

Managing Secondary Student's Test Anxiety Using Peer Collaborative Learning Technique: A Gender Based Intervention

Onyia Chukwuebuka Frank*, N.H. Chinweuba

Department of Educational Foundation, University of Nigeria, Nsukka, Nigeria

ABSTRACT

This study sought to examine the effect of peer collaborative learning technique on student's test anxiety; gender based intervention in Enugu education zone of Enugu state. The study was guided by three research questions. A quasi-experimental study, which adopted the pre-test, post-test nonequivalent research design, was adopted for this study. A total of 32 identified students suffering from test anxiety were used for the study. Stratified sampling technique was employed and used to select coeducational schools within the zone. The instrument for data collection was a 21 item instrument, titled the "Examination Anxiety Scale (EAS)". The reliability of the instrument was determined using Cronbach Alpha and a reliability coefficient of 0.86 was obtained implying that the instrument is highly reliable and yielded a consistent result. The students from the two experimental groups were subjected to a pre-test using the EAS before receiving treatment self efficacy and peer collaborative learning. After the treatment, the EAS was reshuffled and re-administered this time as the post test. Mean and standard deviation were used to answer the seven research questions generated while Analysis of Covariance (ANCOVA) was used to test the seven hypotheses. The findings of the study revealed that peer collaborative learning slightly was effective in the treatment of examination anxiety. Gender was discovered not to be a significant moderating variable to examination anxiety. In light of these findings it was recommended that school counselors should adopt and use of self peer collaborative learning technique in the treatment of test anxiety.

Keywords: Test anxiety; Peer collaborative learning; Gender

INTRODUCTION

Education is a powerful tool for transforming individuals and the society as a whole. It is also a system by which individual's develop attitudes and abilities that society considers valuable and important. It is the most valuable legacy a country can leave to its people, especially its youths. A good level of education confers on one, a corresponding high level of Meta cognitive skills which in turn helps the individual to have a good knowledge of self as a cognitive processor, knowledge of task and strategy variables necessary for effective learning [1]. The development of human potentials and the acquisition of skills is heavily dependent on education [2]. Hence, Federal Republic of

Nigeria in its National Policy on Education clearly stated that education in Nigeria is an instrument 'par excellence' for effecting national development. For the purpose of education to be effectively achieved assessment must be frequently conducted in lieu of a test.

For the purpose of assessing academic achievement, Educational tests are an essential part of almost all educational systems worldwide [3]. Frank and Chinweuba asserts that every student's life has included test taking at some point. Osuji defined tests as the universal method of verifying a learner's mastery of a subject or study area. According to Frank and Chinweuba a test is defined as an academic exercise geared towards establishing

Correspondence to: Onyia Chukwuebuka Frank, Department of Educational Foundation, University of Nigeria, Nsukka, Nigeria; E-mail: frankchukwuebuka49@gmail.com

Received: 19-Sep-2023, Manuscript No. JDA-23-27131; **Editor assigned:** 21-Sep-2023, PreQC No. JDA-23-27131 (PQ); **Reviewed:** 05-Oct-2023, QC No. JDA-23-27131; **Revised:** 18-Jan-2025, Manuscript No. JDA-23-27131 (R); **Published:** 25-Jan-2025, DOI: 10.35248/2167-1044.25.14.558

Citation: Frank OC, Chinweuba NH (2025) Managing Secondary Student's Test Anxiety Using Peer Collaborative Learning Technique: A Gender Based Intervention. J Dep Anxiety. 14:558.

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whether a student has assimilated the instruction taught and to which extent the assimilation has taken place. Sunny posits that tests have been a major used for evaluating learners academic achievement in from the advent of western education [4].

