



Positive Reinforcement on Academic Achievement of Senior Secondary School Students in River State

Maxwell D. Eremie & Juliana Doueyi-Fiderikumo

Department of Educational Foundations, Rivers State University, P.M. 5080, Port Harcourt, Rivers State, Nigeria

Emails: ¹maxwell.eremie@ust.edu.ng; ²julianadoueyi@gmail.com

ABSTRACT

The study investigated positive reinforcement on the academic achievement of secondary school students in Rivers State. Three (3) research questions and three (3) null hypotheses guided the study. The population of the study comprised of all the SS2 students in Rivers State numbering 40,497 students across the 247 senior secondary schools in Rivers State. The sample size comprises of 1200 students from 12 senior secondary schools in 6 local government areas of River State. The cross-sectional survey design was used to carry out the study. The instrument for data collection was the (PRSAAS) Positive Reinforcement and Students' Academic Achievement Scale. The reliability was determined through a test-retest procedure and it yielded a coefficient of (r) 0.72 with Pearson product moment correlation coefficient test. The research questions were answered with mean and standard deviation while the null hypotheses were tested at 0.05 level of significance with z-test statistic. The results obtained indicated amongst others that both male and female students were not influenced differentially by verbal and tangible rewards but differentially influenced by non-verbal rewards. Based on this finding it was recommended amongst others that, Teachers should apply positive reinforcement in the teaching and learning situation when appropriate to improve academic achievement. State and federal government ministries should organise seminars for teachers on how best to apply positive reinforcement for the maximum benefit of students.

Keywords: Positive reinforcement, verbal rewards, non-verbal rewards, tangible rewards, academic achievement

INTRODUCTION

Positive reinforcement is one of the teacher's most valuable behaviour management tools. Positive reinforcement is an interesting technique that helps teachers to improve the overall behaviour of students. Positive reinforcement can be explained simply as "timely encouragement" which is gentle and effective at the same time.

The words, actions and inactions of a teacher can make or mar the academic performance of a student. Students need positive reinforcement to improve their performances. The researcher as a secondary school teacher had a personal experience with a student who complained bitterly about her mathematics teacher calling her names like "escort, olodo" This incident threw this child off balance as her performance was affected in most subjects, including the subject of one of the researchers (English). This student was one of the best students in the researcher's subject, her woeful performance warranted the researcher to engage her in a chat which revealed the encounter she (the student) had with her mathematics teacher. The researcher being a counsellor/teacher engaged the mathematics teacher in a discussion and counselled her on the need to use positive words instead of negative words. With the consent of the principal of the school, a talk was delivered to the teachers on "Positive Reinforcement for Academic Enhancement" during a staff meeting. Positive Reinforcement is now a watch- word in the researcher's school. The academic of performance of this student was monitored and a tremendous

improvement was noticed thereafter. That shows the power of the words of a teacher whether positive or negative.

The need for high academic achievement in schools is very key to anyone who see education as an instrument of societal transformation and development. Most teachers are interested in just using the conventional methods of teaching without considering how positive reinforcement can impact positively on students' academic achievement.

Akinade,(2012), defined positive reinforcement as reinforcement that involves the application of pleasant or desirable stimuli in the treatment of behaviour. In other words, positive reinforcement is the encouragement that follows good behaviour. For instance, a student submits an assignment on time and includes some extra information that she or he gathered about the topic. The teacher wanting to appreciate the student's efforts asks the other students to clap her. The teacher's action acts as an impetus for the student to repeat the same effort again. Positive reinforcement as the name implies is a hassle-free technique to bring about a sense of responsibility and discipline in a class. It does not involve any kind of force that would pressurize a student into behaving well. Positive reinforcement can be in the form of verbal remarks like praises, commendations, compliments, approval, encouragement and affirmation e.g. good job, well done, nice work etc. or tangible rewards like cash gift, pen, cake, sweets, erasers etc. or none-verbal rewards like being clapped, a pat on the back, being smiled at etc to encourage the repetition of such behaviour. The researcher conceives positive reinforcement as any activity that motivates a learner to do more of his activities to achieve a better result.

