



Analysis of Gender Gap in Teachers' Supply in Arts and Science Subjects in Senior Secondary Schools in South East States Nigeria

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ABSTRACT

The study assessed gender gaps in teachers' supply in Arts and Science subjects in senior secondary schools in South East Zone of Nigeria from 2011-2020. Four (4) research questions and Four (4) null hypotheses guided the study. The study adopted descriptive survey design. The population for the study comprised one thousand three hundred and ten (1310) public senior secondary schools in twenty one (21) Education Zones in South East States of Nigeria. All the schools were used; hence, there was no sampling. Secondary data were used in the study. The data on the Gender Gap in Teacher Supply in Secondary Schools were collected directly from the Post-Primary Management Board (PPMB) and Secondary Education Board of each of the States under investigation. The data collected covered teacher supply in Arts and Science subjects from 2011 to 2020 in each State of South East Zone. The checklist was validated by three lectures from Faculty of Education, Ebonyi State University Abakaliki. There was no reliability since the data was secondary data. Frequency distribution and percentage were used to analyse the secondary data while the Chi-Square was used to test the null hypotheses with the aid of Statistical Package for Social Sciences (SPSS) at 0.05 level of significance. The study revealed among other things that there were more supply of male teachers in Science subjects in secondary schools in South East Nigeria than female teachers; that there were more supply of female teachers in Arts subjects in secondary schools in South East Nigeria than male teachers; that the disparity index of female teachers is higher in science subjects in secondary schools in South East Nigeria, and that there was high disparity index of male teachers in Arts subjects in secondary schools in South East Nigeria. Based on these findings, the study recommended among other things that more female teachers should be recruited for science subjects, and that more male teachers should be recruited to Arts subjects by the Ministry of Education for equity and equality in the teaching of science and Arts subjects in secondary schools in South East Nigeria.

Key Words: *Gender, Gender Gaps, Gender Disparity, Teachers' Supply, Secondary Schools*

Introduction

The importance of gender characteristics in relation to teachers' supply and students' achievement in secondary schools cannot be underestimated. Gender is a variable that plays important role in different facets of life; hence, the role an individual plays in society is distinguished by his or her gender characteristics. In other words, men are expected to behave and to perform duties and show they are men, while women behave and perform duties and show they are female. Eugene and Ezeh (2016) defined gender as a psychological term and a cultural construct developed by society to differentiate between the roles, behaviours, mental and emotional attributes of males and females. Tim (2018) also maintained that gender characteristics, therefore result in cultural learning and socialization which continue throughout one's life. Seguino (2016) opined that gender is the array of socially constructed roles and relationships, personality traits, attitudes, behaviours, values, relative power and influence that society ascribes to the two sexes on a differential basis. Nevertheless, for men to choose to work as teachers in the early years of schooling, they must first overcome gender barriers. For example, gender expectations and stereotypes strongly influence why men shy away from teaching. For instance, Igbokwe (2016) maintained that teaching profession at early stage is usually considered as "women's work" and associated with the care and nurturing of young children. As such, men who teach young children may have their masculinity questioned or scrutinised, and not be seen as "real men". Teaching young children, however, requires a balance of stereotypically feminine and masculine traits. Therefore, gender is the different perceptions of male and female teachers about teaching profession which imposes differences in the appointment or supply of teachers to secondary schools. The differences in perception and cultural role orientation of children could result to gender gap in teachers' supply in secondary schools.

Gender gap is the difference between women and men as reflected in social, political, intellectual, cultural, or economic attainments or attitudes (UNESCO, 2018). This shows that gender gap measures these differences irrespective of overall income level. According to Seguino (2016), gender gap is an important indicator of social and economic stratification and hence create gap between people in the society. The gap in economics, for example, is the difference between men and women when it comes to salaries, number of leaders and participation in the workplace. Gender studies usually examine the differences between how men and women are represented within decision-making in organizations. Therefore, the gender gap index aims at measuring four key areas: health, education, economics and politics (Sabine and Falk, 2019). According to Wright and Rogers (2009), gender gap, or in other words, gender inequality refers to unfair rights between male and female based on different gender roles which leads to unequal treatment in life. Ellison and

Swanson (2018) held that the concept of gender gap has been widely known in human history but not until the beginning of the 20th century when the transformation of gender relations became one of the most rapid, profound social changes. In relation to school, it is imperative to note that teachers are socialized by society to adhere to social and occupational roles that align with masculine and feminine gender stereotypical traits and behaviours. For example, women are still expected to be caring and to focus more on relationships than men which might have implications in the supply of female teachers as they are more attentive of their children's emotional needs at home (Eagly, Nater, Miller, Kaufmann and Sczesny, 2020). Power and higher social status are also inherent to the masculine gender role, paving the way for access to privileges in organizations or higher jobs that suit their status (Eagly and Wood, 2012). These inherent role differences as perceived in the society invariably influence occupational distribution of people especially in secondary schools. This inherent role differences therefore create artificial gender disparity in schools.