Anxiety is a multifaceted psychological concept that can take many different forms and have different levels of severity. Fundamentally, Chakraborty defined anxiety as the body's reaction to an attention-demanding external trigger. Papenfuss et al defined anxiety as a set of emotional, cognitive and behavioural response to an unknown threat [5]. Operationally anxiety is defined as the body's natural response to frightening or threatening situations. The physiological changes that characterize this response, such as a rise in adrenaline and a decrease in dopamine, serve to improve our awareness of the perceived threa. The "fight-or-flight response" is the name given to this physiological response, which occurs when the body gets ready to either face the threat head-on or flee from it. Anxiety is often related to vigilance [6].

Anxiety is a common human emotion that can affect how well someone performs in various contexts in both positive and negative ways. An individual's capacity to perform in a variety of social and academic settings can be negatively impacted by excessive levels of anxiety, even if a modest amount of worry can be beneficial in fostering responsibility and motivation [7]. Anxiety is a complicated psychological concept. Language, speech, social anxiety and test anxiety are just of the many subtypes of anxiety [8]. When face tests with uncertainty and are not confident in their abilities to perform favourably which leads ultimately to poor performance in a given test, such can be attributed to test anxiety [9]. The term test anxiety according to Nwafor et al, is a collection of mental, bodily and behavioural responses that reflect stress or disquiet about unfavourable results or underperformance in an assessment/environment where judgment will be applied. Cherry defined test anxiety as a psychological condition in which people experience considerable distress and anxiety (worries) during testing settings. Operationally test anxiety in this study is defined as a psychological feeling of panic and distress in relation to ones performance in an upcoming assessment or test [10,11].

According to Cheraghian et al., test takers may feel anxious because they believe their performance is being closely watched and analysed. Moadeli and Ghazanfari claim that emotion al suffering brought on by test anxiety can lead low to self-esteem or sub-par academic achievement. As they worry about being judged negatively by their parents, teachers and others, people who are anxious about tests may also worry about how others will perceive them [13-15]. Test anxiety also has an affective impact on the body nervous system; such effects include unpleasant feelings of anxiousness, insecurity and powerlessness. The feeling can cause avoidance behaviours and have detrimental effect on the student's motivation. A moderate amount of stress is important, but occasionally it interferes with the student's performance on tests, leads to behavioural disorder, low self-esteem and subpar academic results [16].

Tests have long been valued as important decision making tools in our culture at all educational levels, particularly the secondary school or high school level depending on the system of

education the country is running when it comes evaluating and grading students' performance, abilities and skills [17]. Thus, according to Ng'ang'a et al., test anxiety continues to be one of the major challenges that students confront in their academic careers. Oluoch et al., acknowledged the need for a small amount of anxiety to stimulate and propel the students to learn during the test or examination, but they also pointed out that excessive worry will negatively impact students' accomplishment. Family dynamics may also contribute to exam anxiety in students [18]. A child's anxiety may grow as a result of a parent's anxiety and their parenting techniques [19]. Despite having a genetic component, anxiety can also be learned [20]. One way to ensure that students overcome test anxiety is to impute a sense of dominance over testing in these students. In order to achieve common objectives, peer collaborative learning enables students to take an active role in their own learning and to forge both social and academic partnerships.

LITERATURE REVIEW

In the past, our ancestors had to identify with different groups in order to survive. Being a member of a particular group brought advantages of its own, including protection from predators [21]. In modern contexts, peers could be used to refer to this group, which is typically classified along age lines or what is popularly known as age grade [22]. Other names for peers include pals, cliques, dyads, classmates, and co-workers. Spadafora et al., defined peers as a collection of individuals that are roughly same age, share hobbies, backgrounds or socioeconomic standing. The concept of peer collaborative learning is based on Lev Vygostky's zone of proximal development. He noted the necessity of learning through communication and interaction with others rather than just through independent effort. This effort has paved way for various forms of group learning of which peer collaborative learning is one of them [23].