Iwundu, (2009.), defined academic achievement as the degree or level of success attained at the end of an academic endeavour. Lin in Buseri (2017), conceive academic achievement to be the outcome of education, the extent to which a student, teacher or institution has achieved his or her educational goals. However, academic achievement is commonly measured by examinations or continuous assessment, but there is no general agreement on how it is best tested or which aspect is most important.

Several studies have revealed that positive reinforcement has a great influence on the academic achievement of students and may increase their grades. Amadi and Onyeike (2015),conducted an experimental study among 120 JS1 students in Abia State on the effectiveness of token economy and verbal rewards on students' academic achievement in Igbo language in Aba North Local Government Area of Abia State. The results of the study revealed that token economy which is a form of tangible positive reinforcement significantly enhanced students' academic performance over verbal rewards which are intangible forms of positive reinforcement although the verbal rewards significantly improved academic performance over the control group. Nnodum, Agbaenyi and Ugwuegbulam (2014), in another study investigated the efficacy of positive reinforcement (PR) and self-control (SC) in the management of aggression among pupils. 30 pupils were randomly selected through a purposive sampling procedure in Owerri North Local Government Area of Imo State using a quasi-experimental design with three experimental groups comprising, two treatment groups and one control group. The results revealed that positive reinforcement was more effective than self-control (SC) both at post-test and follow-up periods in reducing aggression among the pupils. Ukoha (2002), effectively used positive reinforcement to improve students' performance in mathematics. Although the number of subjects used, type of research design adopted and the area of study were not indicated. Results proved that positive reinforcement improve mathematics achievement among students. In the same vein,Onunkwo and Unachukwu (2003, 2005), also used verbal rewards to enhance secondary school students' commitment to take home assignment as well as improving adolescents' cognitive achievement in biology respectively. Results revealed that verbal rewards (positive reinforcement) improved students' commitment to take home assignment and improved cognitive achievement in Biology. In a related development, positive reinforcement was also used by Chima and Nnodum (2006), to control late coming behaviour among secondary school students. Insol in Amadi et al (2015), conducted an investigation on the effect of token economy reinforcement on students' achievement. Results indicated that token economy would be difficult to implement at home. But will be very successful in a school setting. The use of these techniques in school settings are appropriate because daily routines are clearly established. Adult supervision is consistent and assesses rein-forcers such as recess and free time can be strictly controlled.

Deci & Ryan in Amadi et al (2015), in their investigation showed that positive verbal reward increased athlete's intrinsic motivation and feelings of competence irrespective of the amount of positive verbal feedback presented. Reitman (2001), conducted an experiment with token economy technique on children with Attention Deficit Hyperactive Deficiency (ADHD) to evaluate the effectiveness of token economy as a behaviour management technique. Results shows that it helped to reduce the amount of behaviour problems while completing homework which led to the decrease stress level.

To the best of the researcher's knowledge, positive reinforcement has not been studied in relation to academic achievements of students in Rivers state due to paucity of literature. It is against the background that this study 'Positive Reinforcement on Academic Achievement of Senior Secondary School Students in Rivers State' was conceived to fill the existing gap.

Statement of the problem

Students' academic achievements in recent times have been far from being desirous at all level of education, particularly at the secondary school level among public school students. The researcher observed that many students complete their secondary school education without being able to read well, and display mastery in other relevant subjects. The effectiveness of positive reinforcement cannot be over emphasized as documented in journals, books and research articles. Yet there are many teachers who are having difficulties implementing the technique. This is because some teachers often do not understand how positive reinforcement works. The issue now is, can positive reinforcement improve academic achievement of secondary school students in Rivers State, having successfully worked for students in other parts of the country and the world? Students have challenges with the learning process due to the words, actions and inactions of teachers, who knows if it can be a panacea for academic achievement among student in Rivers State of Nigeria? Given the above, the researchers investigated Positive Reinforcement on Academic Achievement of Senior Secondary School Students in Rivers State.

