

**EFFECTS OF INSTRUCTION IN ENGLISH LANGUAGE ON GENDER PERFORMANCE IN MATHEMATICS OF MARGI SPEAKING JUNIOR SECONDARY SCHOOL STUDENTS IN MADAGALI LOCAL GOVERNMENT AREA, ADAMAWA STATE**

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**ABSTRACT**

This research was an experimental study carried out to determine the Effects of Instruction in English Language on Gender Performance in Mathematics of Margi Speaking Junior Secondary school students in Madagali Local Government Area of Adamawa State. A sample of 271 Margi Junior secondary school students was sampled for the study from six schools. The study adopted the non-equivalent, pre-test, post-test quasi-experimental design. The instrument used for data collection in this study was Test of Solving Mathematics Problems (TSMB) which was validated and pilot tested with Cronbach-Alpha reliability coefficient of 0.69. Graphs were used to answer the research question, while Analysis of Covariance (ANCOVA) was used to test the hypothesis stated at 5% level of significant. It was observed that in the control treatment group, male participant are high (57.5%) than female with (48.8%), which showed a difference of 15% in favour of male, students. Similarly, in the Experimental treatment group, male participants performed better than female with a difference of high (28.8%). Therefore, this finding revealed that there is difference in inter - gender performances in Mathematics for Margi speaking junior secondary school students in favour of male participants. It was recommended among others, that girls should rather be stimulated to choose subject in the area of science and technology.

**KEYWORDS:** Margi; lexical Ambiguity; English Language; Effect of instruction, Mathematics problem solving

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**INTRODUCTION**

One important question for teachers and many others in the society has been how boys and girls differ in their academic performance? This question has been thoroughly investigated over a long period of time though there are disagreements; some general results appear to have

emerged. Most studies have not found major inherent differences between boys and girls in general cognitive abilities, (Halpern and LaMay, 2000). Gurian (2002) concluded that differences between boys and girls were always small, those differences arise in some contexts and situations but not in others, and that educational

programmes can influence when differences arise. Other studies such as Kissen, (2003) have reached similar conclusions. However, Kleinfeld (1999), Villegas and Lucas (2002) reached a slightly different conclusion and argued that some differences do exist. They reported that girls do better in the language arts, reading comprehension, written and oral communication, whereas boys seem to excel slightly in Mathematics and Mathematical reasoning. Other researchers have pointed out that gender differences in regard to cognition and achievement may be situational, that differences vary with time and place (Biklen and Pollard, 2001) and may interact with race and social class (Pollard, 1998).

Studies also have shown that at the primary school level achievement of boys and girls in Mathematics are at par (Leder, 1992). However, a decline in girls' participation and performance in Mathematics begins to be apparent during the senior years of secondary school (Ormrod, 2000). Obioma and Ohuche (1994) observed that while Biology is fairly popular among boys and girls, more boys than girls enroll for Chemistry, Mathematics and Physics.

Eccles (1987) in his study on students' perception of the utility of Mathematics reported that throughout childhood and adolescence, girls like to spend more time than boys reading, writing, and participating in activities related to arts and crafts, domestic skills and drama. Boys in contrast, spend more time engaged in sports, working with machines and tools, and involved with scientific, Mathematics-related hobbies. These differences, she

reported, may have a direct effect on the training of girls and boys on the skills they acquire during childhood. Eccles findings are important because in her model of educational and occupational choice, she concluded that achievement-related choices are influenced most directly by the value individuals place on the choices they perceive as appropriate and by the probability they perceive of being successful at those options.

Studies by (Arends, 2007) suggested that boys, especially those for whom the teacher holds high expectations get more rewards or praise for academic performance in school. This finding can be interpreted in form of the value children place on various academic domains.

Reyes and Stanic (1988) reported a relationship between student interest in Mathematics and student attitude toward the teacher. The American Association of University Women Study (1994) concluded that girls find that their teachers believe that girls cannot do things the girls think they can. This results in lower self-esteem for the girls. In the same vein, feelings about academic performance correlate strongly with relationship with teachers for girls. This study also describes research that finds amongst other things that teachers tend to ask boys more complex, abstract and open-ended questions than girls and that typical teachers tend to initiate more conversation with boys than with girls.

