THE EFFECT OF PEER TUTORING AND EXPLICIT INSTRUCTIONAL STRATEGIES ON PRIMARY SCHOOL PUPILS LEARNING OUTCOMES IN MATHEMATICS

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Abstract. The study investigated the effect of explicit and peer tutoring instructional strategies (treatment), pupils ability and gender on learning outcomes in primary school Mathematics. Data analysis involved the use of analysis of covariance (ANCOVA). The sample consisted of 170 primary 5 pupils selected through simple random from eight schools. The findings revealed that there was significant main effect of treatment on achievement in Mathematics and attitude towards Mathematics. Pupil's ability and gender were found not to have significant main effect on achievement in Mathematics and attitude toward Mathematics. However there was a significant interaction effect of treatment and pupils' ability on pupils' attitude towards Mathematics. All the two and three ways interaction effects on achievement and attitude were found not to be significant. These findings and application indicate that the significant main effect of treatment on mathematics achievement and attitude respectively provide empirical basis to suggest that primary school practicing Mathematics teacher should constantly use peer-tutoring and explicit

teaching instructional strategies in Mathematics classrooms. The use of these instructional strategies in improving Mathematics achievement and attitude toward the subject should also be encouraged irrespective of student pupil's ability and gender. There is also a need for developers of curriculum materials (e.g. teacher trainee's, textbook associated trainer's guide) in Mathematics methodology to incorporate the significant findings of the present study. The textual material should contain detail of hour peer-tutoring and explicit - teaching instructional strategies could be made an integral part of Mathematics teaching at the primary school level.

Keywords: peer-tutoring, explicit instruction, learning outcomes, primary school, mathematics

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Introduction

Research findings over the years have revealed the importance of Mathematics as the basic tool for industrialization and national development. It is also recognized to play a vital role in contemporary society, and this is indispensable for the existence of any nation. The implication here is that for a nation to take her right place technologically among the developed nations, she must focus on Science and Mathematics. Mathematics has been defined as bedrock for technological advancement, and development for all nations. This leads to the suggestion of its teaching in a more practical way starting from the primary school level where the advantage of the natural curiosity of children and their enthusiasm for learning before years of drilling and rote learning cause some of them to lose interest in the subject at school. Lack of interest and poor performance in Mathematics at the primary and secondary level and later in life may not be unconnected with the lack of acquisition of the basic Mathematics concepts/skills right from the primary schools. Successful Mathematics learning goes beyond passive acquisition of knowledge transmit-

ted to learners. Rather, understanding in Mathematics occurs through individual constructions and interactions with the natural and physical world and through a social process of communicating with others in the Mathematics form. Though, the FGN/UNICHF/UNESCO findings[1)] on monitoring school pupils' learning achievement stressed the need for the promotion of understanding, problem solving ability and inquiry oriented learning among strategies for meeting these requirements may be lacking in all classroom teaching and learning situation.

In view of the importance associated with the study of Mathematics, there have been series of initiatives to improve the quality of Mathematics education. The measures include teachers' attendance of in-service training, Mathematics workshops and seminars. A major goal of Mathematics curriculum development is to make learning materials appropriate to the learning capabilities of the learners. The general aim of these initiatives is to encourage good classroom practices that would lead to improved pupils' performances. In spite of these efforts and many others, primary Mathematics education in Nigeria is still facing the problem of pupils' underachievement and poor attitude towards Mathematics. It is against this backdrop that this study examined the need for an effective method of teaching that could enhance better learning outcomes in Mathematics among Nigerian primary school pupils. Many teaching strategies have been advocated for effective teaching and learning of Mathematics in primary schools, hence this study focused on some other teaching methods and strategies that could facilitate the development of basic skill of listening, observing, co-operation, analysing and ordering among learners during the teaching of some primary Mathematics topics. Two of such methods that could help in the development of the basic skills in teaching Mathematics in primary school are explicit teaching and peer tutoring. They have been found to take care of pupils of varying intellectual abilities and found to be very effective in the teaching of social science.

This study sought to assess the effects of the strategy adopted on learning outcomes in Mathematics of pupils in primary schools in order to embark on more effective instructional practices and to determine the desirability of the use of the treatment conditions.