The process of teaching and learning known as collaborative learning involves teams of students working together to investigate a significant question or develop a project [24]. Students can freely discuss the subject in either a traditional classroom setting or in eLearning sessions using Google Hangouts or Skype. The typical student-teacher relationship is redefined by collaborative learning since it allows for discussions, group problem solving, collaborative writing, study teams, and group projects. Here, learning takes place during group discussions that are directed by students rather than teachers or instructors [25]. Typically, the teacher will only ask the group questions regarding the work when necessary to guide the pupils' learning. The group shares the work at the end of the session, so it is judged as a collective effort. Some collaborative learning strategies also encourage students with different academic levels to compete with one another, which encourage more fruitful cooperation. Operationally peer collaborative learning is defined as peers coming together to work in micro groups to dissect a concept and search out solutions to challenges.

A study conducted Bozkurt and Aydin reported that peer collaborative learning slightly decreased speaking anxiety.

Similarly Falkner et al reported that peer collaborative learning presented varieties of opportunities for the engagement of students in the learning process, thereby cushioning the effect of anxiety. In the same vein Ahmed et al, reported that collaborative learning was significant in lowering students reading anxiety and enhancing students motivation and comprehension. Collaborative learning in education, which is acknowledged as an effective teaching method, is used extensively all over the world. The most major and successful paradigm of educational transformation in recent decades, according to Vermette, has been collaborative learning. Collaborative learning is a student-centered teaching approach that has been recognized as a good strategy to build student social and communication skills, improve learner retention, and develop their capacity for critical thought and reduce testing anxiety [26].

The ability to work effectively with others is a basic prerequisite for effective learning and engagement within today's higher education system, which is supported by empirical research, according to Lee and Yang, and collaborative learning is linked to greater student performance results. A body of research demonstrating the various advantages of collaborative learning supports its importance these advantages include improved communication, higher engagement, and a greater openness to variety. Laal and Ghodsi reported that along with enhanced academic achievement, the growth of social support networks and learning communities, as well as psychological advantages related to higher self-esteem and less anxiety, seem particularly pertinent. Ruta reported that gender provide necessary information on the way students engage, collaborate and learn together.

Gender is the differences between cultural and societal difference between a man and woman. Gender, according to Tolland and Evans is that social construction of masculinity and femininity that is connected to behaviors and characteristics. As a result, social roles that have been established in society may have an impact on people. Students that are male or female experience test anxiety in various ways, which has a different impact on how well they do. Gender is not innate but or inborn, it is more of culturally or societal assigned role [27].

However, due to the debates it has sparked, researchers and educators from all over the world, particularly from Nigeria, have continued to be interested in how gender affects students' test anxiety. Test periods are regarded as the peak of each term; students become increasingly focused on their academic work at this point. It is a period of heightened tension, pressure and anxiety among students in Enugu Education Zone. It is a period when the pressure to excel in the forthcoming examination is high among them. Overzealous ones among them with poor study habits in a bid to study through the night or what students popularly call "Till Day Break (TDB)", take unhealthy substances in a bid to stay awake all night, which could land the unfortunate ones among them in the hospital. Some of them in the bid to study through the night, when they decide to take a little nap, sleep off and end up missing the said examination. Students during this period tend to develop unwarranted health complications because of the examination. The heightened

tension and the resultant anxiety to perform well, some of them engage in all forms of examination malpractice and when they are caught, some are rusticated, while others face varying forms of punishment. The present study established the moderating effect of gender on students test anxiety. This research aims at determining the effect of peer collaborative learning on students test anxiety and the interaction effect of gender on peer collaborative learning and test anxiety among secondary school students [28].

