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**THE IMPACT OF PRACTICAL APPLICATION OF MATHEMATICS ON SENIOR SECONDARY
SCHOOL STUDENTS' INTEREST AND ACHIEVEMENT IN ALGEBRA IN KARU LOCAL
GOVERNMENT AREA OF NASARAWA STATE, NIGERIA**

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ABSTRACT

The study on, Impact of practical Application of mathematics on Senior Secondary School Students' Interest and Achievement in Algebra in Karu Local Government Area of Nasarawa State. It was an attempt to ascertain the influence of practical approach on students' interest in learning Algebra in senior secondary school and to determine the effect of practical approach on male and female students' achievement in Algebra. The study used quasi-experimental design. 137 senior secondary two students (65 for Experimental group and 72 for control group) were used. The experimental group were expose to practical application in algebra, while the control group were taught using conventional method. The instrument used for data collection were Mathematics Achievement Test (MAT) and Mathematics Interest Assessment Test (MIAT) with the reliability coefficients of 0.86 and 0.63 using Kuder-Richardson formula 20 and Cronbach Alpha coefficient respectively. Four hypotheses were formulated and tested at 0.05 level of significance. Analysis of Covariance (ANCOVA) was used to test hypotheses 1 & 3 and independent samples t-test was used to test hypotheses 2 & 4. Results from the study revealed that students taught mathematics using the practical application teaching method achieved higher but showed little or no greater interest in learning mathematics than those taught with conventional teaching approach. The study also revealed that both male and female students in experimental group achieved the same and also showed similar interest in mathematics. The study recommended among others that teacher education institutions should be encouraged to include practical application as a method in teaching secondary school mathematics since their interest is likely to increase if well applied.

Keywords: Practical Application, Senior Secondary School Students, Interest, Achievement.

I. INTRODUCTION

Mathematics is an intellectually stimulating subject that affects every talent of human activities such as politics, economics, science and technology. Mathematics is the foundation of all scientific, technological and economy investigations toward the development of human activities (Beaty, 2000). It is in light of this that, all over the globe, much effort and time is put in action by mathematics educators and practitioners for the teaching and learning of mathematics to be enhanced. Hence, the declaration that mathematics is used in procuring solution to problems, answer to questions which arises in everyday life as humanity strive to satisfy the needs and wants in all areas of enterprise (Odili, 2006).

Mathematics has been described as 'the abstract key which turns the lock of the physical universe' (Devlin 2002 in Linda and Trisha 2011). Devlin (2000, 2002) simply describes mathematics as the science of patterns. Guy Claxton, in his submission to the Cambridge Primary Review (Alexander 2010: 224), argues that the high status given to mathematics is based on a false premise derived from the legacy of the classical emphasis on logical and 'quasi-logical' thinking which has long dominated Western education. This presents mathematics, erroneously in Claxton's view, as a subject which; is timeless and does not therefore need to be relevant; may be broken down into segments which can be taught in isolation through graded exercise; can be organised in such a way as to ensure that there are clear right and wrong answers, making it simple to assess. For Claxton this attitude to mathematics is 'a million miles away' from 'the real way mathematicians actually solve problems and make discoveries' (Alexander 2010: 224, citing Claxton). Similarly, Worthington and Carruthers (2006) compare young children's attempts to learn mathematics to those of someone learning a new language. They suggest that children need to become much more than mere 'adders and dividers'. What society actually needs, they argue, are 'seekers and solvers of problems and makers of new mathematical meanings'.

Secondary school mathematics is aimed at developing learners understanding of basic scientific phenomena and the application of scientific ideas to everyday life. The objectives of Mathematics curriculum at the secondary school level are to: Provide basic literacy of mathematics for functional living in the society; Acquire basic concepts and principles of mathematics as a preparation for further studies; Acquire essential scientific skills and attitude as a preparation for technological application of mathematics and Stimulate and enhance creativity (FRN, 2004).

