sabon Gari	PU	120	65	84	45	108	61	136	74	68	59	516	304	820	273.3	
	PR	143	117	178	149	57	45	110	78	99	111	587	500	1087	362.3	
Subtotal (%)		7.2	4.9	7.2	5.3	4.5	2.9	6.7	4.2	4.5	4.6	30.1	21.9	**52.0**		
Grand Total		914		898		679		646		526		2146	1517	3663		
%		25.0		24.5		18.5		17.6		14.4		58.6	41.4	100		

% = Percentage, N = Total number of students, M = Male, F = Female, ST = School type, PU = Public, PR = Private, X^2 = calculated Chi-square value, $\bar{x}$ = mean.

examination in Zaria and Sabon Gari LGA, respectively. Yearly enrollment was inconsistent and in reducing manner with 25% and 14.4% enrollment observed in 2014 and 2018, respectively. Results also revealed high enrolment (373.3) in Zaria public schools followed by Sabon Gari with a mean number of 362.3 in private schools. However, based on location, Sabon Gari had more population of students. Generally, the significant X^2 value of 158.5 indicated high enrollment

of male and public schools in Zaria followed by private school students in Sabon Gari, therefore, the hypothesis that there is no significant difference in the enrolment of public and private schools in the two LGAs was rejected.

3.2. Influence of School Types on Student Academic Performance in Agricultural Science

Results (Table 3) indicated poor performance in both school types with mean scores of 43.36 and 46.59 corresponding to E_8 and D_7, for Zaria and Sabon Gari, respectively. Specifically, mean scores of Sabon Gari 45.44% and 47.74% for public and private schools were higher compared to Zaria public (41.29%) and private (45.42%) schools, indicating that private school students performed academically better. Similarly, in terms of quality of performance (A_1 - C_6) that determines whether or not the students may continue with the subject to tertiary level, 24.46% and 21.90% passed in Sabon Gari and Zaria, respectively. However, results also showed that, public schools performed better with 22.04% in Zaria while private schools dominated (29.05%) in Sabon Gari. The significance different ($P \leq 0.05$) on the interaction between the two location and school type (Table 4) clearly indicated that although results were generally poor, Sabon Gari agricultural science students performed better, hence reject the hypothesis that location has no influence on performance of students in public and private schools.

3.3. Effect of Location and Gender on Academic Performance

Results in Table 5 revealed poor mean scores of 44.52% and 45.10% for Zaria and Sabon Gari students which corresponded to D_7 grade. However, gender mean scores varied from a minimum of 39.1% to maximum of 49.94% for male and female, which was directly proportional to the percent pass of the students. Results also showed that Sabon Gari students performed better in terms of quality performance with mean score of 26.95% and 21.97% for male and female against their counterparts in Zaria that scored 22.72% and 21.07% for male and female, respectively. Results (Table 6) clearly showed significant difference within location and gender but there was no significance different in the interaction (L * G), indicating that performance is at par, meaning that gender is not a strong

Table 3. Relative performance of public and private school students in Zaria and Sabon-Gari LGA (N = 3663).

Location	ST	A_1	B_2	B_3	C_4	C_5	C_6	D_7	E_8	F_9	Total	%	Q%	$\overline{x}$	β
							Grades								
Zaria	PU	5	17	103	64	61	137	115	140	478	1120	63.78	22.04	41.29	43.36
	PR	6	23	75	21	58	199	91	92	71	636	36.22	21.75	45.42	
Sabon-Gari	PU	1	1	83	50	66	178	113	107	221	820	43.00	19.87	45.44	46.59
	PR	1	14	147	91	101	200	209	161	163	1087	57.00	29.05	47.74	

ST = School type, PU = Public, PR = Private, % = Percentage, Q% = percentage quality of performance (Zaria = 21.90%: Sabon Gari = 24.46%), N = Total number of students, β = combined mean of public and private school per LGA, $\overline{x}$ = mean.

Table 4. Effect of location and school type on academic performance of students in agricultural science.