Hypotheses

The following null hypotheses were tested at 0.05 levels.

HO_1: There is no significant main effect of treatment on pupils: (i) achievement in Mathematics; (ii) attitude towards Mathematics.

HO_2: There is no significant main effect of gender on: (i) achievement in Mathematics; (ii) attitude towards Mathematics.

HO_3: There is no significant main effect of ability on: (i) achievement in Mathematics; (ii) attitude towards Mathematics.

HO_4: There is no significant interaction effect of treatment and gender on: (i) achievement in Mathematics; (ii) attitude towards Mathematics.

HO_5: There is no significant interaction effect of treatment and ability on: (i) achievement in Mathematics; (ii) attitude toward Mathematics.

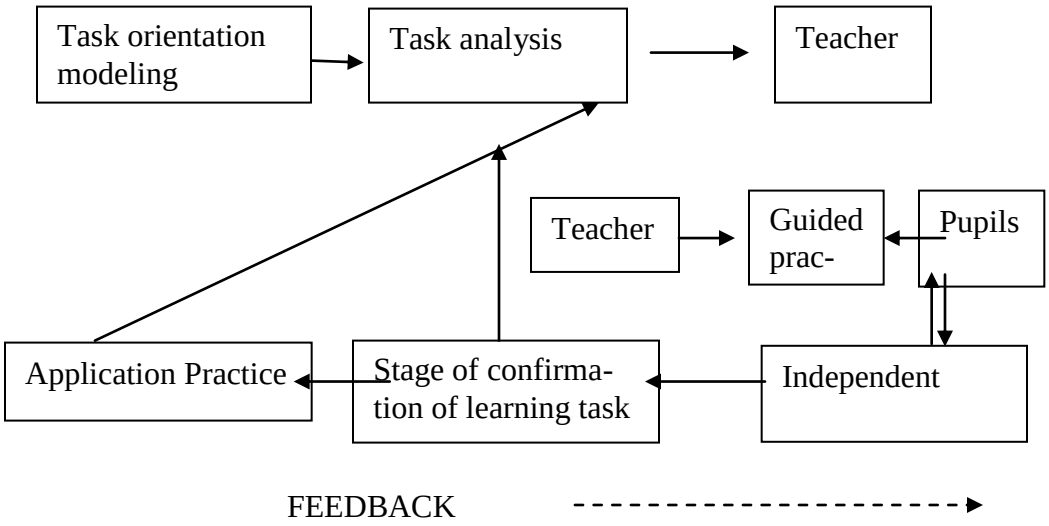
HO_6: There is no significant interaction effect of gender and ability on: (i) achievement in Mathematics; (ii) attitude towards Mathematics.

$HO_?$: There is no significant interaction effect on treatment, gender and ability on: (i) achievement in Mathematics; (ii) attitude towards Mathematics

Review of literature

The term explicit teaching referred to as systematized guided approach that may be employed by classroom teacher to bring about meaningful learning. It function on the principle of breaking learning tasks into sub-units and presented in a step by step form so that all categories of pupils can benefit positively in a general classroom situation. However, there seems to exist a lot

of' empirical studies on explicit teaching. The components of explicit teaching are clearly presented in the model below and how each component interacts with each other.



The various view on the components of explicit teaching are designed and structured to lead the acquisition of meaningful learning task, maximizing and minimize passive rote learning. Peer tutoring on the other hand is a process where pupil helps each other to learn. It involves pupils playing the role of a tutor and a tutee thereby applying the principle of one who teaches also learns (Walberg & Susan, 2000). The pairing of pupils by the teacher is based on their ability levels. The teacher guides and directs tutor to share his knowledge and experiences on an issue, learning tasks, etc. Selection of tutor by the teacher is based on two criteria: (1) the tutor must demonstrate sufficient knowledge of the content to assist their low achieving partner with Mathematics learning tasks; (2) the tutor must possess the quality of promoting low achievers to participate actively in the learning task, wait for tutees to attempt a problem independently before offering assistance, encouragement and correct responses.