Purpose of study

The purpose of this study is to investigate Positive Reinforcement on the Academic Achievement of Senior Secondary School Students in Rivers State. Specifically, the objectives of this study include;

1. To investigate the extent to which verbal rewards affects academic achievement of male and female senior secondary school students in Rivers state.
2. To find out the extent to which none verbal rewards affect male and female senior secondary school students 'academic achievement in Rivers State.
3. To examine the extent to which tangible rewards affect academic achievement of male and female senior secondary school students in Rivers State.

Research Question

The subsequent research questions were answered to obtain the findings of the study;

1. What is the extent to which verbal rewards affect academic achievement of male and female senior secondary school students in Rivers State?
2. To what extent do non-verbal rewards affect male and female senior secondary school students' academic achievement in Rivers State?
3. What is the extent to which tangible rewards affect academic achievement of male and female senior secondary school students in Rivers State?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

- (1) There is no significant difference between male and female students' academic performance regarding verbal rewards.
- (2) Non-verbal rewards do not significantly influence male and female senior secondary school students' academic achievement in Rivers State.
- (3) There is no significant difference between male and female students' academic performance regarding tangible rewards.

RESEARCH METHODS

The research design used for this study was the survey research design. Specifically, the cross-sectional survey research design was adopted for the study. Kpolovie (2010) describes the cross-sectional survey research design as a developmental field study that is characterized with large representative samples of subjects drawn randomly from different ages or educational levels to be comparatively investigated simultaneously. The population of the study includes all the senior secondary two (SS2) students in public secondary schools in Rivers State. As at the time of this study they were 40,497 across the 247 Senior Public Secondary schools in Rivers State; 19,600 boys and 20,897 girls in SS2 respectively (Source: senior Secondary Schools board: office of the director planning, Research and Statistics).The multi-stage sampling method was used to compose a sample of 1200 students from 12 schools.

Distribution of Samples

Total No of LGA	Selected No of LGA	Total No of students for study	Total No of Schools for study.	No of chosen LGA/Schools.	Total no of students for each LGA chosen
23	6	1200	12 schools	WALGA = 6	692
			(2 schools each LGA)	PHALGA = 12	4030
				ASALGA = 10	609
				AELGA = 15	1992
				KELGA = 13	1954
				OYIGA = 4	688

The instrument used for data collection was developed by the researchers and named ‘Positive Reinforcement and Students’ Academic Achievement Scale (PRSAAS). There is no right or wrong answer as far as responding to the instrument is concerned, it is a non-achievement oriented scale. It has 2 sections. Section A, is the personal data section which sort to know the sex of the respondent and location of school. Section B has eighteen (18) self-report items in relation to positive reinforcement and academic achievement. The items were centred on statements that portray verbal rewards, non-verbal rewards and tangible rewards. The items were on a four-point scale of Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1. The items on the scale give a minimum of 18 points and a maximum of 72 points. A criterion mean of 2.5 was established to determine agree and disagree items on the scale (4+3+2+1=10, 10 divide by 4 = 2.5. Any mean above the criterion mean of 2.5 was considered agree while any mean below the set mean is considered disagree. The raw scores obtained from this instrument were subjected to mean and standard deviation scores which were eventually used for parametric statistic to draw inferences about the population. The instrument was validated by 3 experts from the field of guidance and counselling in the three universities in Rivers State. The instrument was scrutinized by the experts in terms of clarity of words, content coverage and facial adequacy and sentence structure. Experts’ contributions were reflected on the final draft which was used for the study.