Source of Variation	SS	DF	MS	F	F-tabulated
Location	10468.48	1	10468.48	39.95	3.84
School type	55809.46	1	55809.46	212.99	3.84
Interaction (L * ST)	1240.86	1	1240.86	4.74	3.84
Error	958755.11	3659	262.03		
Total	1026273.91	3663			

SS = sums of squares, DF = degree of freedom, MS = means square, L = location, ST = school type.

Table 5. Relative performance of male and female students in Zaria and Sabon-Gari LGA (N = 3663).

Location	Sex	A_1	B_2	B_3	C_4	C_5	C_6	D_7	E_8	F_9	Total	%	Q%	$\bar{x}$	β
Zaria	M	6	18	108	47	63	157	123	124	372	1018	57.97	22.72	39.10	44.52
	F	5	22	70	38	56	179	83	108	177	738	42.03	21.07	49.94	
Sabon-Gari	M	1	9	119	71	85	229	183	165	241	1103	57.84	26.95	43.85	46.10
	F	1	6	111	70	82	149	139	143	804	804	42.16	43.95	21.97	48.33

M = Male, F = Female, % = Percentage, Q% = Percentage Quality of performance (Zaria = 21.90%; Sabon Gari = 24.47%), N = Total number of students, β = combined mean of male and female per LGA.

Table 6. Effect of location and gender on academic performance of students in agricultural science.

Source of Variation	SS	DF	MS	F	F-tabulated
Location	10468.48	1	10468.48	38.08	3.84
Gender	9067.43	1	9067.43	32.98	3.84
Interaction (L * G)	725.81	1	725.81	2.64	3.84
Error	1006012.19	3659	274.9		
Total	1026273.91	3663			

SS = sums of squares, DF = degree of freedom, MS = means square, L = location, G = gender.

determinant factor and as such, the hypothesis that location has no significant effect on the academic performance of the male and female was accepted.

4. Discussion

The policy 6-3-3-4 education system of Nigeria made it clear that agricultural science should be compulsorily taught as a pre-vocational subject at the primary and junior secondary school and as a vocational subject at senior secondary school level (Federal Republic of Nigeria (FRN), 2004). This is to encourage enrolment and ensure that youths inculcated techniques, skills and practice of

the subject. Seventeen years later, evidence of inconsistent and declined enrollment as revealed by the study abound in most areas of the country (Nwanosike, 2005; Ojimba et al., 2018). Although Sabon Gari had a high number of enrollment due to proliferation of private schools, Zaria had more population in public school because of reduced or cheap school fees and the presumption that education sponsorship is government's responsibility. Average income parents in Sabon Gari preferred private school to have positive attitudinal teachers, adequate facilities, good school environment, and the presumption that students are assisted to pass external examination. Unfortunately, majority of the private school lack facilities, such as demonstration farm and agricultural laboratories for practical, hence they rely on alternative to practical which do not inculcate the right skill and knowledge. However, the study obviously indicated that location strongly influenced enrolment in the school types among relatively low number of students that opt for the subject in the two LGAs within the five years.

Ezewu (2007) associated the declining syndrome to lack of interest and students' perception of ending up as dirty farmers without future, such impression makes student see practical agriculture as punishment and or a *sine qua non* to pass examination, and not as knowledge for skill acquisition and means of livelihood on graduation. Furthermore, broad curriculum and unclear specification for practical skill (Egbule, 1998), inconsistent curriculum development, lack of interest, inadequate trained agricultural science teachers and school factors have also been reported as impediments (Onwunali, 2020). Hence the need for proper school monitoring to facilitate implementation and generate feedback mechanisms to sustain the integration of agriculture as basic subject in primary and secondary schools and review of policy on agriculture-based trade subjects to involve trades like crop production and horticulture. Zaria is an agrarian city and the majority of men and youths are poor resourced subsistent farmers. Therefore, a sustainable free education plan, provision of appropriate facilities and abolition and or amendment of cultural norms like early marriage and its consequent *Kulle* system will no doubt encourage female enrolment and participation for gender equity of the United Nations Sustainable Goals.