Practical application is a situation in which teachers employed the use of physical objects that can be touched, manipulated and utilized proficiently in the teaching and learning process. In the teaching and learning of trigonometry, practical approach is considered as the process of improvising materials and/or bringing in real objects that can be used as teaching aids to learner's (Salau, 2001). Practical work provides the effective, meaningful, interesting, fun and pleasurable to learners which are contained within the various most effective means by which understanding and comprehending of mathematical concepts can be improved. It enable students to reason out the mathematical ideas which are contained within the various activities, thus make them to become critical thinkers. Practical application provides the opportunity where the teacher becomes the instructor of the group, providing stimulating learning situation (Koko, 2008). The learners are then guided to find information and understand concept through appropriate activities and demonstrations which encourages them to discover patterns in mathematics leading to rules and formulae. Haara and Smith (2009) define a practical activity to include all forms of engagement where the pupil uses physical objects while carrying out the activity at hand. That means including the opportunity for physical activity, and not just the use of artefacts or material found in nature.

Isaac and Andrew (2014) conducted a research on the Effect of Practical Approach on Basic 7 Mathematics Students' Interest and Performance in Fraction in Uyo Local Government Area of Akwa Ibom State. The result showed that students taught using practical approach performed significantly better than those taught using conventional method. Students in the practical approach group developed interest that was significantly better than their counterparts in the conventional group. It was concluded that practical approach significantly enhances students' performance and interest in fraction.

Gender bias in Nigeria and Africa as a whole is still very prevalent (Arigbabu and Mji, 2004). However, some researchers still found that there are still significant differences in the cognitive, affective and psychomotor skill achievements of students in respect to gender (Aguele and Uhumniah (2008); Kolawole, (2007); Croxford (2002); Beller and Gafni (1996) conducted a study to investigate differential performance of boys and girls during the second International Assessment of Educational Progress in mathematics performance for ages 9 and 13. Analysis of results indicated that mathematics performance was in favour of the boys. In the study of the pattern of mathematical achievement of secondary schools in Ghana conducted by Eshun (1999), he found that although there was low achievement by majority of the students, boys performed relatively better than girls. Consequently, Sinnes (2006) in (Emaikwu, Iji & Abari 2015), opined that for gender inequality to be removed in the class room, methods that encourage the active participation of students' in the class should be employed by the teachers. This is in agreement with Etukudo (2002) who emphasized that gender disparity exists in the face of weak methods.

Emaikwu, et al (2015) conducted a research on the Effect of Geogebra on Senior Secondary School Students' Interest and Achievement in Statistics in Makurdi Local Government Area of Benue State. Results from the study revealed that both male and female students in experimental group achieved the same and also showed similar interest in statistics.

Emmanuel, Benjamin and Nguuma (2012) conducted a research on Improving Some Nigeria Secondary Students' Achievement in Geometry: A Field Report on Team Teaching Approach. The result reveals that male and female students taught Geometry using team teaching approach did not differ in their mean achievement significantly ($F(1, 287) = 9.690, p > 0.05$).

The WAEC Chief Examiners' report (2012) confirmed that candidates had weak presentations on questions similar triangle; this had some adverse effects on their performance. Also, the WAEC Chief Examiners (2007) report revealed that candidates lack interpretation and handling of trigonometric construction and its application to angles and triangles, this shows that the candidates did not show any firm grasp of detail needed to answer the questions. These problems emanate as a result of a lot of problems facing the effective teaching and learning of mathematics at all levels of Nigerian educational institution (Bankolere, 2006). Okafor (2002) and Okeke (2006) identify poor teaching methods as the major factor contributing to the poor performance of students in mathematics. Okeke (2002) as cited in Ayawari (2015), observed that students normally perform badly in Physics especially in Girls school in Nigerian secondary schools, she further stress in her studies on poor achievement in science subject (mathematics inclusive). In this regard, the main purpose of this study is to investigate the Impact of practical Application of mathematics on Senior Secondary School Students' Interest and Achievement in Algebra in Karu Local Government Area of Nasarawa State. Specifically, it is to:

- i. Determine the effect of practical approach on students' achievement in Algebra in senior secondary school.

- ii. Ascertain the influence of practical approach on students' interest in learning Algebra in senior secondary school
- iii. Determine the effect of practical approach on male and female students' achievement in Algebra
- iv. Determine the effect of practical approach on male and female students' interest in Algebra

Research Questions: This study provided answers to the following research questions:

4. What is the effect of practical approach on students' achievement in Algebra in senior secondary school?
5. What is the influence of practical approach on students' interest in learning Algebra in senior secondary school?
6. What is the effect of practical approach on male and female achievement in Algebra?
7. What is the effect of practical approach on male and female interest in Algebra?

