A Multidisciplinary Indexed International Research Journal

Volume XIV
ISSN: 2320-3714
Impact Factor 0.75 to 3.19
Journal No 63012

ADHYAYAN
INTERNATIONAL
RESEARCH
ORGANISATION

A CRITICAL STUDY AND ANALYSIS OF LEARNING STRATEGY ON ACHIEVEMENT AND RETENTION: A CASE STUDY OF UNDER GRADUATE STUDENTS

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ABSTRACT

Late research has uncovered that learning behavior is related with academic achievement at the college level, yet the effect of particular learning strategies on academic success and gender contrasts in that are as yet not clear. Therefore, the point of this study was to explore gender contrasts in the incremental contribution of learning strategies over general cognitive capacity in the forecast of academic achievement. The present study was started to decide how academic achievement and retention in science is upgraded utilizing the two instructional techniques among students and discovered the differential performance of male and female students in science with a perspective of enhancing student performance in science. The study embraced a non-identical pretest, posttest control semi test design.

The general outcomes demonstrated that talk instructional system essentially enhanced students' performance in science superior to the address instructional technique. The study concluded that discourse improved preferable achievement and efficiency over the address strategy. It was recommended that dialog strategy ought to be use to show natural science.

Keywords – *Achievement, retention, Performance, college.*

INTRODUCTION

The role of chemistry in our every day and national life and in addition in the business is unafraid. Many of our day-today exercises rotate around chemistry. Chemistry is all around; chemistry is life; chemistry is the prophet and crown ruler of current science. In spite of the key role of chemistry as the focal science that forms the fundamental establishment to many

orders and in enhancing the quality of life, the performance of college graduate students in the subject has for many years remained a matter of a genuine concern.

Efforts made through research to discover the reasons for the determined disappointment uncovered among others that under graduate chemistry teachers principally receive the address strategy in the teaching and learning of chemistry. Accentuation on traditional methodologies and coverage of content mapped out in the school syllabus and plan of work for the three years of senior graduate education.

At the point when students learn chemistry meaningfully, their capacity to ponder their own learning and make changes accordingly encourages further learning. More profound learning is the key procedure through which students discover meaning and understanding from course material and encounters. This thus may result to competence of knowledge exchange to different areas and how to apply the knowledge in noting inquiries and settling issues.

Piaget (2014) noticed that "learning is a dynamic procedure of knowledge construction, the making of connections between existing system of knowledge". According to Bybee (2009), students' earlier conceptions, thoughts and encounters which they convey to the classroom impact the way they learn new concepts and skills . Consequently, it is vital that they are effectively occupied with the learning procedure and that they are tested to ponder their own particular learning other than having the capacity to interface their earlier knowledge to new knowledge.

Talk strategy is characterized as a well ordered method of teaching particular part of subject in other to get the coveted destinations. The strategy is appropriate for the most part for points that are far from being obviously true and risky. It is a strategy that uses guided connection to feature a specific topic with the point of encouraging the members. Aside from the reality the strategy is tedious, it upgrades learning by giving the learners space to build up their communicating skills, mental skills, for example, basic reasoning , reflective reasoning and assessing various conclusion.

The role of the teacher where exchange technique hold influence is that of a facilitator. The teacher encourages the student to discover things for themselves. In spite of the few research prove for the exchange strategies, there is up 'til now little to look at how it will affect on students' achievement and retention in

chemistry independent of the discrediting diligent disappointment in the subject. It is in the light of this development that the present study was started to decide how academic achievement and retention in chemistry is upgraded utilizing the two instructional strategies.

Objectives

The objectives of the ebb and flow inquire about work are as per the following:

1. To study the learning procedure.
2. To dissect achievement and retention in learning process.
3. To study the hugeness of achievement and retention.

Research questions

Three research questions were postured for the study:

(1) What are the mean achievement scores in chemistry trial of under graduate students showed some chose chemistry subjects through the talk and those showed utilizing address methods?

(2) What is the impact of gender on mean achievement scores in chemistry trial of under graduate students instructed chose chemistry themes through the dialog and those showed utilizing address methods

(3) To what degree do students review when shown utilizing address and dialog methods

Research hypotheses

Two null hypotheses were formulated at 5% level of criticalness as takes after:

Ho1 There is no huge contrast in the mean achievement scores of students instructed chose chemistry subjects through the discussion and those educated by address methods.

Ho2 There is no critical contrast the mean achievement scores of boys and girls educated chose chemistry themes utilizing the discussion and address methods.

Ho3. There is no noteworthy distinction in the mean retention scores between students showed utilizing address and discussion methods.

Methodology

A quasi trial, the non-identical control amass design was utilized for the study, since there was no randomization of the subjects into gatherings. Consequently in place bunches which were at that point sorted out into classes were utilized.

