

EFFECTS OF REINFORCEMENT STRATEGY ON COOPERATIVE ACHIEVEMENT OF STUDENTS WITH VISUAL IMPAIRMENT IN ENUGU EAST LOCAL GOVERNMENT AREA, NIGERIA

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ABSTRACT

This study seeks to find the effects of reinforcement strategy (RS) on cooperative achievement of students with visual impairment (SWVI) in Enugu East Local Government Area, Nigeria. The specific objectives are to determine the level of cooperative achievement ability, and degree of academic skill of SWVI after treatment: using true experimental research design (Protest-Posttest, Control Group Design). The population is thirty-six (36) SWVI. The sample size is eighteen (18) SWVI. Cooperative achievement scale (CAS) is the instrument used to obtain data in this research. Research questions were answered using mean scores, frequencies, and percentages. To test hypotheses one and two, Analysis of covariance was utilized. The results revealed that RS changed the cooperative achievement ability and Academic performance ability of SWVI to high levels. This study recommended that curriculum for both junior and senior secondary school students should reviewed to meet the cooperative achievement needs of students and DSWVI.

Keywords: Reinforcement Strategy, Cooperative Achievement, Students, Visual Impairment.

Introduction

The greatest challenge confronting students in their learning environment is disunity which usually results to conflicts. Conflicts are an inevitable challenge faced among students. It negatively affects them both in collaboration and interaction for cooperative achievement. Lack of cooperation sparks discrimination, misunderstanding, disunity and fight among others. All these negative vices give rise to conflicts which inversely results to

miscommunication, alteration, fighting, discrimination, toxic environment among others. When the learning environment is altered with conflicts, cooperative achievement becomes very difficult hence leading to poor academic achievement.

Academic achievement is the outcome of learning objective which of learning objective which indicate the extent of student learning performance. Academic achievement can also be viewed as academic performance. It is commonly measured through examination and continuous assignment. Academic achievement is the outcome of a formal educational experiences which include social emotional factors, as well as the relationships among students, as indicators student well being and psychological development (Philip, 2019; Chernyshenko, Kankaras & Drasgow, 2018).

However, when there is no stability in social and emotional measures of students, learning becomes difficult. Thus, giving rise to failure in totality. There is bound to be failure in psychological, emotional, psychosocial and general cooperative achievement.

Cooperative achievement is a process of creating mutual assistance and togetherness for common interest. Achievement in itself is a means of accomplishing a targeted goal successfully. Atun, ((2015) held that students cooperative achievement is process that emerges as a result of positive interdependence in an interaction of group members through encouragement, support and improvement of individual efforts for higher productivity. In the case at hand, it is collective efforts of students through skills development, interactions and knowledge built. Operationally, it is a comprehensive inclusion of visual impaired students who are united through learning, combined efforts, acquisition and knowledge abilities for goal attainment.

Achieving harmony, peace and unity among SWVI is problematic giving the predicaments surrounding their existence. Visual impairments is a term used to describe all degrees of virtual loss, which can appear in the form of total, partial sightedness or low vision (Chigbu, Oguzie, Obi, Ngwaka, 2022). Student with visual impairment has functional limitation which leads to loss of visual acuity, distortion and perception difficulties. The above mentioned features possibly may lead to emotional instability among them resulting to low cooperative and academic achievement. Education of the blind or visually impaired is very pertinent as it involves an issue with sight which interferes with student's academic pursuit via their educational performances. When this occurs it can create unhappiness amongst them, which may lead to conflict and loss of competitive achievement.

A study was carried out by Tran, (2014) on the effects of cooperative learning on the academic achievement and knowledge retention of 110 first year primary education students. The students were divided into 55 to be taught by the same lecturer. In the experimental group, cooperative learning was employed, while in the control group, lecture-based teaching was used. The results showed that after approximately 8 weeks students who were instructed using cooperative learning achieved significantly higher scores on the achievement and knowledge retention posttest than did students who were instructed using lecturer base teaching. The study supports the effectiveness of cooperative supports the effectiveness of cooperative learning in Vietnamese higher education. A similar study was also carried out by Ikegbusi and Okeke (2022) on the impact of cooperative learning method on academic