Research Hypotheses

The following hypotheses will be formulated to guide the study;

- i. There is no significant effect of practical approach on students' achievement in Algebra in senior secondary school?
- ii. There is no significant influence of practical approach on students' interest in learning Algebra in senior secondary school?
- iii. There is no significant effect of practical approach on male and female students' achievement in Algebra?
- iv. There is no significant effect of practical approach on male and female students' interest in Algebra?

II. METHODOLOGY

The design adopted for this study was quasi-experimental design of non-equivalent group.

The population for this study are all the senior secondary two (SS2) students in the co-education secondary schools in Karu Local Government Area of Nasarawa State. The sample of students for this study was 137 students (78 male and 59 female) drawn from the four secondary schools.

For the purpose of this research work, Mathematics Achievement Test (MAT) and Mathematics Interest Assessment Test (MIAT) were used. The MAT is a test instrument that covers all the areas of Algebra that will be taught with regard to this study. The MAT is an eighty (80) items multiple choice (with options A - D) instruments prepared for SS2. The MIAT is divided into two sections (section A and B). Section A contains the Bio- data of each respondent, while section B contains information on the research problem. A Likert-type scale of Strongly-agree, Agree, Disagree and strongly disagree was used to determine the opinion of the respondents, with regards to their feelings on the impact of the teaching styles under study.

The instrument was administered to a few respondents in a pre-test exercise. The result of pre-test was used to calculate the reliability coefficient of the MAT using the Kuder Richardson formula 20 which gives 0.86 and Cronbach Coefficient alpha for the MIAT which gives 0.63 showing that the instruments were reliable to be administered to the entire respondents (Loewenthal, 2004).

The researchers administered the pre-MAT, pre-MIAT, post-MAT and post-MIAT to all the SS2 students in the two groups. The pre-MAT, pre-MIAT, post-MAT and post-MIAT was administered to the selected groups at the same time to avoid the students' discussing the test items and also to avoid leakages. The researcher administered the pre-MIAT by visiting the studied schools, in which he had a direct contact with the respondents through hand to hand process and the pre-MIAT and pre-MAT were retrieved or collected on the same day. At the end of each teaching session the post-MAT and post-MIAT was administered. Students noted their responses in a normal classroom situation.

Each item of the test scored 0 and 1 for incorrect and correct responses, respectively. Data collected were analysed using descriptive Statistics of mean and standard deviation to answer the research questions while the hypotheses were tested at 5% significance level using the Analysis of Covariance (ANCOVA) and Independent sample t-test.

III. RESULTS

The Data is presented according to research questions and hypotheses.

Question 1: What is the effect of practical approach on students' achievement in Algebra in senior secondary school?

Table 2: Mean Achievement Scores and Standard Deviation

Teaching Method	Type of Test	N	Mean (\bar{x})	Standard Deviation (SD)
Practical Application	Pre-MAT	65	48.98	6.60
	Post-MAT		49.58	7.29
Conventional	Pre-MAT	72	48.96	8.84
	Post-MAT		48.84	9.53

In table 2, the mean pre-test scores for practical application method group are 48.98 with a standard deviation of 6.60 and the mean pre-test for the conventional method group is 48.96 with a standard deviation of 8.84.

However, the mean of post-test for the practical application method group is 49.58 with a standard deviation of 7.29 while the mean of the post test scores for the conventional method group is 48.84 with a standard deviation of 9.53. From the mean scores for both groups it could be seen that the practical application method group has a higher mean score in statistics than the conventional method group. To prove if the mean difference in the achievement scores of the students in statistics between the two groups is significant, hypothesis 1 was tested at 0.05 level of significance.

Hypothesis 1: There is no significant effect of practical approach on students' achievement in Algebra in senior secondary school?

Table 3: Summary of ANCOVA Result of Students Achievement Score in MAT

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1812.131 ^a	3	604.044	14.754	.000
Intercept	661.964	1	661.964	16.169	.000
Pretest	715.854	1	715.854	17.485	.000
Method	661.964	1	661.964	16.169	.000
Method * Pretest	650.407	1	650.407	15.887	.000
Error	2006.057	61	32.886		
Total	134425.000	65			
Corrected Total	3818.189	64			
a. R Squared = .475 (Adjusted R Squared = .442)					
b. Computed using alpha = .05					

In table 3 above, the result shows that the covariance is not significantly the same with the dependent variable thus a sig value of 0.000. However, the significant value of the dependent variable (Posttest) in the two methods is 0.000. Since this value is less than the level of significance of 0.05, the null hypothesis is rejected. It shows that there is a statistical significant difference in the mean achievement scores of senior secondary school students taught mathematics in experimental group and control group.