Gender disparity is the differences or inequality that exists between males and females in social, education, politics and economics. The United Nation Education, Science and Cultural Organisation (UNESCO, 2016) defined gender disparity as the differences in women's and men's access to resources, status and well-being, which usually favour men and are often institutionalised through law, justice and social norms. In this study, gender disparity is the differences in the selection or appointment of teachers to science or arts subjects as a result of cultural orientation especially in Africa. This cultural orientations in African society portrays that males is strong and must engage in heavy or strenuous tasks or discipline like Mathematics, Sciences, Engineering and Woodwork while females are weaker and must go for Artistic and Linguistic subjects like English, Government, History, Commerce, Economics and Civic Education. These orientations begins at home and culminate to job selection or appointment positions as well as male and female students' liking or choosing a subjects in terms or arts or science. Gender Disparity Index (GDI) is a composite measure, reflecting inequality in achievements between women and men in three dimensions: reproductive health, empowerment and the labour market. European Institution for Gender Equality (2017) maintained that GDI provides insights into gender disparities in health, education, empowerment and the labour market. This study analyse the GDI in the supply of male and female teachers in Arts and Science subjects particularly in secondary schools.

Secondary education is the level of education after primary education; it includes the final stage of compulsory primary education (FRN, 2013). It implies that secondary education is received before entering into tertiary level. According to Oyoyo (2014), secondary school level is the bridge between the primary and tertiary levels. The importance of secondary education made the Federal Government to state the broad aims of secondary education to include preparation for useful living within the society, and for higher education. The underlining principle here is that the secondary schools should be able to provide quality secondary education to all those who can benefit from it. However, for decades now there has been an outcry from the general public on the poor performance as well as the high rate of examination malpractice in WAEC and NECO examinations by students in various school subjects (Olasehinde and Olatoye, 2014; Oyoyo, 2015). This situation indicates that secondary schools are not living up to the expectations in discharging their obligations. This could be attributed to gap that might exist in the supply of teacher in science and arts subjects. It is crucial to note that all subjects at this level are meant to prepare the students for further education. Gender disparity or gap is one of the most contemporary issues in many countries which affect their domestic politics and international relations as well as educational system. Thus, countries are in the need to be clear that gender parity is not just a moral issue, but shares meanings beyond that. According to the Global Gender Gap Report (2015), it would take another 118 years to fill economic and education gender gap. This implies that gender gap is inevitable in human society and it could manifest in various activities like teachers supply and students' achievement in secondary schools.

Supply is an economic concept which describes the quantity of commodities that is made available to the market over a period of time at specific prices. According to Adeyemi (2011), an increase in supply tends to lower the price and increase the quantity demanded. Conversely, a decrease in supply causes a rise in price and consequently reduces the quantity demanded. In relation to education, supply is the resources accrued to education in terms of money, materials and human beings. According to Ekeh (2014), teacher supply in school is the number of teachers employed at a particular period of time and on specific salaries and wages to teach various subjects. In addition, Smadar and Ruth (2014) defined teacher supply as the total number of male and female teachers employed to teach or appointed to teach various school subjects which is measured by teacher-students' ratio. According to FRN (2013), the supply of teachers should be based on 1:50 teacher and students in a class at secondary schools. This is also in relation to subject specializations. In the context of this study, teacher supply is the quantity and quality of male and female teachers employed to teach science or arts subjects in secondary schools in South-East Geographical Zone of Nigeria.

