

Impact Assessment of Emotional Learning System on Academic Achievement and Retention of Senior Secondary School Students FCT, Abuja

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ABSTRACT : This study investigated effects of Emotional Learning System on Academic Achievement and Retention among Senior Secondary School Students, FCT Abuja. Three Research Questions were answered; three Hypotheses were tested at 0.05 Level of Significance. A quasi experimental design was used. The total population of the study is 70,162 and sample size is 371 respondents. Simple random sampling technique was employed. Two Instruments were used for data collection. They are Math, English, Biology Achievement Test (MEBAT) and Emotional Learning System (ELS) Instruments. The Validity index for MEBAT is 0.80, 0.73 and 0.85. Descriptive statistics of mean and standard deviation were used to answer Research Questions, while Inferential Statistics Using Analyses of Covariance (ANCOVA) was used to test the null hypotheses. Findings revealed that there was a significant mean effect of treatments on Emotional Learning System on the posttest scores of students' achievement in Math, English and Biology. Result of the study revealed a significant mean effect of male and female on Emotional learning system on students' achievement in Math, English and Biology. Findings revealed that students in Experimental group performed better than those in the control group. It was concluded that Emotional Learning System skills facilitated the learning and aids retention in male and female students. It is recommended that the use of Emotional Learning System should be emphasized in secondary schools for effective counseling and behavior modification process. Effective follow up by the teachers, parents and guidance counselors in ensuring that their wards are recording significant improvement in their academic achievement and retention is recommended among others.

KEY WORDS: Baseline test, MEBAT, post-posttest, Retention, Quasi- Experimental.

I. INTRODUCTION

Education has brought an unprecedented turnaround in development for nations that have given it pride in their national affairs. In line with this, the Federal Government of Nigeria ^[1], has adopted education as an instrument par excellence for effective national development. The quality of educational outcomes of learners would determine how education is set to achieve this national expectation. All stakeholders in the business of child education (the child himself, the home, the school, and the society at large) are saddled with the responsibility of realizing this national goal. According to ^[2], academic achievement refers to excellence in all academic disciplines, behavior, confidence, attitude and arts while ^[3], stated that achievement is a measure of output expressed in learning. On this note, academic achievement refers to the level of performance in a particular field of study, For example, higher scores indicate better academic achievement while lower scores depict poor academic achievement ^[4]. Student academic achievement relates each student's performance in each subject to the proposed academic skills gained from each subject ^[5].

An observation of West African Examinations Council (WAEC) Statistics from 2019 to 2021 in Federal Capital Territory, Abuja, reflected that a total of 20,141 candidates sat for WAEC in 2019 as public students (9,081 male and 11,060 female). However, only 9,941 (4,895 male and 5,046 female) of the candidates had 5 credits, including English. The percentage of candidates is put at 49.4%. In 2020, the total number of students was 21,514 (9,722 male and 11,792 female). 13,302 (6,364 male and 6,938 female) had 5 credits and above, including English. The percentage is put at 61.83%. In 2021, the total number of students was 23,622 (10,711 male and 12,911 female). Only 12,310 (5,851 male and 6,459 female) had 5 credits and above, including English. The percentage is put at 52.11%

Fig. I. (WAECE Result Statistics in Federal Capital Territory From 2019 – 2021 Showing trends Of Students' Academic Achievement)

Year	Total no of candidates who sat for the examination			No of candidates with 5 credits and above (English Language Inclusive)		
	Male	Female	Total	Male	Female	Total
2019	9,081	11,060	20,141	4,895	5,046	9,941
2020	9,722	11,792	21,514	6,364	6,938	13,302
2021	10,711	12,911	23,622	5,851	6,459	12,310

Source: National Bureau of Statistics (2021)

The table indicates poor academic performance in FCT secondary school WAECE result, also FCT secondary schools is among the academic deficiency zone.