Question 2: What is the influence of practical approach on students' interest in learning Algebra in senior secondary school?

Table 4: Mean Interest Scores and Standard Deviation

Teaching Method	Type of Test	Mean	Standard Deviation
Practical Application	Pre-MIAT	34.07	4.42
	Post- MIAT	34.35	4.41
	Mean Gain	0.28	
Conventional	Pre-MIAT	33.83	7.50
	Post- MIAT	33.35	6.53
	Mean Gain	0.48	

Results in table 4 shows that the mean interest scores of students taught mathematics with Practical application method was 34.35 with a standard deviation of 4.41, while those taught mathematics with Conventional approach was 33.35 with a standard deviation of 6.53. The mean gain of the students taught mathematics with practical application was 0.28 while that of the students taught mathematics with conventional approach was 0.48. Therefore the mean interest rating of the students taught mathematics with the practical application method is higher than those taught mathematics with the conventional method. This implies that the students taught statistics using the practical application method showed higher interest in learning mathematics than the students in the conventional method group. To show if the mean interest rating in mathematics of students between the experimental and control group is significant, hypothesis 2 was tested at 0.05 level of significance.

Hypothesis 2: There is no significant influence of practical approach on students' interest in learning Algebra in senior secondary school?

Table 5: Independent Sample T-test Result of Subject Interest Score in MIAT based on Method

Teaching Method	MIAT Scores		t	P-Value
	Pre - Test	Post -Test		
Practical Application	34.07	34.35	1.07	0.29
Conventional Method	33.83	33.35		

In table 5 above, the result shows that the t-test value is 1.07 with significance of 0.29 respectively. However, the significant value of the post interest in the two methods is 0.29 which is greater than the level of significance of 0.05. Thus, null hypothesis is accepted. It therefore means that practical application method does not inflict an increase in interest in the students to learn mathematics than conventional method.

Question 3: What is the effect of practical approach on male and female students' achievement in Algebra?

Table 6: Mean Achievement Scores and Standard Deviation

Teaching Method	Gender	Type of Test	Mean	Standard Deviation
Practical Application	Male	Pre-MAT	50.15	6.70
		Post-MAT	49.48	7.83
		Mean gain		
	Female	Pre-MAT	47.60	5.75
		Post-MAT	49.70	6.68
		Mean gain	2.10	

In table 6, the mean achievement score in statistics of male and female students in the practical application method pre-test is 50.15 and 47.60 with standard deviation of 6.70 and 5.75 respectively. This implies that both the male and female students in the practical application method were almost at the same level of knowledge in mathematics before the treatment, although the male had a little higher mean score. However, the mean achievement scores in mathematics for the male and female students in the post test of the practical application method group are 49.48 and 49.70 with a standard deviation of 7.83 and 6.68. This implies that the female student in practical application method group improved upon their interest in mathematics. However, there is no much difference between the male and female students mean achievement scores in mathematics even though the female students slightly achieved above their male counterpart. To ascertain the significance of this finding, hypothesis 3 was tested at 5% level of significance.

Hypothesis 3: There is no significant effect of practical approach on male and female achievement in Algebra?

Table 7: ANCOVA of Subject Achievement Score in MAT based on Gender

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.

Proceedings of August 2017 54th Annual Conference (Education Science)

Corrected Model	1294.747 ^a	3	431.582	8.380	.000
Intercept	450.966	1	450.966	8.757	.005
Pretest	1043.388	1	1043.388	20.260	.000
Gender	89.683	1	89.683	1.741	.193
Gender * Pretest	109.441	1	109.441	2.125	.151
Error	2523.442	61			
Total	134425.000	65	41.368		
Corrected Total	3818.189	64			
a. R Squared = .339 (Adjusted R Squared = .299)					
b. Computed using alpha = .05					

In table 7 above, the result shows that the covariance is not significantly the same with the dependent variable thus a sig value of 0.000. However, the significance value of posttest of male and female students in statistics within the groups is 0.151. Hence 0.151 is greater than 0.005, the null hypothesis is accepted. This result shows that there is no significance difference in the mean achievement scores in mathematics between male and female students in practical application method group. This implies that both the male and female students achieved equally in the mathematics taught during this study. This therefore implies that practical application method of teaching mathematics can reduce gender gap in achievement of students.