Teachers are supplied to schools through employment based on subject specializations and qualifications. The supply of teachers in secondary schools is determined by the economic system, the subjects taught and students' enrolment status as well as gender differences. Adeyemi (2008) identified students' enrolment, teacher-student ratio, the range of subjects taught, number of classes in the schools, minimum class size, number of periods per teachers and gender differences among others as some of the factors that necessitate demand for teachers. Most time the numbers of teachers that teach school subjects are less than curriculum specification for subject allocation to teachers. This situation is manifested in the poor supply of teachers to schools. The free education policy of most States in South-Eastern Nigeria and the subsequent rapid access to equal basic education has resulted in rapid increase in the enrolment of students (Offorma, 2016). This situation may bring about the demand for more teachers in many schools. Although the State governments in South-Eastern Nigeria have taken various measures to recruit more teachers on subject basis into schools, it seems that there has not been an equitable distribution of available teachers along subject lines and gender.

The curriculum in secondary schools in Nigeria consists of both science and non-science subjects. Although teachers are available in both fields of study in all the schools in varying proportions, it seems that the state governments have not really complied with the National Policy on Education provisions of 40:60 in respect to science and non-science teacher ratio (FRN, 2013) in the distribution of qualified teachers into secondary schools in Nigeria. It implies that the ratio of teacher supply in secondary schools should be at least 40 teachers for science and 60 teachers for arts subjects. Nevertheless, it seems that the supply of teachers in arts or science vary depending on gender differences. The implication of this variation is that the disparity in teachers'

supply in arts or science subjects might affect the attributes of the male and female teachers that would have been beneficial to the learner's social and cognitive development. It is most appropriate for the supply of teachers in secondary schools to be equitable among gender groups and not skewed in favour of any particular group of persons. According to Japo (2013), the gap in teachers' supply in secondary schools could negatively affect students' achievement either in science or in arts subjects especially in South East of Nigeria.

In South East Nigeria, secondary education is still confronted with poor supply of teachers in various public secondary schools. For instance, the Daily Newspaper Reports of 2020 on the teacher quality in Nigeria submitted that most State Governments of Ebonyi, Enugu, Imo and Abia in the Region since the beginning of the present administration in 2015, have not employed or supplied new teachers to teach various subjects in their public secondary schools. The obvious problem of poor supply of teachers to public secondary schools according to Taiwo and Talabi (2015) is poor instructional quality and poor academic achievement of students in Science or Arts subjects. However, the available teachers supply to secondary schools in South East Nigeria seems not to match the demand with reference to various school subjects and achievements of students. This situation often leads to underachievement of male and female students in Arts or Science Subjects since individual abilities and motivations vary according to gender role expectations of the society. Therefore, understanding the trend in gender gap in teacher supply would not only help to improve the standard of education, but help to close the gap in employment ratio in labour market for rapid economic development. It is against this background that the present study was designed to analyse the gender gap in teacher supply in secondary schools in South-East Nigeria from 2011-2020.

Statement of the Problem

The issue of gender gap in teachers' supply in secondary schools in recent time is becoming worrisome to parents, educationists, private and public organisations and the society in general. The UNESCO reports on secondary education in 2018 submitted that there is always gap in the supply of teachers in secondary schools in Nigeria in varying capacities in Africa (Nigeria). This scenario could affect the vision of equal representation of women or men in various works of life if something is not done urgently at early foundation of schooling. The researchers' interaction with students and teachers in secondary schools within the South East Nigeria showed that there is still inadequate supply of teachers to various school subjects, as most teachers teach up to two or more subjects with many classes. This poor supply of teachers varies according to gender of teachers (males or females) in accordance with different subjects. This situation gives more challenges to teachers as certain subjects in Arts or Sciences could not be taught well due to inadequate number of teachers. Consequently, this situation might negatively affect the achievement of students in arts and science subjects at secondary school level and even in higher institution of learning. This is because quality of tertiary education is dependent on the standard of secondary schools which prepare students for further education.

Although the gap in teachers' supply in secondary schools might equally vary based on gender differences of teachers, it might equally create gap in students' achievement in schools. Nevertheless, there is still gap of literature on the gender gap in the supply of teachers in public secondary schools in South East Nigeria. The thrust of this study therefore was to analyse the trend in gender gap in teacher supply in secondary schools in South-East Zone of Nigeria.

Purpose of the Study

The main purpose of this study was to analyse the trend in gender gap in teacher supply in secondary schools in South-East Zone of Nigeria within the period 2011-2020. Specifically, the study is designed to:

1. determine the gender gap in teachers' supply in science subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020.
2. ascertain the gender gap in teachers' supply in arts subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020.
3. find out the disparity index of gender gap in the teachers' supply in science subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020.
4. ascertain the disparity index of gender gap in teachers' supply in arts subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020.