II. LITERATURE REVIEW

Several research reports have shown that students' Academic achievement generally is poor. Poor senior secondary certificate examination result can be said to be a threat to the aim of achieving high socio-economic advancement through the production of relevant skilled man power in Labour market. There is need to work on how to improve students' Academic achievement. Blames have been apportioned. On one hand, it was the students who refuse to work hard at these subjects, hence their low performance and growing apathy. On the other hand, the teachers bear the blame for failing to employ a proper pedagogy and skills that can assist the students in the effective conception of the Subjects. Despite school improvement being placed high on the policy agenda, the results of such actions have been poor. Therefore, there is a need to explore additional ways in which academic performance can be enhanced such as the inclusion of emotional learning system in the Curriculum of senior secondary school students FCT, Abuja.

Emotional Learning System refers to ability to stimulate the feelings, interests, and attitudes that students have toward learning and schooling ^[6]. Emotional Learning System skills may improve Academic performance due to the fact that Emotional stability is one of the key to maintain attentiveness to the teacher and the content of teaching. Secondary school students can easily be distracted maybe by thought, peers, and restlessness, fear of the teacher or subject and other nature or nurture factors. There is a great connection between emotions and academic Achievement. ^[7], in their work noted that the overall emotional comportsness has significant positive associations with intrapersonal, interpersonal, stress management, adaptability and general mood scales while overall emotional intelligence and its composite scales are related to academic performance. In the same direction, ^[8], study found that emotion regulation ability enables students to maintain higher positive affect (e.g., excitement and enthusiasm) while emotion facilitation ability enables students to use their positive affect to enhance their academic skills. According to ^[9], emotional competencies (self-awareness, relationship management, social-awareness and self-management) taken together statistically significantly predicted academic adjustment of first year university undergraduates. Thus, the researcher assumes that emotions which most secondary school students of FCT Abuja manifest in most situations might be responsible for their low academic achievement, thus, training FCT Secondary School Students on Emotional Learning System Skills may be impactful on poor academic performance menace in FCT Secondary Schools Abuja.

Gender is a factor that affects students' Achievement as observed by [10], their study showed that females performed better than males. Generally females are seen as weaker sex, the custom and norms of the society attached more importance to the male child than the girl child. This believes is extended to schooling and academic achievement. Psychologically it is believed that male is more emotionally stable than female, natural component of the female such as menstruation and other hormonal factors are said to contribute to the weakness of the female to the male child. For example a girl child may not be active and lacks concentration in class during her monthly flows; hence the researcher believes there may not be any gender difference in emotional learning system as both male and female equally needs the skills to boast their academic Achievement. Reports showed that females perform comparable or higher than males and get a higher grade and complete high school at a higher rate than boys ^[11], it was observed that there is interaction between emotional learning system and gender on students 'Achievement and there is significant difference between male and female students' Achievement. ^[12], study also revealed that the mean score of boys was higher than the mean score of girls expose to emotional system, but the mean score of girls was higher than that of the boys in the test for retention of learning while ^[13], work indicated that there were significant mean effects of treatment on all the dependent measures. ^[14], analysis by gender shows that the ratio of male to female in physics is high at 3.4: 1 while in chemistry, it is approximately equal and Biology, by contrast, is still dominated by girls, with 1.6 girls to every

boy, although the numbers choosing to study it have remained relatively stable. This study relates to the present study because it deals with emotional learning system and academic Achievement. However, while the above study was on emotions and conducted in Kano State, the present study was conducted in FCT and was emotional Learning System on academic achievement and Retention. Retention is an important variable in Learning; it is the student ability to save knowledge in long term memory and recall whenever the knowledge is needed. It is the ability to retain, or preserve concept and later recall the information or knowledge gained after learning^[10]. A student with good retentive memory may definitely excel in Academics. Retention is one of the keys to academic achievement and may be influenced by emotional learning system.^[15] argue that a child's that possess emotional learning system Skill have the ability to exert effortful control over his or her attention and impulses which can aids Retention and improved the child's academic achievement.^[16], Showed in their study that students taught emotional system strategy improved significantly with a mean retention score of 52.72 against 33.21 for those taught not exposed to emotional system strategy.^[17] study indicated that there is a significance difference between the mean performances of students in the experimental group than those students in the control group. The students in the experimental group performed better in mechanical craft practice and in retention test than those in the control group.