METHODOLOGY

Design

The study adopted the pre-test post-test quasi experimental control group design, using non-equivalent groups. This design will be adopted because of its ability to establish cause-effect relationship due to intervention. The design is considered appropriate for the study because of the use of two independent variables in the study. Okwo noted that factorial design is the most appropriate for a study that employs two or more independent variable to study their effects on the dependent variable. It also allows the use of non-equivalent groups, controls the internal validity threat of the group initial difference as a result of non randomization and the researcher's selection bias of the subjects. The design for the study is represented in the below:

Factorial quasi experimental group design

Experimental Group 1(EG1) $O_1 X_{PCL ON EA} O_2$

Control Group (CG) $O_1 X^{\sim} O_2$

EG1=Experimental Group1: Treatment with peer collaborative learning on examination

Anxiety

CG=Control Group

X=Treatment (pcl on EA)

O_1 =Pre-test

O_2 =Post-test

X^{\sim} =No treatment

Measure

The instrument used for the study was the Examination Anxiety Scale (EAS). The researcher adopted the examination anxiety scale by Abbasi and Ghosh. The instrument for Examination Anxiety is a twenty one (21) item instrument that consists of two sections. Section A will be used for collection of student's demographic information. While the section B would be used

in determining their levels of agreement or disagreement with the statement on the instrument in relation to Examination Anxiety. The EAS will be structured on a four point likert scale and will be graded as: Strongly Agree (SA), 4 points, Agree (A) 3 points, Disagree (D) 2 points, Strongly Disagree (SD) 1 point. The EAS would initially be administered to the students as pre-test and later reshuffled and administered as post-test. The intervention package used for the study is the peer collaborative learning treatment plan. The objective of this treatment plan for experimental group two was to find out the effect of peer collaborative learning on students examination anxiety. The treatment plan would be based on techniques aimed at promoting peer collaborative learning among the students. The treatment plan was administered over a period of eight weeks.

The validation of the instrument was carried out by three experts, one from guidance and counseling, education psychology and measurement and evaluation, and all from the faculty of education, university of Nigeria Nsukka. The experts were requested to scrutinize the instrument to ascertain its level of appropriateness, clarity, logicity and level of language expression. All recommendations, modifications and corrections made by these experts were rigorously followed and adhered to in producing the final draft of this instrument [29].

The treatment plans were also validated. The reliability of the Examination Anxiety Scale (EAS) was determined by carrying out a trial test on twenty (20) students in Nsukka Education Zone, which is outside the study area but have similar features with the study sample. Cronbach alpha was used to ensure the internal consistency of the instrument. Nworgu reported that Cronbach Alpha is the appropriate method of calculating internal consistency of polytomously scored instruments. The rating of the instrument EAS by the 20 students were subjected to Cronbach Alpha reliability and a reliability coefficient of 0.86 was obtained indicating that the instrument is highly reliable and will yield a consistent result [30].

Participants and procedure

Thirty two students constituted the sample size of this study. Stratified random sampling technique was used to select a school within the research area. simple random sampling technique was used to assign an intact class into the experimental and control groups, based on the condition that the selected classes are of the same stream, that is to say if experimental group 1 is an Art class all the other groups would be Art classes. With the help of the school counselors, the researcher administered the pre-test and identified thirty two (32) students suffering from test anxiety. Twenty students made up the experimental group while twelve students made up the control group.

The researcher visited the schools marked for the study in other to obtain the permission from the school management to carry out the study in their school. The researcher presented a letter to the management of the school and commenced with the process of the programme once. The researcher collaborated with the counsellors of the three schools and they played the

role of research assistants. One counsellor for experimental group with another counsellor for the control group. The school principal formally introduced the researcher to SS2 students and encouraged them to avail themselves fully to the program.

The researcher briefed the research assistants during the first contact within the first week, on the purpose and procedure to be adopted in carrying out the research. The researcher got the statistics of all the research participants for production of enough copies of instrument for pre-test and post-test administration. The researcher with the research assistants met with the participants to acquaint themselves with them and create rapport with them, the researcher explained the purpose, nature and importance of the program to the participants and why their utmost cooperation is needed and the participants were told that the program would run for eight (8) weeks. Once the researcher was done with the briefing the pre-test was administered to the students by the research assistants under the supervision of the researcher.