achievement of public secondary school students in Ogidi education zone of Anambra state, Nigeria. One research question and one hypothesis guided the study. Quasi-experimental research design was adopted for the study. The population of the study comprised of all the 1,566 SS 2 Agricultural science students in all the 40 public secondary schools in Ogidi education zone of Anambra State. Purposive sampling technique was used. 53 students were chosen from each of the two local government areas, making it a total of sample size of 140 respondents. The instrument used was agricultural science achievement test (ASAT). For the pre-test and post-test quasi experimental design, two groups of respondents were chosen the experimental group (Group A) and the control group (Group B) was chosen without random assignment. Group A was exposed to the treatment of cooperative learning while the conventional method was administered to group B. The research question was analyzed using mean and standard deviation, while the null hypothesis was tested using the inferential Statistical tool, the ANCOVA at .05 level of significance. The findings of the study revealed among others that the group taught with cooperative learning method learned faster and adjusted to agricultural science compared to their counterparts who were taught with conventional method.

Yunusa, Abdulwahid and Adullahi (2014) investigated on the effect of cooperative instructional strategy on interest, and achievement in biology among low-achieving senior secondary school students in Niger state, Nigeria. a quasi experiment, non equivalent control group, pretest-posttest design was used. The population of the study was all senior secondary school students in Bida Education zone, Niger state, Nigeria. Two research questions and two null hypotheses guided the study. The sample was 44 students drawn from four schools purposively sampled from 40 schools in the educational zone. An instrument labeled Biology interest Inventory (BII) and Biology Achievement Test (BAT) were developed and used for the study. Data was analysed using means and analysis of covariance (ANCOVA). Findings indicate that cooperative instructional Strategy (CIS) significantly affects student interest and achievement in Biology.

The benefits of cooperative achievement are not restricted to increase in academic achievement; increases in self efficacy, intrinsic motivation, decision making skills, empathy, tolerance for differences, feelings of acceptance, and school attendance (Odoh, 2013). Odoh (2013) emphasized on the use of intrinsic motivation inform or reinforcement to enhance students cooperative achievement. Other therapies are use as reinforce to enhance motivation among students and teachers. Otu, Dike, Ebizie, Chigbu and Otu (2021) used CBT to reduce stress reduction among primary education pupils in Nigeria. Cognitive restructuring strategy also enhances self esteem among secondary school students in Enugu state (Chigbu, Ngwaka, Nnadi, 2020). Chigbu, Chukwu and Nwobodo (2022) emphasized on adolescent motivation towards good scholastic performance and positive self image. However, these motivations come inform of reinforcement.

Reinforcement is any consequence that strengthens behaviour (Kinyanjui in Fitriate, Fatmala & Anjamputra, 2020). Researchers have investigated the use of reinforcement in the classroom settings. Reinforcing students in the classroom is important because it improve student's achievement (Fitriati, Fatmala & Anjaniputra, 2022). A study from Rumfola (2017) focused on how positive reinforcement positively helps the students to achieve the goals of the lesson. Fitriati et al (2017) examined teachers' classroom instruction reinforcement strategies in

English language class. The findings indicate that praise or other verbal reinforcement, tangible rewards, and token rewards can be use to motivate student cooperative achievement. The problem of this study is to ascertain whether RT can be used to change SWVI low cooperative achievement. This study will benefit SWIV by helping them to understand RT and to excel in academic and cooperative achieving.

This study is anchored on operant conditioning theory. The theory is an instrumental conditioning that uses a method of learning that uses rewards and punishment to modify behaviour. Through operant conditioning, behaviour that is rewarded is likely to be repeated, and behaviour that is punished will rarely occur (Wahome, 2022).

The aim of this study is to examine the effect of RT on cooperative achievement of students with visual impairment in Enugu East Local Government Area, Nigeria. The specific objectives of this study include the following:

- i. Determine the level of cooperative achievement amongst SWVI after exposure to treatment.
- ii. Assess the degree to which RT can be used to develop academic achievement of SWVI.

Research Questions

1. What is the level of cooperative achievement amongst SWVI after exposure to treatment?
2. To what degree can RS be used to develop academic achievement of SWVI?

Hypotheses

Ho: There is no significant mean scores difference between SWVI in Experimental and Control groups on cooperative achievement, after intervention.

Ho: There is no significant difference in the pre-test and post-test academic achievement mean scores of SWVI who were exposed to RS and those who were not.