Research Questions

The following research questions guided the study:

1. What is the gender gap in teachers' supply in science subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020?
2. What is the gender gap in teachers' supply in arts subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020?
3. What is the disparity index of gender gap in the teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria from 2011-2020?

4. What is the disparity index of gender gap in teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria from 2011-2020?

Hypotheses

The following null hypotheses tested at 0.05 level of significance guided the study:

H₀₁: There is no significant difference in male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria.

H₀₂: There is no significant difference in male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria.

H₀₃: There is no significant difference in the disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria.

H₀₄: There is no significant difference in the disparity index of male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria.

Methodology

The design of this study was a descriptive survey research type. This design is a scientific method that involves observing and describing the behaviour of a subject without the manipulation of any variable in the investigation. According to Nworgu (2015), descriptive survey is a type of design that systematically and accurately describes a population, situations, events, phenomenon without influencing any variable, but only observes and measures them objectively. The choice of this design is because the data collected were secondary type, and using this design helped the researchers to use statistical tools like percentages and chi-square for analysis. The study was carried out in all the public secondary schools in South East zone of Nigeria. South East Zone is one of the Six Geo-Political Zones in Nigeria. The Zone is geographically bordered by Cameroon to the East and Atlantic Ocean to the South, Benue and Kogi States to the North and Delta State to the Western Axis at Latitude 9.082° E and Longitude 8.6753° N of the Nigerian map. The Zone is made up of the following States: Abia, Anambra, Ebonyi, Enugu and Imo respectively. The area has many public secondary schools in both rural and urban area. The choice of South East Zone of Nigeria in this study was because there have been observed low achievements of students which could be attributed to low teacher supply in Science or Arts subjects which could have been varying based on gender differences. Hence, the present study was designed to analyse the gender gap in teacher supply in science and arts subjects in public secondary schools in South East Nigeria. The population for the study comprised one thousand three hundred and ten (1310) public senior secondary schools in twenty one (21) Education Zones in South East States of Nigeria. All the schools were used; hence, there was no sampling. Secondary data were used in the study. The data on the Gender Gap in Teacher Supply were collected directly from the Post-Primary Management Board (PPMB) and Secondary Education Board of each of the States investigated. The data collected covered teacher supply in Arts and Science subjects from 2011 to 2020 in each State of South East Zone. There was no reliability since the data were secondary data. Frequency distribution and percentage were used to analyse the secondary data while Chi-Square statistics was used to test the null hypotheses with the aid of Statistical Package for Social Sciences (SPSS) at 0.05 level of significance

Results

Research Question 1: What is the gender gap in teachers' supply in science subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020?

Table 1: Gender Gap in Teachers' Supply in Science Subjects in Secondary Schools in South East Zone of Nigeria from 2011 to 2020

Sub	Teacher Supply in Science Subjects in Secondary schools in 2011-2020																			
	2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Ch	57	38	45	32	57	38	11	87	11	87	11	87	11	87	11	86	11	86	11	86
	6	8	5	3	8	7	78	7	71	4	70	1	67	0	63	7	60	4	56	0
AH	76	54	76	54	76	53	10	60	10	60	98	59	98	59	98	59	98	59	98	59
	2	3	1	0	1	8	12	2	11	2	8	9	6	8	6	8	5	3	2	0
Bio	72	61	60	57	82	57	92	43	92	42	92	41	92	41	10	77	10	76	10	76
	2	2	2	7	1	8	2	3	1	2	0	9	0	9	22	1	19	9	13	9
Phy	87	59	82	58	82	56	82	54	82	54	81	53	10	61	10	61	10	71	10	60
	2	9	9	8	7	6	5	4	0	0	9	2	19	2	12	1	11	0	08	8
Geo	12	13	24	20	45	32	42	30	30	31	41	30	41	33	39	38	45	38	44	31
	3	6	1	1	5	6	2	3	9	2	1	4	4	3	9	9	1	8	8	6
Ag	74	62	13	93	14	99	16	93	16	88	16	85	16	81	15	91	15	90	15	90
	5	1	82	2	45	1	85	4	33	7	13	5	08	9	67	1	61	9	61	9

Com	39	28	38	29	51	41	70	49	75	40	75	45	75	45	75	43	75	43	74	43
	6	7	8	1	6	8	1	9	9	1	4	3	4	3	2	2	0	1	0	0
Ttl	41	31	46	34	54	38	67	41	66	40	66	40	68	41	69	45	69	46	69	44
	96	86	58	52	03	04	45	92	24	38	75	33	68	04	01	79	37	64	08	82
GG	1010	1206	1599	2553	2586	2637	2764	2322	2273	2426										

