

**EFFECT OF STREAMING BY GENDER ON STUDENTS ACHIEVEMENT IN ENGLISH GRAMMATICAL STRUCTURES IN SENIOR SECONDARY SCHOOLS: A CASE STUDY OF OREDO LOCAL GOVERNMENT AREA OF EDO STATE**

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**ABSTRACT**

*This study examines the effect of streaming by gender (school type) and instructional methods and its interaction effect on achievement in English grammatical structures. Four hundred and two (402) SS II students from nine intact classes in six secondary schools in Oredo Local Government Area of Edo State were involved in the study. Three of these nine classes were assigned to each of the treatment and control groups – deductive; inductive and integrative methods. All the 402 Subjects were administered the pre and posttests. The results indicated that achievement scores of students in English grammatical structures are influenced by method of instruction, with the integrative method being the most effective of the three methods. It also revealed that streaming by gender did not significantly affect students' achievement in English grammatical structures. There was similarly, no method by streaming by gender interaction effect.*

**Introduction**

Single-sex education refers most generally to education at the elementary, secondary, or postsecondary level in which males or females attend school exclusively with members of their own sex. Single-sex and coeducational secondary schools have coexisted in Nigeria since the early 1960s. The National Policy on Education (FGN 2004) recommends both school types especially at the primary and post primary levels. In recent times attention has been drawn to the differences in the academic performance of adolescent boys and girls in single-sex and coeducational schools. A review of the

educational research conducted over the past twenty years reveals that the debate on coeducational versus single-sex schooling is one that shows no signs of disappearing.

The subject has been discussed from diverse points of view, particularly moral, economic, social and educational. There have been significant divergences of opinion as to the wisdom of co-education particularly in secondary schools, with some people arguing for it and others against it. Most times, the rationale for these debates has been on matters of managing student discipline rather than directly being related to achievement issues. In this study the attempt is to analyse the effect of streaming by gender on students achievement in English grammar, with particular focus on the interactive effect of methods of instruction and streaming on student achievement.

### **Review of Literature**

The 'for' or 'against' stance that shapes popular literature on single-sex education's success or failure, according to Hagg (1998) are contingent on: stakeholders' goals, indicators of success used, historical context, and issues of selection bias. Although research on the effects of single-sex education is generally inconclusive, some common themes emerge in the research literature; attitudinal variable – self-esteem, attitude towards academic subjects and achievement variable. It is this last variable that is of interest in this study.

Research findings are ambiguous concerning the effects of single-sex schools on girls' achievement. For many studies that did find gaps favouring girls in single-sex schools once findings were adjusted for socioeconomic or ability variables, these differences diminished. Harker & Nash (1997) used data gathered in a longitudinal study of more than 5,000 eighth-grade students in New Zealand and controlled for individual characteristics (such as socioeconomic status) and school type. As with other studies, the researchers concluded that there was statistically significant difference in favour of girls at single-sex schools. However, after controlling for ability levels and for social and ethnic background differences disappeared. LePore & Warren (1997) using data from the National Educational Longitudinal study of 1988, found that boys in single-sex schools did not increase their test scores more than boys in coeducational schools and that girls experienced no statistically significant positive effects of single-sex school environment. Similarly, Daley's (1994) study confirmed that, when student and school background factors are controlled, single-sex schooling does not result in superior academic performance for girls in public examinations.

At another level, studies by Harding (1981) and Lee & Lockheed (1990) found that girls do better than boys as a result of single-sex schooling. On the other hand, Carpenter (1985) reported that students' achievement in a given type of school was influenced by a number of variables including the curriculum, teachers' encouragement and the social class background of the students. He found that while single-sex schooling appears advantageous to girls with working class mothers, coeducational schooling offers such girls a small advantage in achieving high marks. Among girls whose mothers had no paid jobs, single-sex schooling offers a little more insurance against scoring low marks.

Smith's (1996) 10-year-long study into the impact of coeducation at two Sydney high schools clearly undermined the myth that coeducational schools are "good" for boys and "bad" for girls. His study found that there were no academic disadvantages for either girls or boys. No changes occurred in the year 10-school certificate performance in English or mathematics of girls or boys over the five-year period from 1982 to 1986. He therefore concluded that coeducation had made no impact one way or the other.