One hundred and eighteen students filled in as test studying from Punjabi college partnered colleges,. As gender is one of the

variables in the examination, purposive inspecting system was received to guarantee subjects picked that is both male and female had comparable foundation, experience and presentation to comparative framework.

Two instruments were utilized for the study. This was the chemistry achievement test (CAT) and chemistry retention test (CRT) individually. This consists of 20 numerous decision thing and short answer write addresses precisely drawn from past WAEC and NECO past inquiry papers and from the examiners design who is likewise a pro in chemistry. Before controlling the test things, the inquiries were subjected to content and face legitimacy by different specialists in chemistry to find out their propriety. The dependability coefficient was computed utilizing Pearson-item minute correlation technique and the esteem was r= 087. This shows the test was solid and all things considered would test what it was out to test.

Results

Research question 1: What are the mean achievement scores in chemistry trial of under graduate students showed some chose chemistry points through the discussion and those showed utilizing address methods

Table 1: Relative Students' Mean Achievement Scores in CAT with Discussion and Lecture methods

Group	Symbol	Pretest	Posttest	Mean gain Difference
Discussion	N	59	59	
Method	X_1	15.45	25.78	10.33
(Experimental method)	SD	3.75	4.02	
Lecture	N	59	59	
Method	X_1	14.93	21.67	6.74
(control)	SD	3.40	3.56	

N= Number of students X_1 = Mean, SD = Standard Deviation

Table 1 demonstrates that the standard deviation of 3.75 for the trial gather as against 3.40 for the control aggregate demonstrated that the scope of scores between the exploratory and control bunch from the pretest CAT was extremely limited. This recommends the gathering were equal subject to treatment. The posttest mean scores for the test students enhanced apparently from 15.45 to 25.78 while their standard deviation demonstrates a minor increment. For the control gathering, it was a change from a mean score of 14.93 to 21.67 and likewise a minimal increment in standard deviation. At the point when compared with the trial gathering, it was low. The table additionally demonstrates that the mean

pick up distinction was 10.33 for discussion strategy and 6.74 in address technique. This infers subject educated with discussion technique performed preferable in the achievement test over those instructed with address strategy.

Table 2: Analysis of variance of Mean Achievement Score in CAT with Discussion and Lecture methods

Source of Variance	Sum of squares	df	Mean square	F	Signifance level at 0.05
Discussion & Lecture Methods (DM & LM)	152.14^2	1	23146.89	4.65	3.85
Group (Methods)	-70.54^2	1	4975.89		
Total	81.59^2	117	6656.93		

Table 2 above demonstrates the achievement scores of students showed DM and LM with the table F-proportion at 0.05 level of essentialness to see whether the theory is acknowledged or not. The computed F-proportion between discussion strategy (exploratory technique) and address strategy (control) was observed to be 4.65 and the table F-esteem at 0.05 level of criticalness was 3.85. This infers Fcal > Fcrit i.e the figured F-proportion was more noteworthy than table F-esteem at 0.05 level of importance, the expressed null speculation is therefore dismissed meaning there was critical contrast between the mean achievement scores of students instructed with discussion technique and address strategy.

Research question 2: What is the impact of gender on mean achievement scores in chemistry trial of under graduate students educated chose chemistry subjects through the discussion and those showed utilizing address methods

Table 3 : Relative Students' Mean Achievement Scores of Boys and Girls in CAT with Discussion and Lecture methods

Group	Symbol	Pretest	Posttest	Mean gain Difference
Discussion Method (Boys) (Experimental method)	N	32	32	
	X_1	15.75	29.98	14.23
	SD	3.25	4.32	
Discussion Method (Girls) (Experimental method)	N	27	27	
	X_1	16.45	25.58	9.13
	SD	3.65	5.02	
Lecture Method(Boys) (control)	N	32	32	
	X_1	14.73	25.87	11.14
	SD	3.73	4.57	
Lecture Method (Girls) (control)	N	27	27	
	X_1	15.03	20.67	5.64
	SD	3.21	3.36	

N= Number of students X_1 = Mean, SD = Standard Deviation

Table 3 demonstrates that the pretest means scores of students instructed with the two methods of teaching i.e. discussion (trial technique) and address strategy (control) were observed to be 15.75 and 14.73 for boys and 16.45 and 15.03 for girls separately; while the post test comes about shows 29.98 and 25.87 for boys and 25.58 and 20.67 for girls individually. These outcomes appear there is a distinction between the students pretest and post-test scores in every strategy for teaching. The distinction is most noteworthy with discussion and least with the address strategy. The mean pick up contrasts for boys are 14.23 for the discussion technique and 11.14 for the address strategy and for the girls the mean pick up scores are 9.13 and 5.64 in every strategy separately.