In summary, these related works showed students poor academic performance and efforts to improve students' academic performance but work has not been done on impact assessment of emotional learning system on academic performance this study the Researcher defined Emotional Learning System as psychological skills the students' needs to acquire and use to control/stabilize their emotions during teaching and learning process which may improve academic performance and aid retention. Therefore, this research shall examine the impact assessment of Emotional Learning System on Academic Achievement and retention of Senior Secondary School Students FCT, Abuja to determine the inclusion of Emotional Learning System in the secondary school curriculum.

Statement of Problem : The focus of this research is to ASSESS the impact of Emotional Learning System on Academic achievement of the senior secondary school students in FCT, Abuja due to statistical observation of poor Academic Performance among the senior secondary school students in FCT, Abuja. The researcher assumed that if the students are aware and acquire the knowledge of Emotional Learning System (ELS), it could boast their academic achievement and aids retention. It is against these backgrounds that the researcher sought to investigate impact assessment of emotional learning system on academic achievement and retention of Senior Secondary School Students FCT, ABUJA.

Significance of the Study : The research will be of significant benefits to teachers in training, Academic Environment, head of department, education stakeholders, especially the Federal and State Ministries of Education and teacher educators. Specifically, the results of the research will be of enormous benefit to Secondary schools education pre-service teachers because it may enhance the development of positive attitude toward the improvement of student Academic Achievement, promote emotional stability during teaching process and enhance the interest of students in learning / schooling. Findings from the study will also benefit education lecturers and expose them to the effectiveness of using Emotional Learning System to improve academic achievement and aid Retention. The outcome of the research will also create awareness for State and Federal ministry

Scope of Study : The purpose of this study is to investigate Impact assessment of Emotional Learning System on Academic Achievement and Retention of senior secondary school students FCT, Abuja. In specific terms, the study will determine:

1. The mean achievement scores of the students given Emotional Learning System (ELS) and their counterparts in the control group.
2. The mean achievement scores of males and female students given emotional learning system.
3. The mean retention scores of students in experimental group and control group.

Research Questions

The following research questions were raised to guide the study:

1. What are the mean achievement scores of students given Emotional Learning System treatment and their counterparts in control group?
2. What are the mean achievement scores of students given Emotional Learning System treatment segregated by gender?
3. What are mean Retention scores of students in experimental group and control group?

Research Hypotheses

Based on the above research questions, the following null hypotheses were formulated to guide the study and were tested at 0.05 level significance.

1. H_{01} : There is no significant difference in the mean achievement scores of students given Emotional Learning System treatment and their counterparts in the control group.
2. H_{02} : There is no significant difference in the mean achievement scores of male and female students given emotional learning system treatment.
3. H_{03} : There is no significant statistical difference in the mean retention scores of students in experimental group and control group.

III. METHODS

The study adopted quasi experimental research design. It involves pretest, post-test, post-post test design with experimental and control groups. This design was adopted because the experiment lacks full laboratory control.^[18] it was observed that, among other conditions, when subjects for a study are selected and randomization of the subjects is not feasible, rather intact classes are used such is quasi- experimental. Intact classes were used to avoid disruption of normal class lessons and to control extraneous variables. The study adopt pretest, posttest and posttest control group design to compare the results of the participants groups as well as measure the degree of change of occurring as a result of treatments or interventions, also to assign participants to treatment condition and enable the researcher to test the participant twice before the retention test^[18]MEBAT instrument (Mathematics, English and Biology Achievement Test) was administered for Pretest, it consisted of 60 items multiple choice questions with four options (A-D). It cut across the tree subjects. The pretest was used to determine the homogeneity of the treatment and control groups before treatment. The result was used to categorize the subjects into Experimental group and control group. Both groups were given treatment ELS (Emotional Learning Skill). Emotional Learning Skill (ELS) treatment was adapted and modified from the work of Lopes and Salovey,^[19]It was an Emotional modulation system designed as treatment for the groups. After treatment, the same instrument was re-administered for posttest and posts posttest for both experimental group and control group to check retention.