Researchers have extensively investigated gender differences particularly in science and Mathematics. Science subjects generally are perceived as male

domain, (Iliya, 2000). However, there has been growing concern for the place of girls in science education. Proffering solution to feminine gender problems in science, Pollard (1998) suggested that all teachers must reconsider their attitude to girls in science classrooms. They must also device teaching strategies that will ensure that girls develop and maintain an interest in science lessons. Mallum (1990), Dauda (1991) and Becker (1995), all agree in their separate studies that confidence-building approaches and girl-friendly approaches in science lessons especially for girls would encourage them, help boost their confidence and correct their misconceptions about science. The emphasis here is that, it is highly essential to provide more opportunities for pupils irrespective of their gender, to talk about what they are doing to become aware of their own ideas and those of their peer groups.

In contrast to superiority of male over female in science, several other studies of school achievement by researchers like Thompson and Dinnel (2007), Balus (1997) concluded that girls tend to make consistent better scores than boys (particularly in elementary school). Balus (1997) in particular reported that girls surpass boys in those subjects, like English language, reading and verbal aptitude. On the other hand, boys excel in those subjects that call for numerical reasoning and spatial aptitudes such as Mathematics. According to Mallum (1990) at primary school level, girls tend to do as well as boys sometimes even better. However, once they graduate from primary school, females perform less in a variety of subjects,

especially in physical sciences, engineering and technology related subjects.

Salman (2008) have drawn attention to the generally unsatisfactory nature of studies relating to biological characteristics to examination performance, especially in relation to the gender of the individuals. While it would be wrong to dismiss genetic arguments entirely, the weight of evidence seems to suggest that environmental and social factors may have a greater role to play in setting differential patterns of achievement.

In another study “Learning style factors and Mathematics performance: Sex-related differences” by Bohlin (1994) revealed among the major findings of the study that of the 421 high schools students:

- (i) girls reported significantly less interest in technical careers than boys did and less confidence in their mathematical abilities;
- (ii) high scores on the confidence scale were also correlated with high spatial abilities (or relational learning styles) – girls lower confidence scores may explain their lower geometry grades;
- (iii) girls reported a greater desire for structure than boys did;
- (iv) girls received higher grades than boys in Algebra and
- (v) high - structure students (e.g. many girls) often do well on teacher made tests, but are at a disadvantage with

standardized tests where creative thinking and intellectual risk-taking are required.

These factors constitute great impediments to female achievement and aspirations in science subjects generally. Balus (1997) also noted that girls are drilled early into believing that girls should not study science and technology. She however recommended the eradication of the traditional view of the girls' role and every form of sexism that may be inherent and existing in the teacher/pupils classroom interaction. Girls should rather be stimulated to choose subjects in the area of science and technology. This study intends to investigate whether the gender gap still exist in Mathematics performance

**Purpose of Study:** The purpose of the Study was to ascertain the influence of gender on performance in Mathematics among students given instruction in English with Margi in a dominant Margi spoken environment.

**Research Question:** Is there any difference in inter-gender performances in Mathematics for Margi speaking junior secondary school students?

**Research Hypothesis:** There is no significant difference in Mathematics performance between boys and girls given instruction in English only and those given instruction in English with Margi.

## RESEARCH METHODOLOGY

**Research Design:** The study adopted the non-equivalent, pre-test, post-test quasi Experimental Research Design.

**The Study Population:** The population for the study consists of all Margi speaking junior secondary school students of Borno and Adamawa States.

**Sample and Sampling Technique:** The sample was drawn from government owned Junior Secondary Schools in the study area. Since the study was based on Margi junior secondary school students, therefore, the purposive sampling technique was used in selecting 271 Margi speaking junior secondary school students.

**Research Instrument:** The instrument used for data collection in this study was Test of Solving Mathematics Problems (TSMB) which was validated and pilot tested with Cronbach-Alpha reliability coefficient of 0.69.