Peer tutoring is designed to supplement rather than replace a variety of teacher directed activities. In this process, peer tutoring provides low achievers with a high level of active responding (with ongoing guidance and feedback) on a concept that has been introduced, explained and demonstrated by the teacher. Through the provision of the following guidance, peer tutors may be assisted to perform effectively by providing: (i) a clear direction as to what they are to do and how they are to do it; (ii) a specific teaching task to undertake and appropriate instructional materials; (iii) a demonstration of effective behavior (Rosenshine, 1987).

The reason behind the idea of peer tutoring is that it is assumed that most pupils working in pairs may learn better in social context. Execution of peer tutoring method takes the following procedures: (1) identification of learning task; (2) analysis of learning task; (3) presentation of the learning task to the whole class by the teachers; (4) selection of peer tutors; (5) briefing assigning tasks to the tutors; (6) pairing of tutor with tutees; (7) discussion of tutors with tutees; (8) monitoring of peer activities throughout the activity and provision of clue; (9) teacher processes feedback for incorrect responses and praises for correct answers and appropriate cooperation; (10) teachers guide conclusion.

It appears that peer tutoring could be simple instructional strategy that shows a great promise for meeting the complex academic and social need of pupils with diverse learning abilities in a regular class without really affecting other pupils in the class. This is true when pupils supplement teachers' efforts to assist low achievers in a large classroom typical of Nigeria situation. The actual benefit associated with peer tutoring has also been documented by peer tutoring and social support literature.

Methodology

Design

This study adopts a pre-test post-test control group quasi-experimental made up of 3x3x2 factorial design. The study involved two experimental groups and one control group. Respondents in the experimental group one were exposed to selected structured mathematics learning tasks using explicit teaching method while respondents in the experimental group two were exposed to the same tasks using peer - tutoring method. Respondents in group three were exposed to the conventional chalk and talk method (control group). The respondents were exposed to both pre- test and post-test before treatment and after treatment respectively. The research design is illustrated as presented below:

$$O_1\ X_1\ O_2\ (E_1)$$
$$O_3\ X_2\ O_4\ (E_2)$$
$$O_5\ X_3\ O_4\ (C)$$

where O_1, O_3 and O_5 stands for pre-test, O_2, O_4 and O_6 stands for post-test. X_1 stands for explicit teaching (Experimental group 1), X_2 stands for peer-tutoring (Experimental group 2) and X_3 stands for conventional method (control group 3).

This study was designed to investigate the possible effects of three different teaching strategies on primary school male and female (of different ability levels) achievement and attitude to primary mathematics. 3x3x2 factorial representation of the design was chosen because it allow for the determination of the effect of each independent and moderator variables in the dependent variables and also provide an opportunity to determine the interaction effects of the independent and moderator variables on achievement and attitude to primary mathematics. The factorial representation shows how the dif-

ferent teaching strategies at three levels and gender at two levels were crossed with ability levels at three levels.

Variables in the study

The independent variable is the instructional method at three levels, explicit teaching, peer-tutoring and conventional teaching. Dependent variable includes; achievement scores in mathematics and attitude towards mathematics while moderator variable includes gender (male and female) and academic ability at three levels – high, medium and low.

Sample and sampling procedure

The sample for this study consisted of 170 primary 5 pupils selected through simple random sampling technique from eight schools.

Selection of subjects

An intact class of eight primary schools (all in primary five) in Oyo State was used in this study. The choice of these schools and primary five pupils is as a result of the following criteria: (i) schools have been turning pupils for primary six leaving certificate examination; (ii) primary five pupils are assumed to be able to read and write simple English language; (iii) assumption that the selected pupils must have had prior knowledge about selected Mathematics topics

Instrumentations

Four instruments were used in the study for the purpose of data collection. These are: (a) Mathematics achievement tests (MAT); (b) attitude towards Mathematics questionnaire (ATSQ); (c) standardized ability test.

Mathematics achievement test (MAT)

The test was designed by the researchers. It contained twenty five multiple-choice items with four options in Mathematics. This was administered before the treatment and after the treatment. The test was used as pre - test and post-test. The (MAT) was to measure the pupils' ability to recall, relate, and apply any of information received during the treatment.