Methodology

This study utilized the experimental design; true experimental research type with random assignment of samples into experimental group and control group (pretest-posttest, Control Group Design). The design structure is presented thus:

	Groups	Pre-test	Treatment	Post-test
Pretest-Posttest	RE	O1	X	O2
Control Group Design	RC	O3	-	O4

Key

RE = Randomly Assigned Experimental Group	RC = Randomly Assigned Control Group
O1 = Pre-test for Experimental Group	X = Treatment
O2 = Post-test for Experimental Group	O3 = Pre-test for Control Group
- = Absence of Treatment	O4 = Post-test for Control Group

The reason for using pretest-posttest design is that it helped evaluate the scores of Experimental and Control groups. The dependent and independent variables in this study are cooperative achievement and reinforcement strategy (RS) respectively. Jatau (2021)

acknowledged that the pretest-posttest design is an effective technique for ruling out extraneous variables such as testing effects of instruction and statistical regression. In this study, the subjects were randomly assigned to experimental and control groups and administered the pre-test before the experimental group got exposed to the treatment (X) so as to establish the effects of RS on cooperative achievement. After the treatment, a post-test was administered to both groups.

Threats to internal validity are often controlled by the use of control group in this pretest-posttest design (Jatua, 2021). Serious threat to internal validity in this design were controlled before treatment by ensuring that each student involved is one who is a SWVI and has cooperative achievement problem and each research assistance has good knowledge of the variables: RS, cooperative achievement and SWVI.

The population of this research is thirty six students in the class at the study area. This population is found to be suitable for this study because it depicts the same characteristics (low vision) to be used in this study. Therefore, it is believed that the result of this study will provide useful information. The sample size of this study comprised of sixteen (16) SS 1 students with moderate (3/60 to 6/60 with a full field of vision) and severe sight impairment (registered blindness) and show low or lack of cooperative achievement skills. Out of the said sixteen (16) SWVI, 8 were assigned to the experimental group and exposed to RS while the other 8 were assigned to the control group but were not exposed to RS.

Cooperative achievement scale (CAS) was the instrument used to obtain data in this research. The reliability coefficient index was 0.731. CAS is basically divided into section A and B. section A was for bio-data of the respondents, and Section B has 18 items which the respondents responded to. Those are list of items that sought to collect the cooperative achievement and academic achievement of the respondents. The respondents' responses were collected and used at both pre-test post-test. Cooperative achievement was measured with nine items on CAS including items 1, 3, 5, 7, 9, 11, 13, 15, 17 and 19; while academic achievement was measured with nine items on the CAS including 2, 4, 6, 8, 10, 12, 14, 16 and 18. Respondents were asked to tick (✓) items from the options that best expressed their minds.

The scale used for scoring each of the items on cooperative achievement and academic achievement used during the pre-test and post-test was the five points likert Scale rated Strongly Agreed (SA = 5 points), Agreed (A = 4), Undecided (U = 3), Disagreed (D=2) and Strongly Disagreed (SD = 1 point).

Two experts were used to establish the validity of CAS. This is to ensure that the contents of the instrument are applicable and effective for use with the sample, and these experts judged and guided the researchers in making revision on the items for validity. The items on the instrument were judge for the instrument's comprehensiveness, adequacy and relevance by the experts. The validity index of the instrument was generated to be 0.808.

The two research questions were answered using mean, frequencies, and percentages. To test hypotheses 1 and 2, Analysis of Covariance (ANCOVA) was utilized.

Presentation of Results

Research question one: What is the level of cooperative achievement amongst SWVI after exposure to treatment?

Table 1: Level of cooperative achievement amongst SWVI

Level of cooperative achievement	Experimental Group (n=8)		Control Group (n=8)	
	Pre-Test (%)	Post-Test (%)	Pre-Test (%)	Post-Test (%)
Low level (0-39)	8(100)	0	8(100)	6(75)
Moderate Level (40-69)	0	4(50)	0	
2(25)				
High Level (70-100)	0	4(50)	0	0
Total	8(100)	8(100)	8(100)	8(100)

Table 1 shows the level of cooperative achievement of SWVI before and after exposure to RS. Before intervention, both SWVI in experimental and control groups had 100% low levels of cooperative achievement, but after intervention the SWVI in control group had 75% low level of cooperative achievement, while experimental group had 50% high level of cooperative achievement and 50% moderate level of cooperative achievement.

H₀₁: There is no significant mean scores difference between SWVI in experimental and control groups on cooperative achievement, after intervention.