Question 4: What is the effect of practical approach on male and female students' interest in Algebra?

Table 8: Mean Interest Scores and Standard Deviation

Teaching Method	Gender	N	Type of Test	Mean	Standard Deviation
Practical Application	Male	36	Pre-MIAT	34.00	4.24
			Post-MIAT	34.00	4.45
			Mean Difference	0.00	
	Female	29	Pre-MIAT	34.17	4.84
			Post-MIAT	34.79	4.40
			Mean Difference	0.62	

Results in Table 8 shows that the mean interest rating of the male and female students in the practical application method was 34.00 and 34.79 respectively. However the mean gain of the male and female students in mathematics was 0 and 0.62. Therefore, the difference in the mean interest rating between the male and female students in statistics is 0.62. Conclusively, the result implies that there is no much difference between the male and female students' mean interest rating in mathematics. However, hypothesis 4 will be tested to determine if the difference in the mean interest rating between male and female students' is statistically significant or not.

Hypothesis 4: There is no significant effect of practical approach on male and female interest in Algebra?

Table 9: Independent T-test Result of Subject Interest Score in MIAT based on Gender

Gender	Practical Application		t	p-Value (sig.)
	Pre - Test	Post -Test		
Male	34.00	34.00	1.32	0.48
Female	34.17	34.79		

In table 9 above, the t-test value is with significance of 0.48 respectively. However, the significant value of the post interest in the two methods is 0.48 which is greater than the level of significance of 0.05. Thus, null hypothesis is accepted. This result shows that within the groups there is no significance difference between

the male and female students' interest in mathematics. This implies that both the male and female students in experimental group indicated a similar level of interest in mathematics.

IV. DISCUSSION

In table 2, the mean pretest scores for practical application method group is 48.98 and the mean pretest for the conventional method group is 48.96. From the mean scores, it is revealed that the subjects of the study were almost at the same entry level in their knowledge of mathematics before the commencement of the treatment. However, the mean of post-test for the practical application method group is 49.58 while the mean of the post test scores for the conventional method group is 48.84. From the mean scores for both groups it could be seen that the practical application method group has a slightly higher mean score in mathematics than the conventional method group. Hypothesis 1 confirms this in table 3 where the significant value of the dependent variable (Posttest) in the two methods is 0.000. Since this value is less than the level of significance of 0.05, the null hypothesis is rejected. It shows that there is a statistical significant difference in the mean achievement scores of senior secondary school students taught mathematics in experimental group and control group. This reveals that students taught mathematics with practical application improved on their achievement in mathematics more than those taught mathematics with the conventional teaching method. This result agrees with the assertion made by Isaac and Andrew (2014) that conducted a research on the Effect of Practical Approach on Basic 7 Mathematics Students' Interest and Performance in Fraction in Uyo Local Government Area of Akwa Ibom State and revealed that students taught using practical approach performed significantly better than those taught using conventional method.

In table 4, the pre-MIAT result for both the control group and the experimental group was homogeneous; meaning that the students' in the two groups had a similar level of interest in mathematics before the commencement of the study. However, the mean interest scores of students taught mathematics with practical application method was 34.35 with a standard deviation of 4.41, while those taught mathematics with conventional approach was 33.35 with a standard deviation of 6.53. The mean gain of the students taught mathematics with practical application was 0.28 while that of the students taught mathematics with conventional approach was 0.48. Therefore the mean interest rating of the students taught mathematics with the practical application method is slightly higher than those taught mathematics with the conventional method. This implies that the students taught mathematics using the practical application method showed higher interest in learning statistics than the students in the conventional method group. Hypothesis 2 was tested to confirm that the mean interest rating in mathematics of students between the experimental and control group is significant. The result shows that the t-test value is 1.07 with significance of 0.29 respectively. However, significant value of the post interest in the two methods is 0.29 which is greater than the level of significance of 0.05 in table 5. Thus, null hypothesis is accepted. It therefore means that practical application method does not arouse more interest in the students to learn mathematics than conventional method. Although from the result, the mean interest rating of the students in the practical application teaching method group is higher than that of the students in the conventional teaching method group. This implies that practical application method may arouse more interest in the students to learn mathematics than the conventional method. This finding disagree with Isaac and Andrew (2014) that opined that students in the practical approach group developed interest that was significantly better than their counterparts in the conventional group.