The trial test of MAT reveals its reliability coefficient of 0.84 using Kuder Richardson Formula 21 (KR21) after its administration on set of pupils different from those in the study.

Pupil's attitude toward Mathematics scale

This is a 20 item instrument developed by the researchers to elicit information from the respondents on their attitudes towards Mathematics. This instrument was made up of two sections (A&B). Section (A) deals with information about the pupil's age, class and sex while sector B comprises of twenty items requesting pupils to indicate their attitude towards Mathematics. The pupils were to react to each of the statement in the questionnaire by indicating Yes or No in the appropriate column. The result shows that the instrument contained no ambiguities. The instrument returned a reliability index of 0.87 through split halves method while the validity of the instrument was also ensured. The instrument was therefore considered to be valid and reliable.

Standardized ability test

Standardized ability test is a test applied on the subjects at the onset of the experiment coupled with their progress report by their class teacher as revealed by their academic record. The score obtained was used to classify the pupil's into different ability levels (low, medium and high).

Procedure for carrying out the study

The investigating periods is divided into three: pre-treatment, treatment, and post-treatment. The researchers trained teachers on the use of the two teaching strategies on experimental groups. Control group consisted of the conventional mode of instruction (treatment) in which the teachers adopted the normal classroom teaching methodology.

Data analysis procedure

Data analysis involved the use of Analysis of Covariance (ANCOVA) for the post-test achievement and attitude scores with the respective pre-test scores used as covariates. The pre-test scores were used as covariates to cater for initial difference in dependent variables and other extraneous variables which could compound treatment effect. ANCOVA was used in order to estimate the effects of the independent variables and the moderator variables on the observed differences in the pre and post treatment scores of the subjects.

In the case of the existence of a significant main effect, a Multiple Classification Analysis (MCA) post-hoc analysis was used to detect the magnitude and direction of differences between / within the groups. Scheffe statistical technique was used as a post - hoc measure in case of significant treatment effect. The general sequence of the presentation and discussion is in accordance with the generated hypotheses.

HO1a: there is no significant main effect of treatments on achievement in Mathematics.

Table 1 presents 3x3x2 Analysis of Covariance (ANCOVA) on the posttest Mathematics achievement scores by treatment ability and gender.

Table 1. Summary of 3x3x2 ANCOVA on the post-test achievement scores of subjects according to treatment, ability and gender

Source of variation	SS	df	MS	F	SIG. P
Covariate (pretest)	482.274	1	482.274	61.863	.000
Main effects	441.712	5	88.342	11.332	.000
Ability	4.972	2	2.486	.319	.727
Gender	.064	1	.064	.008	.928
Treatment (TRT)	436.676	2	218.338	28.007	.000
2-way interaction	27.642	8	3.455	.443	.893
Ability x gender	8.198	2	4.099	.526	.592
Ability x TRT	14.857	4	3.714	.476	.753
Gender x TRT	4.652	2	2.326	.298	.742
3-way interactions	76.144	4	19.036	2.442	.049
Ability x gender x TRT	76.144	4	19.036	2.442	0.49
Explained	1027.772	18	57.098	7.324	.000
Residual	1184.965	152	7.796		
Totals	2212.737	170	13.016		

Significant at 0.05 alpha levels

Table 1 shows that the main effect of treatment on pupils' achievement in Mathematics was significant [$F_{(2,170)}$ = 28.007; P<0.05]. Thus, hypothesis 1a was rejected. That is, there is a significant difference in achievement of subjects by treatment. In order to determine the order of achievement among the three groups (experimental group 1, experimental group 2 and control group), the Multiple Classification Analysis (MCA) was computed and the result is represented in Table 2 below.

The MCA table shows that pupils, in the experimental group 2 (peer tutoring) had the highest adjusted post-test mean score ($\bar{x}$ =13.85) followed by those in experimental group 1 (exploit teaching) with and adjusted mean score of 11.86, while those in the control group (conventional teaching method) had the least adjusted mean score ($\bar{x}$ =9.92). The table also shows that treatment accounted for 41.8% (0.418) of the variance pupils' achievement in Mathematics. The results of Scheffe-test of statistics for mean scores of the three groups is as shown in Table 3.