Agricultural science requires an in depth skill of theoretical and practical knowledge, adequate facilities, and a conducive environment to stimulate good teaching, learning and performance of students. In line with speculation, Sabon Gari students performed systematically better with the significant interaction between location and school type, indicating that both factors strongly determined students' performance in agricultural science. However, results were generally poor in both LGAs with an average of D_7, against the presumed expectations in private schools. Results is similar to Muhammad et al. (2016), who recommended that, teachers and librarians should ensure good reading habit in students for individual and contribution to socio-economic development of the society. They further identified debate clubs, seminars, quiz competitions and conferences as means of enhancing reading. Still, regular reading campaign, mo-

tivational awards, and provision of internet facilities in secondary schools will undoubtedly facilitate reading of online published materials and keep Nigerian students abreast of reading online published materials in the subject in the comfort of their rooms.

Comparatively, Sabon Gari students in public and private schools had higher grades due the nature of the environment. The high competition among teachers, students and parents in terms of positive attitudes, interest and commitments in public and private schools in the LGA may have been responsible, a condition rarely common in Zaria. It is obvious that a conducive school environment and classrooms that are well-equipped with modern teaching and learning facilities and an adequate number of trained teachers enhanced the development of student's cognitive, affective and psychomotor skills and subsequent excellent academic performance (Ekezie & Owo, 2019; Amao & Gbadamosi, 2015). In Zaria, the condition is worsened by poor parental income, and as such most parents cannot afford the expensive school fees of private schools for their wards, hence resort to public schools. Amao et al. (2016) earlier established an existing gender bias between male and female academic performance in agricultural science among private and public schools, where private school had better results compared to public schools.

Field interview and personal observation also revealed that, due to poor remuneration, youths are not properly guided by the teachers in public schools and sometimes don't come to work instead engage in farming and small businesses to earn a living, coupled with poor use of teaching methodology necessitated by shortage of trained and qualified teachers. The teaching method(s) in secondary schools' agricultural science influenced the students' academic performance (Ugbor & Oguzor, 2005). Previously, public schools have been associated with shortage and lack of qualified teachers, inadequate facilities, and poor equipment, resulting in poor student performance, especially in sciences (Atovigba et al., 2012; Agbaje & Alake, 2014). In many of the schools in both LGAs, experience showed that agricultural science teachers were not professionals, but biology, geography and integrated science bias teachers and may be responsible for the generally poor performance. Teachers' understanding of the subject matter, friendliness, application of efficient methods such as demonstration method in practical and classroom, student's personal efforts and level of intelligence were paramount to excellent performance in secondary school agricultural science in Emohua LGA of Rivers State, Nigeria (Ikpaikpai, 2008; Ojimba et al., 2018).

Formal academic education begins early at three years in nursery, primary and to secondary school in Sabon Gari and most parents after school hours organize extra-lessons and provide study rooms for their wards for consistent reading and learning activities giving the children the boldness and opportunity to read fluently and write in the English language, which is the medium of communication in Nigeria. Aldridge et al. (2017) reported that conducive learn-

ing environment impacts sound behavioural learning conditions to students. Contrarily, majority in Zaria attend Islamic school, commonly referred to as Islamia and thereafter to primary school and are taught with vernacular (Hausa language) up to secondary school, with relatively little or no home guidance or opportunity to read. The educational policy is clear on the use of vernacular from primary one to three, and subsequently gradually substituted with English language but in most cases is not implemented due to students' academic background and incompetent teachers. Reports have shown that poor parental guidance and supervision, poor motivation, lack of agricultural training and practice, poor reading habits were among the factors responsible for poor academic performance of students in Agricultural Science in Secondary Schools in Nigeria (Ekezie, 2020). Similarly, a positive social environment at home strongly influenced students' behaviour, academic achievement, and motivation (Hoffman et al., 2009; Yahaya et al., 2010). Therefore, poor home and school conditions negatively influence students' performance in Agricultural Science.

The study also indicated that gender is not a serious factor in the determination of agricultural science students' performance in the two LGAs, as there is no significant difference between gender and location interaction. This is because, under the same condition and given equal opportunity, male and female students perform academically the same. The poor performance may be probably due to poor reading habits of students and inadequate or lack of facilities. Although quality of performance was high among male students, mean scores favoured the females in both LGAs. Such a result revealed that the male students had better grades than females, possibly due to a positive attitude toward learning and efficiency in agriculture. Amao et al. (2016) reported standard level of significance performance between male and female students in agricultural science where male students were better. The high performance may be probably due to the availability of competent teachers and facilities for teaching in Port Harcourt which is not available in Zaria. Prior to this, evidence of male students performing better than the females in Agricultural science were documented (Dowing et al., 2008; Kolawole & Ala, 2014).