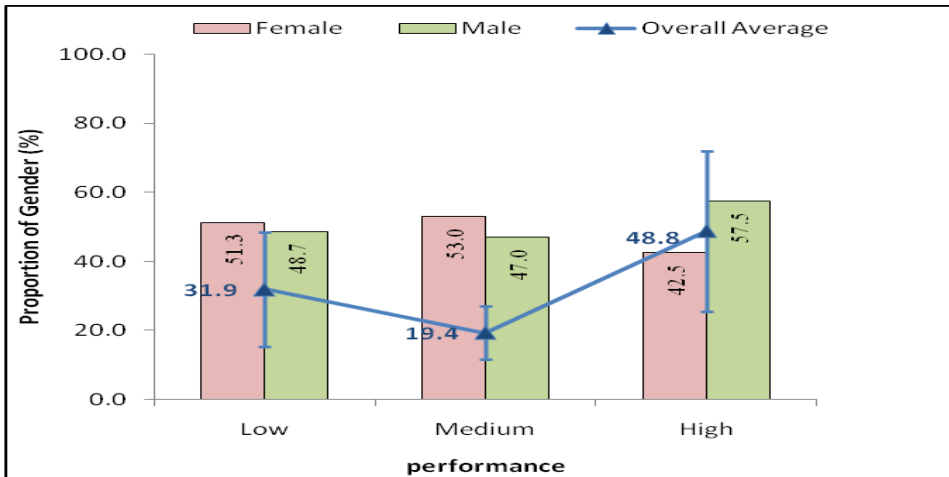
**Method of data Collection:** After receiving instructions in English with Margi (Experimental) and in English only (control), test was administered for data collection including pre-test and post-test.

**Method of Data Analysis:** Descriptive statistics of graphical representation were used to answer the research questions and inferential statistics was employed to test the research hypothesis stated using Analysis of Covariance, (ANCOVA).

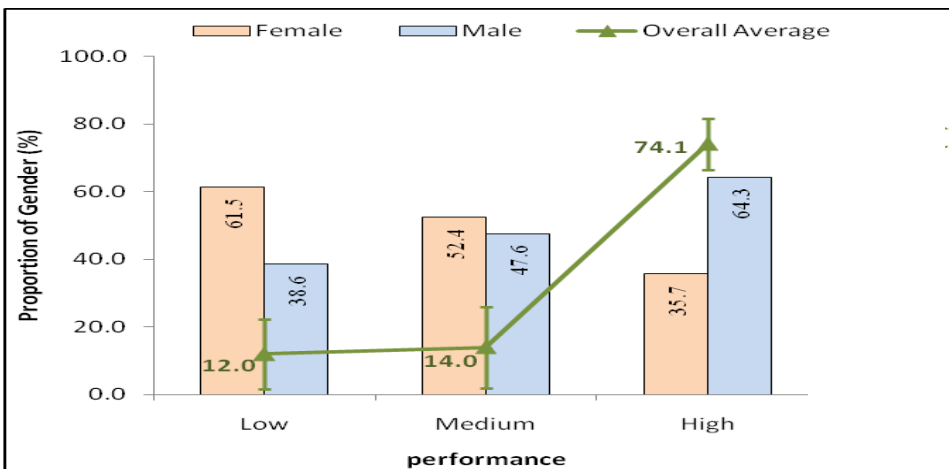
## RESULTS

**Research Question:** Is there any difference in inter-gender performance in Mathematics for Margi speaking junior secondary

school students? The result is presented in figs. 1 and 2.



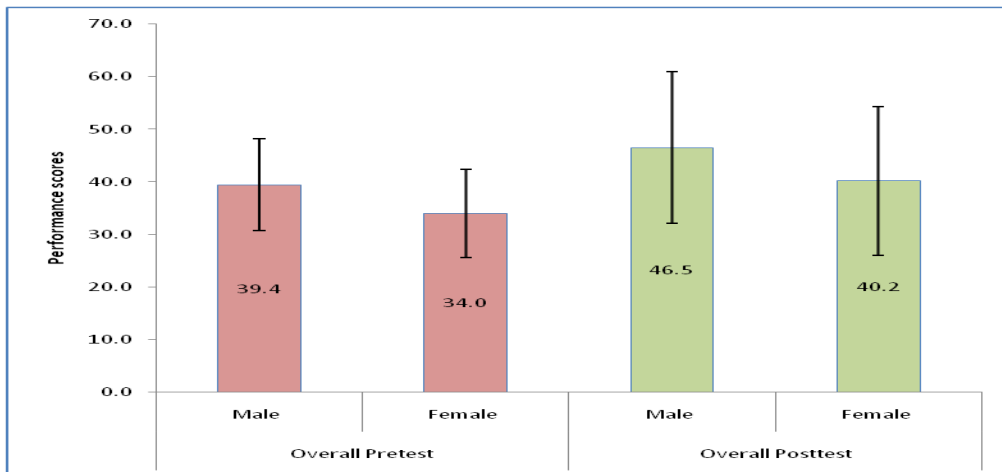
**Figure 1:** Overall summary of control group performance in all tests



**Figure 2:** Overall summary of experimental group performance in all tests

Figs. 1 and 2 depict the overall averages of gender proportions and performances for the entire tests administered. It is observed that in the control treatment group, male participant are higher (57.5%) than female with (48.8%), which shows a difference of 15% in favour of male, students. Similarly, in

the Experimental treatment group, male participants performed better than female with a difference of high (28.8%). Therefore, this finding revealed that there is difference in inter - gender performances in Mathematics for Margi speaking junior secondary school students in favour of male participants.