Table 2. Multiple classification analysis (MCA) of the achievement of subjects according to treatment, ability and gender

Grand means 12.16

Variable + category	**N**	**Unadjusted deviation**	**"Eta"**	**Adjusted for independent covariates deviation**	**Data**
Ability					
Low	63	-.27		-.06	
Average	58	.14		-.02	
High	50	.18		.05	
			.06		.01
Gender					
Male	81	.26		.03	
Female	90	-.24		-.03	
			.07		.01
Treatment					
Explicit teaching	53	-.78		-.28	
Peer tutoring	71	1.94		1.69	
Control	47	-2.05		-2.24	
Multiple R^2					.418
Multiple R					646

Table 3. Scheffe multiple range comparison of treatment group means scores for the three groups

Mean	Group	T1	T3	T2
11.38	T1	0		
12.11	T3	*	0	
14.11	T2	*	*	0

* Significant at 0.05 alpha levels

Table 3 shows that a significant difference in pupils' achievement existed between students exposed to peer tutoring strategy (experimental group 2) and those exposed to conventional method (control group) pupils exposed to explicit instructional strategy (experimental group 1) and those exposed to conventional method (control group), as well as between pupils exposed to explicit strategy (experimental group 1) and those exposed to peer tutoring (experimental group 2). These results are indications that pupil's achievement

in Mathematics could be significantly improved by exposing the students to peer tutoring strategy and explicit instructional strategy. Thus peer tutoring problem solving is the best strategy of all the techniques.

HO_2: there is no significant main effect of ability on pupils' achievement in Mathematics.

Table 1 shows that there was no significant main effects of ability on pupils' achievements in Mathematics [$F_{(2,\ 170)}$ = 0..319, P >0.05]. Thus, hypothesis 2a was not rejected. The non-significant effect accounted for the very small contribution of ability to the explanation of the variation in pupils' achievement in Mathematics (21.8%) R^2 = 0.418

HO_{3a}: there is no significant main effect of gender on achievement in Mathematics.

Table 1 shows that there was significant main effect of gender on pupils achievement in Mathematics [$F_{(1,170)}$ = 0.008; P < 0.05]. Thus hypothesis 3a was rejected. The significant effect accounted for the much contribution of gender on the explanation of variation in pupils' achievement is Mathematics (22%) R^2 = 0.418. The independent and moderator variation, when taken together, accounted for 41.8% of the prediction of pupils' achievement in Mathematics. The MCA in Table 2 shows that treatment was the highest contributor to the prediction followed by ability and gender in that order.

HO_{4a}: there is no significant interaction effect of treatment and ability on pupils' achievement in Mathematics.

Table 1 shows that there was no significant interaction effect of treatment and ability on pupils' achievement in Mathematics [$F_{(4,170)}$ = 0.476; P > 0.05]. Thus hypothesis 4a was not rejected. The non-rejection of the hypothesis thus showed that the impact of treatment on pupils' achievement in Math-

ematics is not sensitive to the pupils' ability orientation. This suggests that teachers should use peer-tutoring and explicit teaching strategies in teaching Mathematics.

HO_{5a}: there is no significant interaction effect of treatments and gender on achievement in Mathematics.

Table 1 shows that there was no significant interaction effect of treatment and gender on pupils achievements in Mathematics [$F_{(2,170)} = 0.298$; $P<0.05$]. Thus, HO_{5a} was not rejected. It thus seems that the impact of treatment in pupils' achievement in Mathematics is not sensitive to the gender. This result suggest that teachers should exposed both male and female pupils to experimental strategies (i.e., peer-tutoring and explicit) during Mathematics class. This is because result has demonstrated that Mathematics achievement is associated with the use of these two strategies and this is applicable to both male and female.

HO_{6a}: there is no significant interaction effect of ability on pupil's gender on achievement in Mathematics.

Table 1 shows that there was no significant interaction effect of pupils ability and gender in pupils' achievement in Mathematics [$F_{(2,170)} = 0.536$; $P<0.05$]. Thus HO_{6a} was not rejected. This result shows that any efforts at manipulating pupils' ability or developing a gender pupils' achievement in Mathematics might see to be necessary.