5. Conclusion

Achievement in school provides feedback for curriculum planning, innovation, evaluation and implementation, and monitoring school activities. The fluctuating and declined enrolment of students, particularly the female will jeopardize government efforts towards attainment of gender parity in education, hence the need to consolidate good policies on gender equality. The evidently poor performance of students particularly among male students in Zaria LGA was associated with parents, inadequate facilities, school location and school types, and not gender in students' achievement in WASSCE. Therefore, urgent effort is needed to monitor schools for information that will ameliorate enrolment problems and ensure provisions of facilities and training for adequate knowledge acquisition in agricultural practice and education.

Recommendations

Based on the findings of the study the following recommendations were made:

- The inadequate implementation of education policy on compulsory integration of agriculture as a basic subject in primary and junior secondary school should be enforced by educational stakeholders while the current agriculture trade subjects should be harmonized to encompass all trade areas of agriculture to improve students' enrolment.
- Field observation showed poor and inadequate number teachers, therefore qualified agricultural science teachers should be employed. The existing teachers need to be retrained on pedagogy through workshops, conferences, graduate and post-graduate programmes among others, to improve the use of agricultural teaching methods for student's performance, and teachers motivated through commensurate remuneration.
- Reports have shown that curriculum review and or amendment is dominated by the Ministry, Agencies and Commission when the need raises, and probably could be associated to poor application and performance of the student. Such interference should be done with minimum influence and teachers given the opportunity to review based on field experience. Squire (2010) reported that maximum involvement of agricultural educators is needed in the assessment plans that reflects on the uniqueness of the programme, policies, vision and mission.
- School registration particularly the private schools, monitoring and feedback mechanism is a major problem in establishment of schools in Zaria, therefore sincere supervision and monitoring by government agencies and commissions is needed in both private and public schools in Zaria to ensure that facilities such as classrooms and its equipment, laboratories and farms are sustained for effective teaching and learning of the subject.
- The poor performance of students should be improved through the use of appropriate teaching methods and inculcation of good reading habits in the students by the teachers while parents ensure proper guidance at home. Provision of internet facilities will also facilitate understanding, placing students at the same level as their counterparts globally.

Acknowledgements

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

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, 5,* 314-333. https://doi.org/10.4314/afrrev.v5i6.26

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,* 123-134.

Aldridge, J. M., Mcchesney, K., & Afari, E. (2017). Relationships between School Climate, Bullying and Delinquent Behaviours. *Learning Environments Research.* https://doi.org/10.1007/s10984017-9249-6

Amadi, N. S., & Eze, U. (2018). Constraints to Female Students' Participation in Practical Agriculture in Senior Secondary Schools in Abua/Odual Local Government Area, Rivers State. *International Journal of Innovative Agriculture & Biology Research, 6,* 1-10.

Amao, S. R., & Gbadamosi, J. (2015). Gender Disparities and Socio-Economic Factors on Learning Achievement in Agricultural Science of Secondary School Students in Rural and Urban Areas of Ogbomoso North Local Government Area of Oyo State. Nigeria. *Journal of Education and Practice, 6,* 1-5.

Amao, S. R., Adewuyi, A. S., Gbadamosi, J., Salami, T. B., & Ogunjinmi, O. O. (2016). Gender Bias and Achievement in Agricultural Science among Public and Private Secondary School Students in Oyo-West Local Government Area of Oyo-State, Nigeria. *International Journal of the Guild of Contemporary Academic Researchers (IJGCAR), 2,* 102-108.

Atovigba, M. V., Vershima, A. M., O'Kwu, E. I., & Ijenkeli, E. (2012). Gender Trends in Nigerian Secondary School Students' Performance in Algebra. *Research Journal of Mathematics and Statistics, 4,* 42-44.