The experiment was designed to cover eight (8) weeks with two sessions per week. Week one was used for mobilization and briefing of all research assistants and participants. Then the administration of the pre-test; the second (2nd) to the seventh (7th) week was used for administration of the treatment packages. During the experiment, experimental group 1 was exposed to self-efficacy treatment package while experimental group 2 was exposed to peer collaborative learning treatment package and experimental group 3 which is the control group was exposed to group counseling on self-esteem. The eight week was used for revision of all the activities carried out during the research, after which the post-test was administered.

At the end of the treatment programme, the researcher with the help of the research assistants administered the post-test to both the experimental and control groups. The results obtained from both tests were used to carry out the analysis of the study. After which the researcher bid them farewell and wish them the best in their future endeavors.

The summary for the experimentation will be:

The 1st week → Mobilization and administration of pre-test.

The 2nd-7th weeks → Administration of treatments.

The 8th week → Revision, administration of post-test and farewell.

DISCUSSION

Data analysis

What is the effect of the peer collaborative learning technique and conventional technique on examination anxiety among students? (Table 1).

Table 1: The pre-test and post-test mean examination anxiety scores of students.

	Pre-test		Post-test-test			Mean difference
	N	\bar{X}	SD	\bar{X}	SD	
Peer collaborative learning	20	54.8	5.73	49.1	5.04	5.7
Control	11	55.27	8.59	46	4.96	9.27

Key: N=Number of subjects, \bar{X} =Mean, SD=Standard Deviation

The data in Table 1 shows the pre-test and post-test mean examination anxiety scores of students exposed to peer collaborative learning technique (treatment) and those in the conventional group. The result shows that students exposed to Peer collaborative learning technique (treatment B) had a pre-test mean examination anxiety score of 54.80 with a standard deviation of 5.73 and a post-test mean of 49.10 with a standard deviation of 5.04. The mean difference between the pre-test and post-test means was 5.7. Whereas, those who were in the conventional group had a pre-test mean examination anxiety score of 55.27 with a standard deviation of 8.59 and a post-test mean of 46.00 with a standard deviation of 4.96. The mean difference between the pre-test and post-test means of the conventional group was 9.27. For both groups, peer collaborative learning technique had a lower mean difference score on

examination anxiety than those in the conventional group. The post-test standard deviation of 5.04 and 4.96 for the experimental and conventional groups respectively indicate that the technique brought the experimental group backward, as the individual ratings were more varied than that of the conventional group. Therefore, it implies that Peer collaborative learning technique was ineffective in decreasing students' examination anxiety.

What is the interaction effect of gender on peer collaborative learning technique and students' examination anxiety? (Table 2).

Table 2: Mean and standard deviation of gender on peer collaborative learning technique and students' examination anxiety.

Variable strategies	Gender	N	Pre-test		Post-test		Mean difference
			\bar{X}	SD	\bar{X}	SD	
Peer collaborative learning technique	Male	14	57.2	5.67	49	2.85	8.2
	Female	14	52.4	4.93	49.2	5.39	3.2
Control	Male	9	54.11	9.16	46.44	5.41	7.67
	Female	2	60.5	0.71	44	1.41	16.5

Key: N=Number of subjects/respondents, \bar{X} =Mean, SD=Standard Deviation

Table 2 showed that male students exposed to peer collaborative learning technique and the conventional technique had a pre-test mean examination anxiety score of 57.20 and 54.11 with a standard deviation of 5.67 and 9.16; and a post-test mean of 49.00 and 46.44 with a standard deviation of 2.85 and 5.41. The difference between the pre-test and post-test means for a male student exposed to peer collaborative learning technique and the conventional technique was 8.2 and 7.67 respectively. While female students exposed to peer collaborative learning technique and the conventional technique had a pre-test mean examination anxiety score of 52.40 and 60.50 with a standard deviation of 4.93 and 0.71 and post-test mean of 49.20 and 44.00 with a standard deviation of 5.39 and 1.41. The difference between the pre-test and post-test means for females exposed to peer collaborative learning technique students was 3.2 and 16.5.