HO_{7a}: There is no significant interaction effect of treatment, ability and gender on Mathematics achievement.

Table 1 shows that there was no significant interaction effect of treatments, ability and gender on pupils' achievement in Mathematics [$F_{(4,170)} = 2.442$; $P > 0.05$]. Thus, HO_{7a} was not rejected. This result when viewed

against the non-significant main effect of pupils' ability and gender respectively shows that the significant main effect of treatment (as in HO_{1a},) was not sensitive to a combination of pupil's ability and gender, meaning that the result shows that the significant main effect of treatment on pupils' achievement in Mathematics was significant irrespective of ability - gender groups, lower male achiever, lower female achiever, high-male achiever, high female achiever, average-male achiever, average- female achiever.

HO_{1b}: There is no significant main effect of treatment on significant main effect of treatment on student's attitudes towards Mathematics.

Tables 4 present a 3x3x2 analysis of covariance of attitude towards Mathematics treatment scores of subject according to pupils' ability and gender.

Table 4. Summary of 3 x 3 x 2 on the post-test attitude scores of subjects according to treatment, ability and gender

Source of variation	SS	df	MS	F	SIG. P
Covariate (pretest)	74.757	1	74.757	1.108	.002
Main effects	38.360	5	7.672	1.037	.398
Ability	22.845	2	11.422	1.544	.217
Gender	3.015	1	3.015	.408	.524
Treatment (TRT)	12.500	2	6.250	.845	.432*
2-way interaction	77.127	8	9.641	1.304	.246
Ability x gender	14.681	2	7.340	.992	.373
Ability x Treatment	43.114	4	10.779	1.457	.218
Gender x Treatment	10.939	2	5.470	.740	.479
3-way interactions	68.573	4	17.143	2.318	.060
Ability x gender x Treatment	68.573	4	17.143	2.318	.060
Explained	258.817	18	14.37	1.944	.016
Residual	1124.994	170	6.618		

* Significant at 0.05 alpha levels

Table 4 shows that the effect of treatment on students attitude toward Mathematics was significant [$F_{(2,170)}$ = 0.845; P> 0.05]. Thus, hypotheses lb

was rejected. In the light of the rejection, it could be said that attitude toward Mathematics of pupils in the experiment group was significantly better than pupils in the control group. In order to determine the hierarchy of attitude among the three group (experimental group 1, experimental group 2 and control group) reference was made to the multiple classification analysis (MCA) in Table 5.

The MCA Table 5 shows that pupils' in experimental group 2 (peer tutoring strategy) had the best attitudinal towards Mathematics ($\bar{x}$ =11.09) followed by those in control group (conventional method) with an adjusted post-test mean score of 10.64 while those in the (explicit teaching method) experimental group 1 has the worst attitudinal disposition towards Mathematics ($\bar{x}$ =10.48). The table also shows that treatment accounted for (8.2%) R^2 = 0.082 of variance of student attitude towards Mathematics. The result of further analysis on the attitude scores of pupils in the three groups is shown in Table 6.

Table 5. Multiple classification analysis for post attitude score according to treatment, ability and gender

GRAND MEAN =10.78

Variable + category	**N**	**Unadjusted deviation**	**"Eta"**	**Adjusted for independent covariates deviation**	**Data**
Ability					
Low	63	.06		.08	
Average	58	.47		.36	
High	50	-.62		-.53	
			.15		.13
Gender					
Male	81	.07		.15	
Female	90	.06		-.13	
			.02		.05
Treatment					
Explicit teaching	53	-.22		-.30	
Peer tutoring	71	.24		.31	

Control	47	-.12		-.14	
			.07		.01
Multiple R^2					.082
Multiple R					.286

Table 6. Scheffe multiple range comparison of attitude means score of the three groups

Mean	Group	T1	T3	T2
10.56	T1	0		
10.66	T3	*	0	
11.02	T2	*	*	0

*Pairs of group significant different at 0.05 alpha levels

Table 6 shows that significant difference in pupils' attitude existed between pupils exposed to peer - tutoring (group 1) and those exposed to conventional method (control group) as well as between students exposed to explicit teaching (group 2) and those in the control group. These results are further indications that students attitude toward Mathematics could be significantly improved by exposing pupils to peer tutoring teaching strategy.