Awodun, A. O., & Oyeniyi, A. D. (2018). Influence of Location Students' Academic Achievement in Junior Secondary School Basic Science in Ekiti State, Nigeria. *Journal of Emerging Technologies and Innovative Research (JETIR), 5,* 125-129.

Bashir, I., & Mattoo, N. H. (2012). A Study-on-Study Habits and Academic Performance among Adolescents (14-19) Years. *International Journal of Social Science Tomorrow, 1,* 1-5.

Birch, P., Batten, J., & Batey, J. (2015). The Influence of Student Gender on the Assessment of Undergraduate Student Work. *Assessment & Evaluation in Higher Education.* https://doi.org/10.1080/02602938.2015.1064857

Clark, C., & Rumbold, K. (2006). *Reading for Pleasure: A Research Overview.* National Literacy Trust. http://www.literacytrust.org.uk/assets/0000/0562/Reading_pleasure_2006.pdf

Denga, D. I. (2002). *Educational and Social Psychology for Schools and Other Social Organizations.* CATS Publisher.

Dowing, K., Chan. S., Downing, W., Kwong, T., & Lain, T. (2008). Measuring Gender Difference in Cognitive Functioning. *Multicultural Education and Technology Journal, 2,* 4-18. https://doi.org/10.1108/17504970810867124

Egbule, P. E. (1998). Fine-Tuning the Pre-Vocational Education Programme Delivery in Nigerian Secondary School. *Nigerian Journal of Curriculum and Instruction, 6,* 86-91.

Ekezie, A. I. A. (2020). Effects of Environment on Academic Performance of Students in Agricultural Science in Secondary Schools in Rivers State, Nigeria. *International Journal of Humanities and Social Science, 10,* 56-61.

Ekezie, A. I. A., & Owo, O. T. (2019). Assessment of the Capacity Building Needs of Agricultural Science Teachers for Innovative Instructional Delivery in Secondary Schools in Rivers State, Nigeria. *Innovation of Vocational Technology Education, 15,* 43-57. https://doi.org/10.17509/invotec.v15i2.19631

Ezewu, E. E. (2007). *Social Psychology Factors of Human Learning in Schools.* Leadway Books.

Federal Republic of Nigeria (2004). *National Policy on Education.* NERDC Press.

Gouri, S. (2015). *Gender Concerns in Education.* National Curriculum for Elementary and Secondary Education Framework, NCERT.

Hassan, A., Onwunali, M. R. O., & Ibrahim, S. (2020). Small Scale Rice Farmers' Information Needs for Sustainable Development in Bakori Local Government Area, Katsina. *International Journal of Operational Research in Management, Social Sciences & Education (IJORMSSE), 6,* 367-379.

Hoffman, L. L., Hutchinson, C. J., & Reiss, E. (2009). On Improving School Climate: Reducing Reliance on Rewards and Punishment. *International Journal of Whole Schooling, 5,* 13-24.

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,* 11-19.

Ikpaikpai, D. K. (2008). *Effects of Teaching Qualifications on Students' Academic Performance in Agricultural Science in Secondary Schools in Yenegoa LGA of Bayelsa State.* An Unpublished Bachelor of Education (B.Ed) Project, Department of Agricultural Science, Rivers State College of Education.

Isangedighi, A. J. (2007). *Child Psychology: Development and Education.* Eti-Nwa Associates.

Issa, A. O., Aliyu, M. B., Akangbe, R. B., & Adedeji, A. F. (2012). Reading Interest and Habits of the Federal Polytechnic Students. *International Journal of Learning and Development, 2,* 470-486. https://doi.org/10.5296/ijld.v2i1.1470

Iwena, O. A. (Ed.) (2017). *Essential Agricultural Science for Senior Secondary School.* Tonad Publishers.

Kolawole, E. B., & Ala, E. A. O. (2014). Effect of Continuous Assessment and Gender on Students' Academic Performance in Mathematics in Some Selected States in the South West Nigeria. *Education Research Journal, 4,* 1-6.

Muchiri, J. M., Odilla, G. A., & Kathuri, N. J. (2013). Studies Perception on Secondary School Agriculture: A Case Study of Meru Central Distruct, Kenya. *Asian Journal of Social Sciences and Humanities, 2,* 129-135.