In both groups, the posttest means test anxiety scores were less than the pretest means with male students having a slightly higher mean difference in examination anxiety mean score when exposed to peer collaborative learning technique than their female counterparts. However, female students have a higher mean difference in test anxiety scores when exposed to the conventional technique than their male counterparts. The above data show that gender made very little difference in the performance of students exposed to peer collaborative learning techniques. This suggests that peer collaborative learning technique effective in reducing test anxiety of male and female students who benefitted from the treatment.

There is no significant interaction effect of gender on peer collaborative learning technique and students' examination anxiety (Table 3).

Table 3: Analysis of Covariance (ANCOVA) of the significant interaction effect of gender on peer collaborative learning technique and students' examination anxiety

Source	Type III sum of squares	Df	Mean square	F	Sig.	Partial eta squared	D
Corrected model	90.642	4	22.661	0.835	0.515	0.114	NS
Intercept	1031.747	1	1031.747	38.031	0	0.594	
Pre-test	12.464	1	12.464	0.459	0.504	0.017	
Peer collaborative learning	62.978	1	62.978	2.321	0.14	0.082	
Gender	5.326	1	5.326	0.196	0.661	0.007	
Treatment (PCL)* Gender	2.434	1	2.434	0.09	0.767	0.003	
Error	705.358	26	27.129				
Total	72220	31					
Corrected total	796	30					

Note: S=Significant, NS=Not Significant, D=Decision, $\alpha=0.05$

The result in Table 3 also showed that an F-ratio of 0.090 with an associated or exact probability value of 0.767 was obtained for the effect of peer collaborative learning technique on the mean examination anxiety scores as moderated by gender. Since the associated or exact probability value of 0.767, when compared with 0.05 set as the level of significance, was found not significant because it is greater, the null hypothesis four (H05) was therefore not rejected. Also, the effect size value which is symbolically represented as η^2_p (or partial eta squared) was 0.003 (0.3%). This value indicated that gender has a very small effect size on the effect of peer collaborative learning technique and examination anxiety. Thus, the inference drawn was that there was no significant interaction effect of gender on peer collaborative learning technique and mean examination anxiety scores. The observed difference in the research question was probably due to chance error. This result is further explained and supported using the interaction graph in Figure 1, which shows that there was no significant interaction effect of gender on peer collaborative learning and examination anxiety of students. This is evidenced in the graph because the interaction lines of the treatment against gender do not intercept at any point as shown below.

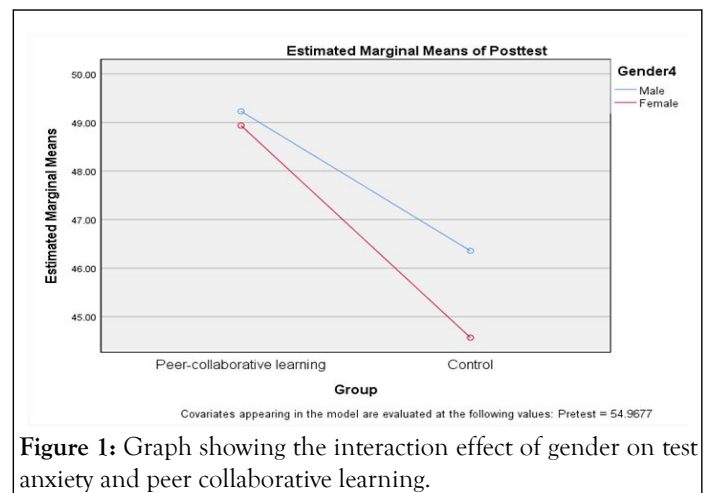


Figure 1: Graph showing the interaction effect of gender on test anxiety and peer collaborative learning.