In table 6, the mean achievement score in mathematics of male and female students in the practical application method pre-test is 50.15 and 47.60. This implies that both the male and female students in the practical application method were almost at the same level of knowledge in mathematics before the treatment. However, the mean achievement scores in mathematics for the male and female students in the post test of the practical application method group are 49.48 and 49.70. This result shows that the male and female students in the practical application method group recorded a mean gain of 0.33 and 2.10. This implies that both the male and female student in practical application method group didn't really improve upon their interest in mathematics. However, there is no much difference between the male and female students mean achievement scores in mathematics even though the female students slightly achieved above their male counterpart. To confirm the significance of this finding, hypothesis 3 in table 7 was tested at 5% level of significance. In table 7, the result shows that the covariance is not significantly the same with the dependent variable thus a significant value of 0.000. However, the significance value of posttest of male and female students in statistics within the groups is 0.151. Hence 0.151 is greater than 0.005, the null hypothesis is accepted. This result shows that there is no significance difference in the mean achievement

scores in mathematics between male and female students in practical application method group. This implies

that both the male and female students achieved equally in the mathematics taught during this study. This therefore implies that practical application method of teaching mathematics can reduce gender gap in achievement of students. The mean achievement scores of male and female students using practical method did not differ statistically significantly. This indicates that both the male and female students achieved equally, though the female students in practical application teaching method achieved slightly higher than their male counterparts. This therefore implies that the use of practical application can attenuate the gender gap in performance of the secondary school students in mathematics. This finding agrees with Emmanuel, et al (2012) who conducted a research on Improving Some Nigeria Secondary Students' Achievement in Geometry: A Field Report on Team Teaching Approach and discovered that male and female students taught Geometry using team teaching approach did not differ in their mean achievement significantly.

Results in table 8 showed that the mean interest ratings of the male and female students in the practical application method were 34.00 and 34.79 respectively. However, the mean gain of the male and female students in statistics was 0 and 0.62. Therefore, the difference in the mean interest rating between the male and female students in mathematics is 0.62. The result implies that there is no much difference between the male and female students' mean interest rating in mathematics. In table 9, hypothesis 4 was tested to determine if the difference in the mean interest rating between male and female students' is significant. The result shows that the t-test value is with significance of 0.48 respectively. However, the significant value of the post interest in the two methods is 0.48 which is greater than the level of significance of 0.05. Thus, null hypothesis is accepted. This result shows that within the groups there is no significance difference between the male and female students' interest in mathematics. This implies that both the male and female students in experimental group indicated a similar level of interest in mathematics. This findings further reveal that female can produce exactly the same scientific knowledge and interest as the males provided that sufficient rigor is undertaken in scientific enquiry. These findings are in agreement with Emaikwu, et al (2015) who conducted a research on the Effect of Geogebra on Senior Secondary School Students' Interest and Achievement in Statistics in Makurdi Local Government Area of Benue State and opined that their study revealed that both male and female students in experimental group achieved the same and also showed similar interest in statistics. They also suggested that for gender inequality to be removed in the class room, methods that encourage the active participation of students' in the class should be employed by the teachers (Sinnes, 2006).

V. CONCLUSION

We live in a society that requires us to produce citizen who possess higher-order problem solving skills. Therefore, we live in a society in which the role of mathematics education is becoming more and more prominent. As more people in our society will need mathematical reasoning in order to be successful, we must consider the direction in which our country is currently heading when it comes to mathematics education. With a great need for problem-solving abilities in youths many people are concerned about the most effective way to teach mathematics in our schools, this can be achieved by the government, schools and general public including practical application method as a model of teaching that can support students in a variety of aspects of education.

Research on the use of practical activities in mathematics teaching points to two crucial elements; first, the student must perceive the practical activity as relevant. Second, there must be a balance between the student' striving to understand the connection between practical and pure mathematics and the teacher's help in transferring between practice and theory.

The above review also suggests that many factors may be associated with the gender gap, including issues such as classroom interactions, students' attitudes, students' interest and self-esteem, teachers' gendered attitudes, curricular materials, beliefs, social and cultural norms. These differences put together have implications for the kind of instructional procedures that are to be adopted for setting up an appropriate teaching and learning environment for mathematics instruction that is suitable for both genders. Furthermore, students who had been taught using practical application has been reported increased levels of confidence and problem solving skills with mathematics than their peers. There is a great tendency that practical application in learning of mathematics is just what this country needs.

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