Muhammad, A., Muhammad, I. U., Muhammad, U. M., Muhammad, R. A., & Muhammad, F. K. (2016). Agricultural Students and Their Academic Performance: A Study of Students in Punjab, Pakistan. *International Journal of Environmental & Science Education, 11,* 5429-5437.

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,* 12-19. https://doi.org/10.21659/rupkatha.v8n2.02

Ndomi, B. M. (2018). Imperatives for Sustainable Food Security through Agricultural Education in Nigeria. *Journal of Agricultural Education Teachers' Association of Nigeria, 2,* 1-9.

Nwanosike, M. R. O. (2005). Effect of School Location and Gender Differences on Students' Achievement in Senior Secondary Agricultural Science in Imo State. *Journal of League of Researches in Nigeria, 6,* 100-105.

Nwanosike, M. R. O. (2010). Low Agricultural External Input for Economic Empowerment in Nigeria. In M. R. O. Nwanosike (Ed.), *Sustainable Low External Input Agricultural Strategies for Nigeria* (pp. 1-18). Esonaj.

Nwanosike, M. R. O. (2015). Influence of Gender and School Location on Students' Performance in Junior Secondary Agricultural Science in Akure, Ondo State of Nigeria. *Journal of Studies in Management and Planning, 1,* 380-389.

Ojimba, T. P., Nwafor, S. A., Chigekwu, N., & Onyekwere, A. (2018). Roles of Students in Academic Performance in Agricultural Science in Secondary Schools in Emohua Local Government Area of Rivers State, Nigeria. *Direct Research Journal of Social Science and Education Studies, 5,* 75-84.

Olukosi, J. O. (2007). A Sustainable Vocation and Technical Agricultural Education for National Economic Empowerment and Development Strategy (NEEDS). *Journal of Vocational Education, 1,* 1-6.

Onwunali, M. R. O. (2020). Youth Participation in Agriculture for Food Security, Self-Reliant and Economic Development in Nigeria. In *The 3rd Annual National Conference of the School of Early Childhood Care and Primary Education, Federal College of Education, Zaria on the Theme: "Challenges of out of School Children in Nigeria: Solutions and Way forward".*

Oredein, O. (2016). *Effects of School Variables on Students' Academic Performance in Calabar Municipal Area of Cross River State.* https://ng.linkedin.com/in/oluwaseun-oredein-mba-m-sc-277bb048?trk=pulse-article_main-author-card

Otekunrin, O. A., Otekunrin, O. A. & Oni, L. O. (2019). Attitude and Academic Success in Practical Agriculture: Evidence from Public Single-Sex High School Students in Ibadan, Nigeria. *Asian Journal of Advanced Research and Reports, 4,* 1-18. https://doi.org/10.9734/ajarr/2019/v4i330111

Oti-Aboagye, R. (2010). *Gender Disparities in Secondar School Enrolment. Why the Gap? A Comparative Study in Guinea and Gambia.* Stockholm University Institute of International Education.

Shastrri, F. C. (2015). Survey Research on the Reading Habits of MBA Students of Saurshtra Region. *Current Research, 7,* 21416-21420.

Sheehan, K. (2012). *Does Gender Inequality in Education Affect Educational Outcomes?* Honors Scholar Program.

Squire, P. J. (2010). Students' Assessment Procedure in the Agricultural Education Undergraduate Program: The Botswana College of Agricultural Experience. *Current Research Journal of Social Sciences, 2,* 296-300.

Ugbor O., & Oguzor, N. S. (2005). Influence of Agricultural Education Students Home Assignments Scores on Their Performance in Class Tests. *Journal of Technology and Education in Nigeria, 10,* 55-59. https://doi.org/10.4314/joten.v10i1.35722

Yahaya, A., Ramli, J., Hashim, S., Ibrahim, M. A., Kadir, H. B. H., & Boon, Y. (2010). The Effects of Various Modes of Absenteeism Problem in School on the Academic Performance of Students in Secondary Schools. *European Journal of Social Sciences, 12,* 624-639.

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,* 16-36. http://www.casirmediapublishing.com