DISCUSSION

The result shows that students who were exposed to peer collaborative learning technique had a slightly higher mean difference score than those in the conventional group. This implies that peer collaborative learning technique was slightly effective in reducing examination anxiety among students. However, it was not statistically significant. The finding of this study antagonizes the findings of Jyoti whose findings suggested that the Jigsaw technique for cooperative learning can assist to lessen academic anxiety. Additionally, co-operative learning

improves knowledge and self-assurance. These findings suggest that implementing cooperative learning in the classroom would improve academic performance and lower the anxiety of students in secondary schools. Similarly the findings of the study also antagonized the findings of Suwantarathip and Wichadee which reported that due to students' lower anxiety levels and improved language proficiency; advocate the use of cooperative learning as a component of the language learning approach. Because of the opportunity for students to encourage, support, and reward one another in this learning environment, their anxiety may have decreased [31-33].

In the same vein the finding of the study contends with the findings of the study carried out by Yusuf which reported that students taught using peer collaborative learning tend to achieve significantly higher and have less anxiety level than those taught using lecture method. The finding of the study is in variance with the findings of Breedlove, Burkett and Winfield which indicated that no significant difference in test anxiety between our groups at either pre test or post test. There is also no significant difference in the change in anxiety level between pre-test and post-test. They further reported that their results do not support the argument that peer collaborative testing reduces test anxiety. Rather than reduce test anxiety, anxiety is apparently higher at the time of the second test than the first, though not significantly so. They reported no significant difference in test anxiety between students who collaborate and those who do not [34].

In the same vein the finding of the study corroborates Masomi finding which reported that teaching using collaborative learning (study group) does not reduce test examination anxiety. They further reported that anxiety in academic processes is of great importance, one factor that has an effect on anxiety is learning environment of the school and also inappropriate conditions of learning environment, poor physical condition of classrooms are other important issues that can affect students' academic performance [35].

Both male and female students exposed to peer collaborative learning technique had a post-test mean examination anxiety scores that were less than their pre-test means score. But, male students had slightly higher mean examination anxiety scores when using peer collaborative learning technique than their female counterparts [36].

The result in Table 3 also showed that an F-ratio of 0.090 with an associated or exact probability value of 0.767 was obtained for the effect of peer collaborative learning technique on the mean examination anxiety scores as moderated by gender. Since the associated or exact probability value of 0.767, when compared with 0.05 set as the level of significance, was found not significant. The finding of the study is in consonance with the findings of Moliner and Alegre (2020) that reported gender as not being significant moderator of mathematics anxiety.

CONCLUSION

Conclusively the study has proven that peer collaborative learning technique was slightly effective in treating test anxiety. Based on this it is pertinent that counsellors and school psychologists should teach this technique more to students in order to reduce examination anxiety among their students. The study also showed that gender is not a significant variable in influencing test anxiety.

From the findings of this study, implications for students, teachers, parents and guardians, guidance counsellors, ministry education and future researchers can be inferred. The study supplied us with empirical proof on the slight effectiveness of peer collaborative learning technique on students identified to be suffering from test anxiety. The students identified as suffering from examination anxiety, improved in their perception towards examination and developed a better attitude towards testing of any kind. One can infer from this discovery that the government through the ministry of education should be pragmatic their training, employment and deployment of counsellors to secondary schools within the affected areas.

School counsellors should make it a point duty in their respective schools to educate students on the dangers of test anxiety, and inform them that it is treatable and anyone willing to treat the problem should visit the counselor. Parents should be educated during Parent's Teachers Association (PTA) meetings on test anxiety and the dangers of the malaise and that they should promptly report any of their wards exhibiting symptoms of examination anxiety for immediate treatment. Schools should reduce the emphasis they place on examinations. The findings also reported that gender didn't have a significant influence on examination anxiety. The implication of this being that counselors should ignore any form of gender bias in the application of treatment.

ETHICAL CONSIDERATION

Research Ethics Committee of the faculty of education from the researchers institution granted ethical approval for the study. The current study followed the research ethics of the American Psychological Association.

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