Population and Sample : The population for this study consisted all Senior Secondary two Students of Federal Capital Territory, Abuja, whose total number is 70,162 (male 32,731 and 37,431 female), in 62 public senior secondary schools cutting across the six Area Councils(FCT secondary education board , 2021).

Sampling and Sampling Techniques : The sample size for this study consisted of 371 senior secondary school students, of which 176 (84 male and 92 female) were used for the control group while 195 (93 male and 102 female) were used for the experimental group. Using simple random sampling technique, two out of the six Area councils namely Gwagwalda and Bwari were used to select the participating respondents. Two schools from each of the two Council Areas were randomly selected using simple balloting method making a total of 4 schools, 2 schools for the control group and 2 schools for the experimental group, while purposive sampling technique was used to select an intact class of one arm from each of the four (4) schools. The ELS instrument was validated by two experts, in the field of tests and measurement and Educational Psychology and yielded consensus validity of 0.80, while MEBAT yielded 0.73 which were considered appropriate for the study

The MEBAT was trial tested using test- re- test method and its internal consistency using Kuder Richardson 21/22 yielded 0.86 index for the Math, 0.80 English and 0.72 Biology. Data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics of mean and standard deviation was used to answer the research questions, while inferential statistics of Analysis of Covariance (ANCOVA) was used for testing the formulated hypotheses at 0.05 level of significance. All analyses were subjected to Statistical Package for Social Sciences (SPSS), version 23. Results were presented in the following Table

IV. RESULT

Research Question One: What are the mean achievement scores of students given Emotional learning system treatment and their counterpart in control group?

Table 1: Pre-test and Post-test Mean Achievement Scores of Students given Emotional Learning System Treatment and those in the Control Group.

Treatment Group	N	Pretest Mean (\bar{x})	Pretest Std. Dev.	Posttest Mean (\bar{x})	Posttest Std. Dev.	Mean Gain
Control	176	34.14	4.98	46.71	3.55	12.57
Emotional learning system	195	32.75	4.92	46.43	3.42	13.68
Total	371					

Table 1 shows the mean scores and mean gain between pretest and posttest scores of the treatments on students' achievement. The result revealed that control had a mean gain of 12.57 while Emotional learning system group had 13.68 mean gain. This implies that students gained more in the achievement when evaluated with the use of Emotional learning system than the control group.

HO₁: There is no significant difference in the mean achievement scores of students given Emotional learning system treatment and their counterparts in the control group.

Table 2: ANCOVA on the Effect of ELS on the students' Academic Achievement

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Squared	Eta Squared
Corrected Model	7.225 ^a	2	3.613	.297	.743	.042	
Intercept	17114.273	1	17114.273	1408.319	.000	.793	
Treatment	7.107	1	7.107	.585	.005	.052	
Pretest_Scores	.001	1	.001	.000	.993	.000	
Error	4472.036	368	12.152				
Total	808861.000	371					
Corrected Total	4479.261	370					

a. R Squared = .002 (Adjusted R Squared = -.004)

Table 2 revealed that after adjusting for pre-test scores, there was a significant main effect of treatments (Control Group and Emotional Learning System) on the posttest scores of students' achievement. The result is given as: [F (1, 368) = .585, P<0.05 (.005), Partial $\eta^2 = .052$]. This implies that since p-value (.005) was significant, the null hypothesis on the mean posttest scores and main effect of treatment was therefore rejected. The result further reveals that the partial eta squared shows that the independent variables accounted for only 5.2% of the variation in the treatment and posttest scores of students' achievement.

Research Question THREE: What are mean achievement scores in posttest and post posttest of students' in the treatment groups?