Key: M= Male teachers; F= Female teachers. The Gender Gap is calculated by subtracting the total number of female from male students

N/B: Sub= Subjects; Ch= Chemistry, AH= Animal Husbandry, Bio= Biology, Phy= Physics, Geo= Geography, Ag= Agricultural Science, Com= Computers, Ttl= Total while GG = Gender Gap

The analysis of data presented in Table 1 show the gender gap in teachers' supply in science subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020. The total supply of male and female teachers in Science subjects (Chemistry, Animal Husbandry, Biology, Physics, Agricultural Science and Computer) from 2011-2020 were 4196 and 3186, 4658 and 3452, 5403 and 3804, 6745 and 4192, 6624 and 4038, 6675 and 4033, 6868 and 4104, 6901 and 4579, 6937 and 4664, 6908 and 4482, respectively. It also shows a gender gap in teachers' supply in science subjects in favour of male teachers from 2011-2020 ranging from 1010, 1206, 1599, 2553, 2586, 2637, 2764, 2322, 2273 and 2426 respectively. The data in the table further show that the supply of teachers in Geography, Computer and Chemistry were declining in the secondary schools surveyed. Therefore, there was more supply of male teachers than female teachers in Science subjects in secondary schools in South East Nigeria.

Research Question 2: What is the gender gap in teachers' supply in arts subjects in secondary schools in South East Zone of Nigeria from 2011 to 2020?

Table 2: Teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria by gender

Su b	Teacher Supply in Arts Subjects in Secondary schools in 2011-2020																			
	2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
His	123	67	112	89	112	87	204	105	184	118	183	115	186	135	186	135	184	133	201	138
Gov	712	109	710	109	695	108	943	108	923	127	899	133	897	132	896	132	890	132	888	131
CRS	723	102	569	899	568	897	801	102	778	102	775	101	748	998	743	996	741	109	738	109
L.	704	126	700	123	700	123	899	143	897	143	894	142	885	142	882	142	880	142	876	141
CE	812	117	804	116	800	116	922	191	920	109	898	109	896	169	891	109		108	789	108
Mk	767	108	864	108	663	107	832	109	829	109	824	109	787	108	786	108	783	108	780	108
Ec	679	102	768	122	766	121	785	113	708	113	729	101	101		101	810	100	772	998	109
Tta	452	693	452	679	430	676	538	778	523	797	520	789	541	748	539	746	537	741	537	772
G.	0	6	7	2	4	1	6	2	9	1	2	7	7	4	6	6	6	6	0	9
G.	2416	2265	2457	2396	2732	2695	2067	2070	2040	2359										

Key: M= Male teachers; F= Female teachers. The Gender Gap is calculated by subtracting the total number of female from male students

Key: M= Male Students; F= Female Students. The Gender Gap is calculated by subtracting the total number of male from female students.

N/B: Sub= Subjects; Hist= History, Gov= Government, CRS= Christian Religious Knowledge, L.E= Literature in English, CE= Civic Education, Mk= Marketing, ECO= Economics, Ttl= Total while GG = Gender Gap

The analysis of data presented in Table 2 show the teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria varies from 2011 to 2020. The total supply of male and female teachers in Arts subjects (History, Government, Christian Religious Studies, Literature in English, Civic Education, Marketing and Economics) from 2011-2020 were 4520 and 6936, 4527 and 6792, 5304 and 6761, 386 and 7782, 5239 and 7971, 5202 and 7897, 5417 and 7484, 5396 and 7466, 5376 and 7416, 5370 and 7729, respectively. It also shows a gender gap in teachers' supply in Arts subjects in favour of female teachers from 2011-2020 ranging from 2416, 2265, 2457, 2396, 2732, 2695, 2067, 2070, 2040 and 2357 respectively. The data in the table further shows that the supply of male teachers in Arts Subjects mostly declined from 5417 in 2017 to 5370 in 2020, while the female supply increased from 7484 to 7729 within the same period in secondary schools surveyed. Therefore, there was more supply of female teachers than male teachers in Arts subjects in secondary schools in South East Nigeria.

Research Question 3: What is the disparity index of gender gap in the teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria from 2011-2020?