The outcomes additionally demonstrates that the distinction in posttest mean score is most astounding among boys and girls students educated with discussion technique and slightest by those instructed with address strategy. On account of inconstancy of test scores, the standard deviation got for each situation demonstrated an insignificant spread of scores. It was additionally seen that there was a little increment in the posttest mean scores for female students instructed with discussion and address methods.

Table 4 Independent t-test for boys and girls in control group post test

Group		Mean	S.D	df	t_{cal}	$P_{0.05}$
Boys	32	25.87	4.57	57	4.906	2.000
Girls	27	20.67	3.36			

Table 5: Independent t-test for boys and girls in experimental group post test

Group	N	Mean	S.D	df	t_{cal}	$P_{0.05}$
Boys	32	29.98	4.32	57	3.621	2.000
Girls	27	25.58	5.02			

The outcomes demonstrated that t - trial of post test scores for boys and girls in the control assemble is huge in light of the fact that 4.906 is higher than 2.000. That is, the null speculation of no huge gender impact is rejected. Therefore, there is critical combined impact of teaching strategy and gender on students' achievement scores in the chemistry tests.

The outcomes demonstrated that t - trial of post test scores for boys and girls in the trial gather is huge in light of the fact that 3.621 is higher than 2.000. That is, the null theory of no critical gender impact is rejected. Therefore, there is no noteworthy combined impact of teaching technique and gender on students' achievement scores in the chemistry tests.

Research question 3: To what degree do students review when shown utilizing address and discussion methods

Table 6: Correlation coefficient of ranked retention scores between students taught using discussion and lecture method

Group	N	r_{cal}	$r_{critical}$ (P< 0.05)
DM	59	0.9786	0.2353
LM	59		

Result in table 6 demonstrates that rcal > rcrit., i.e. 0.9786 is more prominent than 0.2353. The null theory 3 is rejected and so there is huge distinction in the mean retention scores between students showed utilizing address and discussion methods.

Discussion

The consequences of this study gave an exact proof of the efficacy of the discussion strategy in the teaching of natural chemistry. The exploratory gathering created higher mean achievement scores than the control assemble instructed a similar content/concepts in chemistry utilizing the address methods. The discoveries of this study is on each of the fours with those of prior agents that teaching substance concept with movement situated strategies can affect essentially on students' retention, achievement and understanding.

The significance of more profound learning as a means of building up learners' ability to apply knowledge picked up amid the learning procedure to critical thinking was reflected in this study since the students instructed through the discussion technique exhibited their

understanding of the concepts amid the assessment stage. Students' dynamic cooperation, their collaboration in gatherings and the teacher's role as supplier of intriguing questions may have upgraded students' achievement picks up in the chemistry tests as built up by Moyer et al(2007). The consequence of this study demonstrated that there is noteworthy contrast in achievement amongst male and female students in the exploratory gathering educated chose themes in natural chemistry utilizing the discussion technique. With respect to the impact of gender on students' academic achievement, science teachers vary in their discoveries.

For example, Aluko (2005), Nbina and Avwiri (2014) and Muhammad(2014) in isolated investigations, detailed that gender has no impact on student achievement in science while Lawal (2009) found that female subjects were altogether superior to their male counterparts and that there was a huge contrast between the male and female subjects in their capacity to assess science concepts. Additionally Omwirhiren(2013) and Daluba(2013) noticed that the male perform altogether superior to their female counterparts in assessing science concepts. The consensus among science teachers is that some instructional strategies are gender predisposition while some are gender amicable, in any case, the level of gender related contrasts in learning shift from one strategy for instruction to alternate and in addition the concept being learnt.

Conclusion and Recommendations

Findings from show study demonstrate that under graduate students performed diversely when educated with the discussion and address methods. Students' performance in the address gather is lower than those in the test gathering (discussion strategy) as they learnt the chose concepts with trouble. Boys performed essentially superior to the girls when instructed with both the exploratory and control methods. At long last, there was a huge contrast ($P< 0.05$) in the academic achievement scores and retention of students showed chemistry with the discussion and address methods.

Based on the findings and conclusion of the study, the accompanying recommendations were proffered:

1. Secondary school teachers ought to be discouraged from the continuous utilization of address strategy in the teaching of chemistry as the technique make students performed inadequately in chemistry.

2. Consideration ought to be sufficiently paid to the female creases by informing

teachers concerning chemistry to adequately utilize the utilization of discussion strategy in a way that it will help enhance female students performance in chemistry. This is on account of the consequence of the study have demonstrated a noteworthy distinction in their mean achievement scores for guys,

3. To additionally improve performance and retention in the learners, teachers should endeavor conscientious efforts to incorporate discussion strategy into the teaching of apparent troublesome points chemistry in under graduate s. This will go far in diffusing the dynamics of most concoction concepts.

4. More themes in chemistry (, for example, mole concept, electrolysis, energetics among others) ought to be tried utilizing the discussion strategy in the teaching and learning of chemistry in order to compare findings.

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