Table 2: Table of Analysis of covariance of cooperative achievement responses mean scores difference between SWVI in experimental and control groups after intervention

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3678.274 ^a	3	1226.091	13.021	.000	.520
Intercept	42315.024	1	42315.024	449.402	.000	.926
Exp_Control	1177.224	1	1177.225	10.404	.001	.258
Pre_PostTest	1946.024	1	1946.024	20.667	.000	.365
Exp_Control	555.024	1	555.024	5.894	.020	.141
Pre_PostTest						
Error	3389.700	35	94.157			
Total	49383.000	40				
Corrected Total	7067.974	39				

a. R Squared = .520 (Adjusted R Square = .480)

Table 2 showed the ANCOVA result of cooperative achievement responses mean scores of SWVI in experimental and control groups before and after exposure to RS. The statistics showed that a significant ANCOVA reflected that difference existed between experimental and control groups, with calculated F-value of 10.404 and p-value of 0.001. Since the p-value was less than 0.05, therefore there was a significant effect of RS on the experimental group post-test mean scores. The null hypothesis was rejected alternative hypothesis was accepted. This means the treatment (RS) was effective in improving the cooperative achievement of SWVI.

Research question two: to what degree can RS be used to develop academic achievement of SWVI?

Table 3: degree to which RS can be used to develop academic achievement of SWVI

Academic achievement Post-Test	Experimental Group (n=8)		Control Group (n=8)	
	Pre-Test	Post-Test	Pre-Test	Post-Test
	(%)	(%)	(%)	(%)
Low level (0-39)	8(100)	0	8(100)	7(87.5)
Moderate Level (40-69)	0	2(25)	0	1(12.5)
High Level (70-100)	0	6(75)	0	0
Total	8(100)	8(100)	8(100)	8(100)

Table 3 shows the degree of academic achievement of SWVI after exposure to RS. Before intervention, both SWVI in experimental and control groups had 100% low degree of academic achievement, but after intervention the SWVI in experimental group had 75% high degree of academic achievement, while control group had 87.50% low degree of academic achievement.

Ho: There is no significant difference in the pre-test and post-test academic achievement mean scores of SWVI who are exposed to RS and those who are not.

Table 4: Degree of academic achievement of SWVI before and after exposure to RS

Test	Experimental Group (n=8)		Control Group (n=8)	
	Mean	Std. Deviation	Mean	Std. Deviation
Pre-Test (Before)	1.89	2.36	1.35	0.58
Post-Test (After)	19.93	3.54	1.60	0.67

Table 5: analysis of Covariance (ANCOVA) of pre-test and post-test academic achievement mean scores of SWVI who are exposed to RS and those who are not

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5834.877 ^a	3	1944.959	423.225.000	.934	
Intercept	3582.446	1	3582.446	779.543.000	.896	
Groups	2090.106	1	2090.106	452.807.000	.835	
Test	1965.187	1	1965.187	427.626.000	.826	
Groups*test	1859.229	1	1859.229	404.570.000	.818	
Error	413.60145	4.596				
Total	9717.000	47				
Corrected Total	6248.479	46				

a. R Squared = .934 (Adjusted R Squared = .932)

Table 4 shows the pre-test and post-test academic achievement mean scores of SWVI who are exposed to RS and those who are not. Experimental group had pre-test mean score of 1.89 and standard deviation of 2.36 and a post-test mean score of 19.93 and standard deviation of 3.54 with F-test value of 452.807 and p-value of 0.00 (from table 5). Since the p-value is less than 0.05, this implies that there is a significant difference between pre-test and post-test academic achievement level of mean scores of SWVI who are exposed to RS, while SWVI in the control group who are not exposed to RS had a pre-test mean score of 1.35 and standard deviation of 0.58 and post-test mean score of 1.60 and standard deviation of 0.67.

Discussion of the Findings

The first research question and hypothesis revealed that RS was effective in improving the cooperative achievement of SWVI. Similarly, the second research question and hypothesis showed that RS was used to change the academic achievement of SWVI to a high degree level. These results buttressed the position of Fitriati et al (2017), which findings indicate that praise or other verbal reinforcement, tangible rewards, and token rewards can be used to motivate student cooperative achievement.

Conclusion

This study has verified that RS can change level of cooperative achievement of SWVI to moderate level and enhance the grade of academic cooperative of SWVI to a high degree level. However, with a well experimented RS, the cooperative achievement of SWVI was completely changed to moderate or high level. SWVI were adequately reinforced and cooperative achievement enhanced to an extent.

Recommendations

Based on the strength of the research findings, it is recommended that:

1. Reinforcement strategy should be imbibed and inculcated in our education system to boost the overall achievement of SWVI.

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