Table 3: Disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria from 2011-2020

Years	Teachers' Supply in Science Subjects			Disparity Index
	Total Number of Science Teachers	Male	Female	
2011	7382	4196	3186	1.32
2012	8110	4658	3452	1.35
2013	9207	5403	3804	1.42
2014	10937	6745	4192	1.61
2015	10662	6624	4038	1.64
2016	10708	6675	4033	1.66
2017	10972	6868	4104	1.67
2018	11480	6901	4579	1.51
2019	11601	6937	4664	1.49
2020	11390	6908	4482	1.54
Grand Total	102449	61915	40534	1.53

N/B: The Disparity Index is calculated by the No. of male divided by the No. of female, UNESCO Standard

The data in Table 3 show the gender disparity index in the supply of male and female teachers in Science-inclined subjects in secondary schools in South East Nigeria. The data showed the disparity index between 1.32-1.67 for science subjects. The grand index of all the data was 1.53 which is high in favour of male teachers. The data in table 3 equally show that the disparity indexes were high between 2014 and 2017 ranging from 1.61 to 1.67 within the period. The overall indication is that there is disparity index in teachers' supply in science subjects in favour of male teachers in secondary schools in South East Nigeria. This was illustrated in the graph in figure 2.

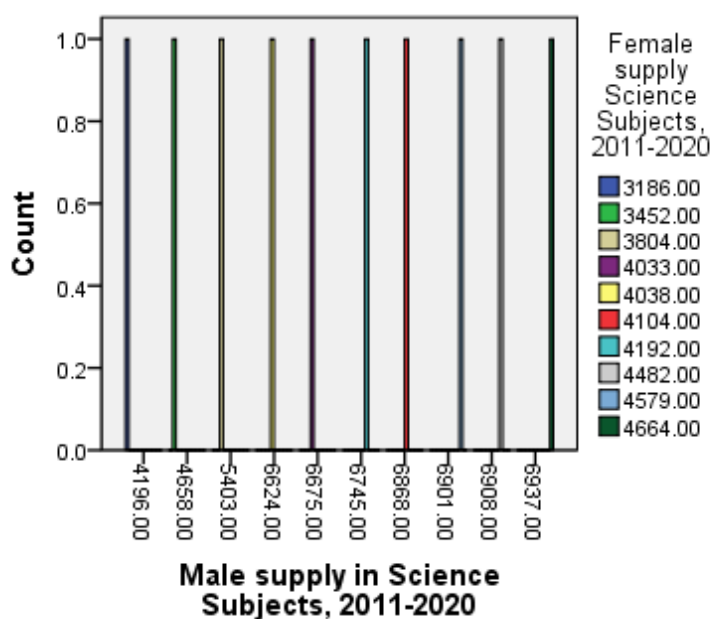


Figure: 2 Teachers' Supply in Science Subjects

Figure 2 shows that male teachers were supplied in Science Subjects more than female teachers in secondary schools in South East Nigeria. The dark bars show that the years with the highest teachers supply in science subjects also vary in accordance with different years surveyed.

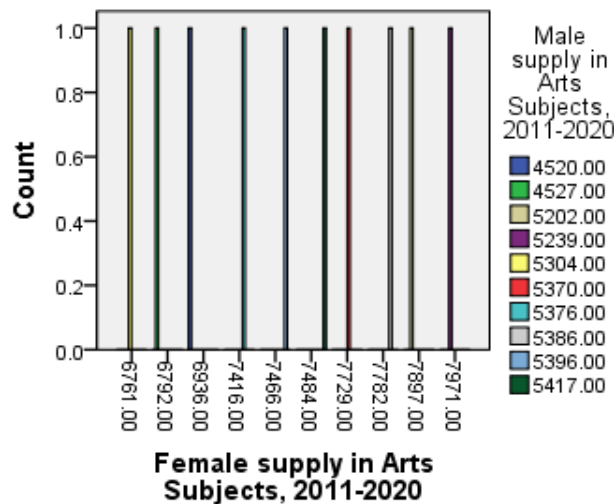
Research Question 4: What is the disparity index of gender gap in the teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria from 2011-2020?