The reliability was determined with the test-retest technique. The researcher administered copies of the instrument to thirty (30) SS11 students in another school which was not part of the study schools. The reason for this was to avoid contamination. After two weeks interval, the researcher re-administered the instrument to the same set of students. At the end the initial scores and the retest-scores we correlated with Pearson product moment correlation coefficient (r) and this gave a coefficient of 0.72 and experts adjudged this to be high for utilization.

The Direct delivery method (DDM) was used to administer the instrument and retrieved on the same day although about 22 were not properly filled only the 1178 that were properly filled were used for the study. The research questions were answered with the use of mean and standard deviation while the Z-test statistic was used to answer the three null- hypotheses.

RESULTS

Research question one: *What is the extent to which verbal rewards affect academic achievement of male and female secondary school students in Rivers State?*

To answer this research, question the mean and standard deviation scores were presented on table 1 item by item.

Table 1: Male and Female students mean and standard deviation scores regarding verbal rewards

s/n	Items	Male			Female			Mean set	Decision
		N	X	sd	n	sd	x		
1	I perform better when I'm praised	515	2.8	1.30	663	1.40	3.0	2.9	Agree
2	My performance triggers when I'm commended		3.0	1.40		1.40	3.1	3.05	Agree
3	Negative words make me lack concentration		1.7	0.54		0.52	1.5	1.6	Disagree
4	Encouragement makes me strive higher		2.7	1.21		1.12	2.6	2.65	Agree
5	Affirmation of my performance increases its re-occurrence		2.6	1.12		1.12	2.8	2.7	Agree
6	My performance drops when I'm verbally abused		1.6	0.54		0.52	1.5	1.55	Disagree
	Grand total		2.4	1.01		1.01	2.41	2.4	Agree

Total response 515+663=1178

The data from table 1 shows that all the mean scores of male and female students were above the criterion mean save items 3 and 6. The mean set and the grand mean shows that both male and female students agreed and disagreed on the same items although the mean set and the grand mean were below the criterion mean. This means verbal rewards improves their academic performance to an extent.

Research question 2: *To what extent do non-verbal rewards affect male and female students' academic achievement among Senior Secondary school students in Rivers State?*

To answer this research question, the items on the questionnaire in relation to non-verbal rewards were analysed item by item on table 2

Table 2: male and female students mean scores with regard to non-verbal rewards

s/n	Items	Male			Female			Mean set	Sd	Decision
		N	X	sd	N	x				
1	When I'm clapped for I do better	515	3.5	1.41	663	3.8	3.65	1.6	Agree	
2	A pat on the back boost my performance rate		3.8	1.6		3.0	3.4	1.4	Agree	
3	Hand shake for a good performance increases my efforts		3.2	1.41		3.2	3.2	1.41	Agree	
4	An embrace for a good performance makes me stand tall		3.5	1.41		2.0	2.75	0.82	Agree	
5	A smile encourages me to improve my performance		3.0	1.4		2.5	2.75	1.2	Agree	
6	A nod of approval for a work well done pushes me to perform better		3.0	1.4		3.5	3.25	1.4	Agree	
	Grand total		3.3	1.2		2.95	2.95	1.31	Agree	

The data on table 2 clearly shows that all the male and female students improves better academically with non-verbal rewards but the female students responded negatively to item 4. Both the mean set and grand mean clearly indicates that both male and female student appreciates non-verbal rewards for improved academic performance.

Research question 3: *What is the extent to which tangible rewards affect academic achievement of senior secondary school students in Rivers State?*

To answer this research question, mean and standard deviation of each item was analysed on table 3

Table 3: Male and female students mean and standard deviation scores regarding tangible rewards