The research reviewed thus far presents a background of mixed evidence on the effect of both types of schooling. While some researchers such as Lillico (1999) and Mixell (1989) claim that single-sex schooling does have its advantages others like Ellis (1968); Smith (1988, 1997) and Harker (2000) assert that there were no significant differences in the achievement or the self-concept of the students of both types of schools. Finally, the research findings while inconsistent in its assessment of whether single-sex education is better than coeducation for girls does reveal areas of consensus on specific indicators, which may serve as starting points for further research into how single-sex schools affect educational outcomes.

### **The Problem**

It has been observed that the usage pattern of English language by most Nigerian secondary school students fall short of international standards. Students' sentences are full of grammatical and mechanical errors, lack intuitive sense of linguistic appropriateness and are often punctuated by mother tongue influenced forms of usage. The evidence of low achievement in English grammar among secondary school students in Nigeria has been well documented over the years. Chief examiner's reports (1998, 1999, 2001, 2002) attest to this weakness. Yet seemingly little progress has been made in understanding why and finding effective solution to the problem.

This points to the fact that majority of the students leaving secondary schools today have not been properly groomed in the grammatical structures of the language. It can be taken

to mean that despite the fact that Nigerian students study English at junior and senior secondary schools for at least six years prior to SSCE examinations, they – on the average – possess insufficient English communicative ability. Why is it that so much effort over such a long period seems to yield such little result?

Secondly, studies have revealed that variables such as methods, gender, streaming by gender (school type) and others appear to have significant effect on students' achievement. To what extent therefore does school type interact with instructional method to affect students' achievements in English grammar? Consequently, this study sought to examine the effect of methods of instruction and school type on achievement in English grammar. The specific objectives were to:

- a. mine the relative effectiveness of methods of instruction (deductive, inductive and integrative) on students' achievement in English grammar.
- b. examine the effect of school type on students' achievement in English grammar.
- c. examine the interactive effect of method and school type on achievement in English grammar.

These objectives were achieved through the following hypotheses:

1. There is no significant difference in the posttest achievement scores of students taught English grammar with different methods (deductive, inductive and integrative).
2. There is no significant difference in the posttest scores of students in English grammar based on their school type (all-boys, all-girls and coed institutions).
3. There is no significant interaction of method by school type effect on the posttest achievement scores of students in English grammar.

## **Method**

### **Research Design and Sampling**

The study made use of 3x3 non-randomized pre-test, post-test control group design. It is a quasi- experimental study. The independent variables in this study are instructional method with three levels – deductive (control), inductive and integrative (i.e. combination of deductive and inductive methods) and school type with three levels – all-boys, all-girls and coeducational schools. The dependent variable in the study is achievement in English grammatical structures. This resulted in 3x3 design. The study focused on public secondary schools that were categorized on school type and class arrangement.

The purposive sampling technique was adopted. This method was used because it gave room for the researcher to select a sample, which simply satisfied the needs of the study. The six schools selected were judged suitable for the study because each of them possessed presumed suitable environment for high academic work and had professionally qualified English language teachers of not less than 5 years of teaching experience. All the six schools were within the same local government area – Oredo LGA, which run the same school calendar using the uniform scheme of work for senior secondary schools drawn by Edo state Ministry of Education. In other words topics taught followed the same weekly sequence. They were also located in the city with similar cultural, economic and school ethos. Rather than randomly selecting the subjects, they were drawn from nine pre-formed, intact classes. Although the subjects represented intact groups, the classes were randomly assigned treatment. Three intact classes were selected from boys' school as teachers in this school are made to teach across arms unlike in the other schools where a single teacher took a whole arm. Three intact classes were selected from the girls' schools while one intact class was selected from each of the co-educational schools. These schools provided an accessible population of 402 students, which also constituted the sample of the study.