Table 5: Posttest and Post Posttest Mean Achievement Scores of Students in the Treatment Groups

Treatment Group	N	Posttest Mean (\bar{x})	Posttest Std. Dev.	Post-Posttest (\bar{x})	Posttest Std. Dev.	Mean Gain
Control	176	46.71	3.55	35.50	4.97	11.21
Emotional learning system	195	46.43	3.42	32.26	4.31	14.17

Table 5 shows the mean scores and mean gain between posttest and post posttest scores of the treatments on students' achievement. The result revealed that control had a mean gain of 11.21 and Emotional learning system group had 14.17 mean gains. This implies that students gained more in the achievement when evaluated with the use of Emotional learning system than the control group

Table 6 Pairwise Comparisons of the Levels of Treatments (Emotional Learning System and control group) on Students Retention in Achievement

(I) Treatment	(J) Treatment	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Difference ^b Lower Bound	Upper Bound
Control	Emotional Learning System (ELS)	2.780*	.464	.000	1.867	3.693
Emotional Learning System (ELS)	Control	-2.780*	.464	.000	-3.693	-1.867

Based on estimated marginal means
 *. The mean difference is significant at the .05 level.
 b. Adjustment for multiple comparisons: Sidak.

The post-hoc test result presented in Table 6 shows where the differences between the treatment groups lie on the administration of the post-posttest achievement. The result shows that there is a significant difference between students given Emotional Learning System and those in the control group not given Emotional Learning System. This indicates that the effect of the treatment group is significant in student's achievement and retention in MEBAT.

IV DISCUSSION OF FINDINGS

Findings from the study revealed that there was a significant effect of treatments Emotional Learning System on the posttest scores of students' achievement; hence, Emotional Learning System has significant impact on the student academic achievement. This is in line with the findings of [7], it agreed that the overall emotional intelligence has significant positive associations with intrapersonal, interpersonal, stress management, adaptability and general mood scales while overall emotional intelligence and its composite scales are related to academic performance. This is further supported by [9] results which showed that; emotional competencies (self-awareness, relationship management, social-awareness and self-management) taken together statistically significantly predicted academic adjustment of first year university undergraduates; on the basis of individual contributions, self-management and self-awareness were significant contributors while social-awareness and relationship management were not. The findings of the study further revealed that after adjusting for pre-test scores, on the effect treatments (Emotional learning system and control group) and gender, there was a significant mean effect of gender on the posttest scores of student achievement. The finding is in agreement with the work [11] that there is interaction between emotional learning system and gender on students' Achievement and there is significant difference between male and female students' Achievement. The work of [12] also supported that the mean score of boys was higher than the mean score of girls expose to emotional system, but the mean score of girls was higher than that of the boys in the test for retention of learning. This is also in line with [13] results which indicated that there were significant mean effects of treatment on all the dependent measures. Findings from the study further revealed that there was a significant effect of treatments (Emotional Learning System, and Control Group) on students' retention in MEBAT achievement. Hence Emotional learning system can aid retention. This is in agreement with the work [20] which showed that students taught emotional system strategy improved significantly with a mean retention score of 52.72 against 33.21 for those taught not exposed to emotional system strategy. Also in accord with the findings of this study was [17] result that indicated that there is a significance difference between the mean performances of students in the experimental group than those students in the control group. Also in accord with the findings of this study was [17] result that indicated that there is a significance difference between the mean performances of students in the experimental group than those students in the control group, The students in the experimental group performed better in mechanical craft practice and in retention test than those in the control group.

V CONCLUSION

The findings of the study revealed that students that were exposed to Emotional Learning System performed better than those in the control group. The study also concludes that Emotional Learning System have proven to have facilitated the learning and skill exhibition of male and female students. Therefore it is important for educational psychologists to be equipped with the new professional skills of exposing students to the use of Emotional Learning System. Successful implementation of these psychological construct or methods in teaching, will lead to academic achievement of students. This method can also be effective in teaching new skills, behaviours modification or changing negative behaviours.

Recommendations

On the basis of the findings of this study, the following recommendations are made:

1. The use of Emotional Learning System should be emphasized in secondary schools for effective counseling and behavior change process. This will also lead to effective follow up by the teachers, parents and guidance in ensuring that their wards are recording significant improvement in their academic.
2. Considering the gains of psychology methods and counseling methods to male and female students, policy makers should motivate educational psychologist to develop a positive disposition to the use of Emotional Learning System by organizing seminars, workshops and conferences. .
3. Science teachers should adopt Emotional learning system psychological strategies to enhance students' academic achievement and retention in science subjects.

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