Table 4: Disparity index of male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria from 2011-2020

Years	Teachers' Supply in Arts Subjects			Disparity Index
	Total Number of Arts Teachers	Male	Female	
2011	11456	4520	6936	0.65
2012	11319	4527	6792	0.66
2013	12065	5304	6761	0.78
2014	13168	5386	7782	0.69
2015	13210	5239	7971	0.66
2016	13099	5202	7897	0.65
2017	12901	5417	7484	0.72
2018	12862	5396	7466	0.72
2019	12792	5376	7416	0.72
2020	13099	5370	7729	0.70
Grand Total	125971	51737	74234	0.70

N/B: The Disparity index is calculated by the No. of males divided by the No. of females, UNESCO Standard

The data in Table 4 show the gender disparity index in the supply of male and female teachers in Arts-inclined subjects in secondary schools in South East Nigeria. The data shows the disparity index between 0.65-0.78 for Arts subjects. The data in Table 4 equally show that the disparity index was higher in 2013, 2017, 2018 and 2019 in favour of female teachers. The grand index of 0.70 indicates that there is high disparity index of male teachers in Arts subjects in secondary schools in South East Nigeria. This difference was also exemplified in figure 3.

**Figure 3: Teachers' supply in Arts Subjects**

Data in Figure 3 shows that female teachers had a higher supply rate than male teachers in Arts subjects in secondary schools in South East Nigeria. The dark bars show the years with the highest supply of teachers in both arts subjects while the light bars show the years with lowest supply rate of teachers respectively.

Test of Hypothesis

H₀₁: There is no significant difference in male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria.

Table 5: Chi-Square Summary on the Significant Difference in Male and female Teachers' Supply in Science Subjects in Secondary Schools in South East Zone of Nigeria

	Df	χ^2_{α}	Sig.	Alpha Level	Remarks
Chi-Square	81	90.000 ^a	.031	0.05	S
Number of valid Cases	10				

Df = degree of freedom, χ^2_{α} = chi-square calculated, Sig. = P-value; P < .05, NS= Not Significant

Data in Table 5 show null significant Chi-square value of 0.031 which is less than the chosen 0.05 level of significance and with 81 degree of freedom. Therefore, the hypothesis which stated that there is no significant difference in male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria was rejected.

H₀₂: There is no significant difference in male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria.

Table 6: Chi-Square summary on the significant difference in male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria

	Df	χ^2	Sig.	Alpha Level	Remarks
Chi-Square	81	90.000	.024	0.05	S
Number of valid Cases	10				

Df = degree of freedom, χ^2 = chi-square calculated, Sig. = P-value; P < .05, NS= Not Significant

Data in Table 6 shows null significant Chi-square value of 0.024 which is less than the chosen 0.05 level of significance and with 81 degree of freedom. Therefore, the hypothesis which stated that there is no significant difference in male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria was rejected.

H₀₃: There is no significant difference in the disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria.

Table 7: Chi-Square summary on the significant difference in the disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria

	Df	χ^2	Sig.	Alpha Level	Remarks
Chi-Square	81	90.000	.021	0.05	S
Number of valid Cases	10				

Df = degree of freedom, χ^2 = chi-square calculated, Sig. = P-value; P < .05, NS= Not Significant

Data in Table 7 show null significant Chi-square value of 0.021 which is less than the chosen 0.05 level of significance and with 81 degree of freedom. Therefore, the hypothesis which stated that there is no significant difference in the disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria was rejected.

H₀₄: There is no significant difference in the disparity index of male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria.

Table 8: Chi-Square summary on the significant difference in the disparity index of male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria

	Df	χ^2	Sig.	Alpha Level	Remarks
Chi-Square	45	50.000	.011	0.05	S
Number of valid Cases	10				

Df = degree of freedom, χ^2 = chi-square calculated, Sig. = P-value; P < .05, NS= Not Significant

Data in Table 8 shows null significant Chi-square value of 0.011 which is less than the chosen 0.05 level of significance and with 45 degree of freedom. Therefore, the hypothesis which stated that there is no significant difference in the disparity index of male and female teachers' supply in Arts subjects in secondary schools in South East Zone of Nigeria was rejected