### **Instrumentation**

Two sets of achievement instruments, the pre- and post- tests were used for the study. Each test was made up of fifty items. The use of different tests help to remove the problem of the participants being test wise, as experts argue that students may carry over their knowledge from the pre-test to perform better on the post-test (Krumwiede, 1996 and Whitney, 1996). Two different tests can also be used if the pre-test was used to determine the students' abilities upon entry and to determine if they have the prerequisite knowledge. This is in line with Gagne's (1970) recommendation, that learners be pre-tested to determine their level of "readiness" for the next level of instruction. Experts in language education and curriculum design at the University of Benin carried out the face and content validity of the instruments. The content validity was also ensured through the use of tables of specification. These test items were also pilot tested in two senior secondary schools in Oredo Local Government Area; these schools were not involved in the main research.

The internal consistencies of the pre- and post-tests were estimated using the Kuder-Richardson Formula 20 (K-R 20). These were found to be 0.78 and 0.85 for the pre- and post-test respectively. The sample was distributed based on instructional methods and school type as shown in Table 1

**Table 1: Distribution of Sample by Treatment (Method) and School Type. (N = 402)**

Method	School Type			
	All-boys	All-girls	Coed	Total
Deductive	34	44	67	145
Inductive	34	47	22	103
Integrative	42	42	70	154
<b>Total</b>	<b>110</b>	<b>133</b>	<b>159</b>	<b>402</b>

The study generated quantitative data that were analysed using the mean scores. Hypotheses were tested using a 2-way (3x3) ANOVA ( $\alpha = 0.05$ ).

### **Results and Discussion**

The results of this study focused mainly on making comparisons on the effect of streaming by gender (school type) on students achievement in English grammatical structures. The comparisons were made among the students taught with the different instructional methods (deductive, inductive and integrative).

#### **Main Effects of Streaming by Gender (School Type) and its Interactions with Treatment (Method) on Posttest Achievement in English Grammar**

To determine the effects of streaming by gender (school type) and its interactions with method on students' achievement in English grammar, the data collected from 402 students were analysed using a 2-way (3x3) ANOVA. Consequently the following hypotheses were tested:

1. There is no significant difference in the posttest achievement scores of students taught English grammar with different methods (deductive, inductive and integrative).
2. There is no significant difference in the posttest scores of students in English grammar based on their school type (all-boys, all-girls and coed institutions).
3. There is no significant interaction of method by school type effect on the posttest achievement scores of students in English grammar.

The descriptive statistics of the groups of students classified by method and school type are shown in Table 2.

**Table 2: Distribution of means of posttest achievement scores in English grammar by method and school type.**

Method	School Type			
	All-boys	All-girls	Coed	Total
Deductive	35.00 (34)	31.80 (44)	37.43 (67)	35.15 (145)
Inductive	36.29 (34)	30.23 (47)	38.27 (22)	33.95 (103)
Integrative	39.98 (42)	35.40 (42)	37.37 (70)	37.55 (154)
<b>Total</b>	<b>37.30(110)</b>	<b>32.28 (133)</b>	<b>37.52 (159)</b>	<b>35.76 (402)</b>

\* *Figures in parenthesis represent actual number of subjects.*

The results in Table 2 indicate that the mean score of students in coeducational schools (37.76) was the highest followed by the mean score of students in the all-boys school (37.30). Students in the all-girls school (32.30) had the lowest mean. For the method of instruction, the integrative method had the highest mean (37.55), followed by the deductive method (35.15), while the inductive method had the lowest mean score (33.95). To test the significance of the differences in the mean scores above, a 2way (3x3) ANOVA was employed. This is summarized in Table 3.

**Table 3: ANOVA Summary for effects of method and school type with score of posttest achievement in English grammar as dependent variable.**

Source	Sum of squares	Df	Mean square	F	Sig
Method (Treatment)	235.471	2	117.736	3.087	.047*
School Type	191.631	2	95.815	2.512	.082
Method * School Type	139.480	4	34.870	.914	.456
Error	14303.509	375	38.143		
Total	20531.075	401			

\* The mean difference is significant at the .05 level.