S/N	Items	Male			Female			Mean Set	Decision
		N	X	S.D	N	X	S.D		
1	Cash gifts for a good performance makes me go extra mile to increase my performance.	515	3.8	1.6	663	3.6	1.42	3.7	Agree
2	Bonus marks gives me a push for an improved performance.		3.8	1.6		3.5	1.42	3.65	Agree
3	When I receive gifts for my performance I do better.		3.8	1.6		3.6	1.42	3.7	Agree
4	Token Economy is a good reinforcer for an increased performance.		3.1	1.41		3.5	1.42	3.3	Agree
5	I can go any mile to increase my performance to get tangible things.		3.8	1.6		3.8	1.6	3.8	Agree
6	Promotion is a panacea for an improved performance.		3.8	1.6		3.5	1.41	3.65	Agree
			3.7	1.6		3.6	1.4	3.65	Agree

Table 3: shows that both male and female students agreed to all the items on table 3. That means both sexes are spurred for an improved academic performance with tangible rewards. Both the mean set and grand mean exceeded the criterion mean on all the items.

Null hypotheses 1: There is no significant difference between male and female student's academic performance regarding verbal rewards

Table 4; Summary of z-test comparison on male and female student's verbal rewards on academic performance

Verbal Rewards	N	X	Sd	df	P	Z-cal	Z-crit	Decision
Male	515	2.4	1.01	1176	0.05	0.16	1.96	Accept Ho
Female	663	2.41	1.01					
Total	1178							

Table 4 shows that the calculated z-test value of 0.16 is less than the critical value of Z at 0.05 level of significance with a degree of freedom of 1176. This therefore calls for the acceptance of the null hypothesis, this means there is no significance difference between male and female students academic performance regarding verbal rewards.

Null hypothesis 2; Non-verbal rewards does not significantly influence male and female student's academic performance in Rivers State.

Table 5: Summary of z-test comparison on male and female students’ non-verbal rewards on academic achievement of students

Non-verbal Rewards	N	X	Sd	df	P	Z-cal	Z-crit	Decision
Male	515	2.3	1.2	1176	0.05	4.70	1.96	Reject Ho
Female	663	2.95	1.31					
Total	1178							

Result significant at 0.05 level $P > 0.05$

Table 5 clearly shows that the calculated Z-test value of 4.7 is far higher than the critical value of Z at 0.05 level of significance with a degree of freedom of 1176. This therefore calls for the rejection of the null hypothesis and the acceptance of the alternate hypothesis this therefore means non-verbal rewards significantly influence the academic performance of male and female secondary school students

Null hypothesis 3; there is no significant difference between male and female student’s academic performance with regards to tangible rewards.

Table 6- Summary of Z-test comparison on male and female students’ influence of tangible rewards on academic performance

Tangible Rewards	N	X	sd	df	p	Z-cal	Z-crit	Decision
Male	515	3.7	1.6	1176	0.05	1.12	1.96	Accept Ho
Female	663	3.6	1.4					
Total	1178							

Table6 shows that the calculated Z-test value of 1.12 is less than the table value of 1.96 at 0.05 level of significance with a degree of freedom at 1176. This analysis calls for the acceptance of the null hypothesis, this means there is no significant difference between male and female students academic performance regarding tangible reward.

DISCUSSION OF FINDINGS

The results in table 1 reveal that both male and female students agreed and disagreed on the same items on the scale. This indicates that neither male nor female students were differently influenced by verbal rewards. This is not surprising because people naturally like to be appreciated and rewarded for job well done. This finding is in positive connotation with the findings of Onunkwo and Unachukwu (2005), who used verbal praises to enhance secondary school students’ commitment to take home assignment as well as improving adolescents’ cognitive achievement in biology and found verbal praises to be very effective on students. This finding also agrees with that of Amadi and Onyeike (2015), who used verbal rewards to influence JSS1 students in academic achievement in Igbo language.

The results on table 2 reveal that the grand mean score of the male students was higher than that of the female on non-verbal rewards. This indicates that male students were influenced more by non-verbal rewards for improved academic performance than the female students. This result is not surprising because females naturally do not appreciate gestures like embracing or an opposite sex smiling at you, giving you a pat on the back and so on, which could be interpreted to mean advances at her. This finding is in consonance with the findings of Nnodum *et al* (2014), who used positive reinforcement in relation to non-verbal rewards and verbal rewards to control late coming behaviour among secondary school students. Results showed that non-verbal reinforcement was very effective in the control of late coming behaviour among students.