Discussion of Findings

One of the finding of the study revealed that there was more supply of male teachers than female teachers in Science subjects in secondary schools in South East Nigeria. From the period of 2011 to 2020 surveyed, male teachers based on the statistical records and analysis were higher than female teachers in various science subjects. The finding corroborates with the findings of Adeyemi (2011) which revealed that science teachers were less in proportion, compared to non-science teachers in all the surveyed schools, and that male science teachers were in greater number compared to female science teachers in Ondo State. The finding is also in tandem with Japo (2013) who analysed the gender equality in teachers' supply in Science Subjects in secondary schools in Bayelsa State and discovered that there were more male teachers than female teachers employed to teach science subjects in the secondary schools by the state government. Globally, Abiodun and Erin (2019) submitted that there is gender gap in teaching profession. This gender gap in teaching profession could be attributed to the enrolment pattern and attitude of students to various school subjects which culminated in the choice of future profession or careers. For instance, Adebule and Omirin (2015) submitted that the negative attitude of female students to science subjects in secondary

and tertiary institutions in Nigeria has resulted to low female enrolment in such science courses as engineering, mathematics and others. As a result the proportion of female scientists usually turns out to be low when compared to their male counterparts, despite the global policy on gender parity in all professions. However, Offorma (2016), Aja-Okorie (2016) held that students' enrolment to science subjects is attributed to cultural orientations of either male or female students which affect their thinking and subject selections in secondary schools. Enyi and Ijeoma (2017) had earlier associated this trend to gender insensitive curriculum which mainly prepare females to domestic engagements.

The finding of the study also revealed that there was more supply of female than male teachers in Arts subjects in secondary schools in South East Nigeria. The findings from the Table 2 data showed that female teachers were more than the male teachers in Arts subjects such as History, CRS, Government, Literature-In-English, Marketing, Civic Education and Economics within the study period (2011-2020). This finding is in tandem with the finding of Adeyemi (2009) and Adeyemi (2011) who submitted that there were more female teachers in Arts subjects than science subjects in secondary schools. The finding also agreed with the finding of Felicia and Clara (2012) that there was high disparity in teacher's enrolment in Arts Subjects as there were more male teachers in science subjects than in Arts subjects. This idea was supported by the finding of Asodike (2016) which stated that there was significant difference in the supply of male and female teachers in Arts subjects in Nigeria in favour of females. The implication of this result is that the teaching and learning of Arts subjects in secondary schools would be female dominated and this would mar the participation of women in science and technology aspect of the society in future.

The finding on this disparity index of female teachers in science subjects shows that female teachers are not given equal recruitment in the area of science subjects or they are not much in the field of sciences due to cultural orientation or educational background which might affect occupational distribution of teachers. This finding was also confirmed by the findings on null hypothesis III which showed that there was significant difference ($P < 0.05$) in the disparity index of male and female teachers' supply in Science subjects in secondary schools in South East Zone of Nigeria. It is apparent from this finding that children in secondary schools, to a great extent, were deprived of the attributes of the female teachers that would have been beneficial to the children's development.

The analysis of research question 4 revealed that the disparity index of male teachers is higher in Arts subjects in secondary schools in South East Nigeria. This finding is in consonance with the finding of Felicia and Clara (2012) who found that teachers supplied to secondary schools in Anambra State were insufficient and were far below the number demanded; and that there was high disparity in teacher's enrolment in Arts Subjects as there were more male teachers in science subjects than in arts subjects. The finding is also in consonance with the finding of Asma, Madiha and Madiha (2022) who discovered that there are higher female teachers in arts streamlined disciplines in schools. The finding was also supported by the results on null hypothesis IV which showed that there was significant difference in the disparity index of male and female teachers' supply in Arts subjects in secondary schools. The agreement in findings showed that the number of male teachers recruited to teach Arts subjects is lower than females, and this could be attributed to school enrolment pattern in secondary schools to various school subjects.

Conclusion

The study revealed that there is gender disparity in teachers' supply in secondary schools in South East Nigeria. This study concluded that to achieve the Sustainable Development Goals-4 (SDGs.4) on education for the 21st century in Nigeria, which explicitly demands elimination of all forms of gender stereotyping in education, the secondary school administrators should seriously consider the implementation of gender-friendly and supportive learning environment that could encourage equal participation in teacher supply in school subjects (Science or Arts), although that gender disparity in the society, is inevitable.

Recommendations

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

1. More female teachers should be supplied to teach Science subjects by the Ministries of Education for equality in the teaching of Science subjects in secondary schools in South East Nigeria.
2. More male teachers should also be supplied by Ministry of Education to teach Art subjects in secondary schools in South East Nigeria.
3. Female students should be encouraged by government and parents to enroll in Science related subjects by empowering them economically, culturally and materially as this would help to produce female graduates in Science subjects to be recruited to teach in secondary schools in Nigeria.
4. Male students should be encouraged by government and parents to enroll in arts related subjects by telling them the benefits of arts in life as this would help to produce male graduates in Arts subjects to be recruited to teach in secondary schools in Nigeria

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