**Figure 3:** Students mean performance Scores in overall problem types by gender

Fig. 3 depict the overall averages of gender performances in Mathematics. It is observed that in both pre and post-tests averages, male participants performed better than female participants. This finding revealed that there is difference in inter-gender performance in Mathematics for Margi speaking Junior Secondary School Students in favour of male participants.

**Hypothesis  $H_{01}$ :** There is no significant difference in Mathematics performance between boys and girls given instruction in English only and those given instruction in English with Margi. This hypothesis was tested using scores of the study in both pre and post-tests for treatment groups.

Analysis of covariance (ANCOVA) was carried out to test this hypothesis, in which the pre-test scores was the covariate; post-test scores the dependent variable, while treatment and gender were the independent variables.

**Table 1:** Summary of ANCOVA results for gender based performances in Mathematics of Margi speaking Junior Secondary School Students

Source	Type III Sum of Squares	df	Mean Square	F	Sig. 2-tailed
Corrected Model	39192.277	2	19596.139	105.937	.000
Intercept	41902.595	1	41902.595	226.525	.000
Pre-test	26737.242	1	26737.242	144.541	.000*
Gender	3584.483	1	3584.483	19.378	.000*
Total	2945669.000	1355			
Corrected Total	289285.218	1354			

\*Significant,  $p < .05$ .

Table 1 present the result of ANCOVA. After adjusting for pre-test scores, there was a significant effect of the between subjects factor group (gender),  $F = 19.38$ ,  $df(1, 1355)$   $p < .05$ . The Adjusted mean gender scores suggested that male students' performances were greatly improved by the intervention. Therefore, the study hypothesis which states that there is no significant difference in Mathematics performance between boys and girls given instruction in English with Margi and English only among the dominant Margi speaking students is hereby rejected.

## DISCUSSION

The result of this study revealed that there is significant gender difference in Mathematics performance of Margi speaking junior secondary school students. The differences observed here are consistent with previous studies showing gender difference in Mathematics achievement (Salman, 2008; Bohlin, 1994). Conversely, the National Center for Educational Statistic (1990) reported that overall Mathematics achievement of females

at ages 9 and 13 is constant with that of males. By age 17, however, the female are not achieving at the same level in Mathematics as their male counterparts. The findings of this study revealed that boys are more confident than girls in their ability to learn Mathematics. Self-confidence is an important factor because relatively strong correlations have been found between Mathematics performance and students' self-confidence in learning Mathematics (Thompson and Dinnel (2007). Self confidence is an important construct because it has been shown to have a consistent, positive relationship with general academic achievement. The National Council of Teachers of Mathematics Report (1989), "Everybody Counts", sums it all when it stated that, gender differences in Mathematics performance are predominantly due to the accumulated effect of sex-role stereotypes in family, school and society.

Mallum (1990) reported a similar finding in Nigeria. She observed that girls possessed lower confidence in their ability to learn science than did boys. She also noted that students' interest towards a

particular science subject was related to the kind of attention given to them by the subject teacher. It is said that teachers seem to pay more attention to students who are sure of themselves than those who are less sure. Mallum therefore recommended that teachers should give as much time to students with low confidence as they would do to those with high level of confidence.

These factors constitute great impediments to female performance and aspirations in science subjects generally. She also noted the under representation of females in science and technological career oriented disciplines. According to the report, girls are drilled early into believing that girls should not study science and technology. She however recommended the eradication of the traditional view of the girls' role and every form of sexism that may be inherent and existing in the teacher/students classroom interaction. Girls should rather be stimulated to choose subject in the area of science and technology.

## CONCLUSION

In this study, Gender disparity in participation was revealed. This is not unusual in Nigeria and in developing countries around the world as the participation show concordance with the total number of inter-gender enrolment in schools. Male enrolment in schools have been higher than their female counterpart due to gender imbalance in school enrolment which tends to occur whenever there is a disparity in the access of males and females to education. In this study, the male mean performance scores were

generally higher than that of female in the treatments given. However, the respective treatments actually impacted positively more on the participants in the experimental (English with Margi) group. It is recommended that girls should be stimulated to choose subjects in the area of Science and Technology.

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