HO_{2b}: There is no significant main effect of pupil's ability on student's attitude toward Mathematics.

Table 4 shows that there was no significant main effect of pupils ability on pupils attitude toward Mathematics [$F_{(2,170)} = 1.544$; $P > 0.05$]. Thus hypotheses 2b was not rejected. The non-significant effect accounted for a very small contribution of pupils' ability to the explanation of the variation in pupil's attitude towards Mathematics (6.4%) $R^2 = 0.082$.

HO_{3b} revealed the effect of gender on pupils attitude toward Mathematics was not significant [$F_{(2,170)} = P > 0.05$].

Thus, HO_{3b} was not rejected.

HO_{4b} reveals significant interaction effect of treatment and pupils ability on pupils' attitude toward Mathematics [$F_{(2,170)} = 1.457$; $P< 0.05$].

Thus, HO_{4b} was not rejected.

HO_{5b} shows no significant interaction effect of treatment and gender on pupils' attitude toward Mathematics [$F_{(2,170)} = 0.740$; $P> 0.05$].

Thus, HO_{5b} was not rejected.

HO_{6b} reveals no significant interaction effect of pupils' ability and gender toward Mathematics [$F_{(2,1\ 70)} = 0.992$; $P> 0.05$].

Thus HO_{6b} was not rejected.

HO_{7b} reveals no significant interaction effect of treatment on ability and gender on attitude toward Mathematics [$F_{(4,170)} = 2.318$; $P> 0.05$],.

Thus, HO_{7b} was not rejected.

Discussion of results

The result that treatment had significant effect on pupils' achievement in Mathematics is supported by considering the research results of Simmons et al. (1995), which indicated that the explicit and peer tutoring could improve pupils achievement in Mathematics. The result that students exposed to explicit instruction achieved significantly better than their counterparts in the control group contradicts the research finding of Onafowokan (1973) but however corroborates the finding of Rosenshine & Stevens (1986). The significant difference in achievement Mathematics of pupils exposed to peer tutoring and those exposed to the conventional method of teaching could be attributed to the nature of the textual Mathematics of pupil exposed to peer tutoring and those exposed to the conventional method of teaching could be attributed to the nature of the textual based instructional strategy. The results were supported by Awolowo (1985). The non- significant main effect of pu-

pils ability on pupils achievement in Mathematics were in support of (Ekong & Achebony, 1988). The non-significant main effect of gender on pupils' achievement in Mathematics is in conflict with the finding of Erinosho (1984); while Odebunmi (1993) reports that girls perform better than boys. Ojo (1995) found a significant difference in student attitude toward Mathematics, His finding shown that male pupil exhibited more positive attitude toward Mathematics than female pupils. More girls than boys in primary school seem to have favorable attitude toward Mathematics. This attitude explains the gender difference in Mathematics achievement that was found to favour males in many studies. In line with this, Alele-Williams[2)] was of the opinion that gender difference in Mathematics achievement is as a result of gender difference in attitude toward Mathematics. Similar results of gender difference in Mathematics achievement were found in difference countries (Walberg & Susan, 2000). The explanation of those differences in relation to pupils' attitudes or other affective factors, seem to be very limited and other affective variable, such as peer group expectation, was found to affect girls attitude toward Mathematics and their achievements.

Recommendations and conclusions

Based on the findings and discussion above, it is hereby recommended that practicing Mathematics teacher should constantly; use peer-tutoring strategy in classroom as teaching method in teaching Mathematics. The use of these is expected to improve pupils' achievement and attitude toward Mathematics. That teacher should pay attention to pupils' learning ability in classroom situation.

That curriculum planner could use the finding of this study for effective planning and re-planning of Mathematics teaching methodology. There is also needs for Mathematics curriculum developers to commission author to write more textbooks on Mathematics educations or make provision for more

mathematics materials. They should also organize teacher training and in service programme from time to time to boost the Mathematics teachers' mastery of the subject.

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