The F-value for method effect in Table 3 was 3.08 with  $df = (2, 375)$  significant at .047 level of significance, and thus, significant at .05 level. The null hypothesis 1, that there was no significant difference in the posttest achievement scores of students taught English grammar with different methods was rejected. It was concluded that there was significant difference in the posttest scores of students taught with different methods (35.15, 33.95 and 37.55).

To determine which of the three methods was most effective, a post hoc analysis was conducted using Scheffe Multiple Comparison since the number of subjects in the three groups ((145, 103, 154) were unequal. The result is summarized in table 4.

**Table 4: Post hoc Analysis of direction of significance using the Scheffe test**

i Method Group	j Method Group	Mean Difference (i-j)	Standard Error	Sig.	95% Confidence Interval	
					Lower bound	Upper bound
Deductive	Inductive	1.20	.80	.327	-.77	3.17
	Integrative	-2.39*	.72	.004	-.4.16	-.62
Inductive	Deductive	-1.20	.80	.327	-3.17	.77
	Integrative	-3.59*	.79	.000	-5.54	-1.65
Integrative	Deductive	2.39*	.72	.004	.62	4.16
	Inductive	3.59*	.79	.000	1.65	5.54

\* The mean difference is significant at the .05 level.

From Table 4, two main differences were found to be significant at .05 level; namely, mean difference between integrative and deductive (2.39) and that between integrative and inductive (3.59), showing that the integrative method is significantly superior to the deductive method and the integrative method is also significantly superior to the inductive method. The differences in the mean scores of the integrative and deductive methods cannot be lower than .62 and can be as high as 4.16 (i.e. 95% confidence interval). Similarly, the difference between integrative and inductive methods cannot be lower than 1.65 and can be as high as 5.54. The mean difference between the deductive and inductive methods (1.20) is not significant.

The F-value for school type effect in Table 3 is 2.51 with  $df = (2, 375)$  but not significant at .05 level. This is only significant at .082. The null hypothesis 2, which states there is no significant difference in the posttest scores of students in English grammar based on their school type was upheld. It was concluded that there was no significant school type effect on the achievement of students in English grammar, i.e. school type did not affect students' posttest scores in English grammar.

The F-value of method by school type interaction in Table 3 is .91 with  $df = (4, 375)$ , but not significant at .05 level. This is only significant at .456. The null hypothesis 3 that there was no significant interaction effect of method by school type on posttest achievement in English grammar was retained. It was therefore concluded that there was



no method by school type interaction effect on performance in English grammar. This means that regardless of school type the superiority of integrative method over others is not only maintained but this difference is constant across all school types.

### Conclusion

Based on the findings of this study, the following conclusions were made. Method of instruction is a major variable that determines or affects students' achievement in English grammar. In this study, school type has no significant effect on students' achievement in English grammar. This is in consonance with the findings by Brutsaert & Brake (1994) who found no significant difference between the academic and attitudinal achievement of boys and girls from single-sex schools. This result is also in support of findings by Marsh (1989); Ellis (1968); Dale (1974); Daley (1994); Rowe (1986); Smith (1997); and Harker (2000), which suggested that school type does not benefit either boys or girls once other variables are controlled. The result of this study is however, at variance with that of Cairns (1990); Granleese & Joseph (1993); Mallam (1993); and Colley, Comber & Hargreaves (1994), which found that single-sex school types, produced preferred gains in attitude and achievement in various school subjects than co-educational school types.

Another observation in this study is that students in co-educational schools performed better than students in single-sex schools. Boys in all-boys school did better than girls in all-girls school. This is at variance with the findings by Lee & Lockheed (1990), in which Nigerian girls from all-girls secondary school out performed their co-educational school counterparts.

The findings of this study revealed that there was no significant interaction effect of method by school type on students' achievement in English grammar. This means that regardless of school type the superiority of integrative method over others is not only maintained, but the difference is constant across all school types. This is in line with Young and Fraser's (1994) caution that some of the differences that may exist between schools on gender line might be attributable to individual characteristics rather than sex segregation of the school. This also supports the fact that it might be misleading to recommend one method for a particular school type since efficacy may depend on implementation.

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