The results on table.3 revealed that both male and female students agreed on all the items on table 3 with mean scores above the criterion mean which was not statically proven when subjected to Z-test. This means both male and female students were not differentially influenced by tangible rewards. This result is not surprising as children naturally love freebies. However the findings of this study is in agreement with

the findings of Amadi et al (2015), Nnodum et al (2014), Ukoha (2002), Ingsol in Amadi (2015), Deci and Ryan in Amadi (2015), Reitman (2001), who conducted different investigations to improve academic achievement of students through the use of token economy and non-verbal rewards and find token economy and verbal rewards to influence academic achievement of students at different levels and on different subjects. From the findings of this study positive reinforcement has a key role to play on the academic achievement of secondary school students. This result is not surprising because naturally humans love praise, free gifts, encouragements etc. to get the best out of them.

CONCLUSION

Sequel to the findings of this study, the following conclusions were drawn;

1. Both male and female students agreed and disagreed on the same items on the questionnaire in relation to verbal rewards. Both mean set and grand mean were below the criterion mean. This was not statistically significant when tested with Z-test with proofs.
2. The grand mean score of the male students was higher than that of the females on non-verbal rewards. This was statistically proven significant when tested with Z-test with statistical proofs.
3. Both male and female students agreed on all the items on table 3, that is items in relation to tangible rewards. This was statistically not significant when subjected to Z-test with statistical proofs

RECOMMENDATIONS

Based on the findings, discussion and implications of the finding of the study, the researcher made the following recommendation

- (1) Teachers at all levels should learn the use of positive reinforcement to help improve academic achievement of students.
- (2) State and federal government ministries should train teachers on how best to apply positive reinforcement for the maximum benefit of students.
- (3) Teaching without any form of reinforcement should be discouraged in the teaching and learning situation.

REFERENCES

- Akinade, E.A. (2012). *Modern Behaviour Modification Principles and Practices*. Ibadan: Brightways publishers.
- Amadi, G.N. & Onyeike, D.U. (2015). Effectiveness of Token Economy and verbal rewards on students' Academic Achievement in Igbo Language in Aba North Local Government Area of Abia State Nigeria. *Journal of Empirical Studies in Psychology and Education*, 1(15) 48-56.
- Busari, A. R. (2017). *Achievement Motivation, Emotional Intelligence and Learning styles as predictors of academic achievement of secondary school students in Rivers State*. An unpublished PhD thesis Department of educational psychology/ guidance and counselling, University of Port Harcourt.
- Chima, I.M., & Nnodum B.I. (2006). "Self-control and positive reinforcement in the management of late coming behaviour among secondary school students". *Journal of Women Academics*, 1(2) 204-213.
- Iwundu, C. (2001). *The impact of sleepiness levels on academic achievement for college students*. Educational measurement. Port Harcourt: University press.
- Nnodum, B.I., Agbaenyi, I.G. & Ugwuebulam, C.N. (2014). Efficacy of positive reinforcement and self-control in the management of aggressive behaviour among pupils. *The Counsellor* 33(2), 163-174.
- Onunkwo, G.I.N. & Unachukwu, G.O. (2003). Effects of verbal praises on secondary school students' commitment to take home assignments. *The Educational Psychology*, 1(1), 134-141.

- Onunkwo, G.I.N. & Unachukwu, G.O. (2003). Effects of verbal praises on secondary school students' commitment to take home assignments. *The Educational Psychologist*, 1(1),134-141.
- Ukoha,E. K. (2002). Reinforcement an Performance in secondary school Mathematics. *The Nigerian Educational Psychologist* 1 (1), 147-156
- Kpolovie, P. (2010). *Advanced Research Methods*. New Owerri: Springfield publishers.