Vol 6 Issue 6 Dec 2016 ISSN No :2231-5063

International Multidisciplinary Research Journal

Golden Research Thoughts

Welcome to GRT

RNI MAHMUL/2011/38595 **ISSN No.2231-5063**

Golden Research Thoughts Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board.Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.aygrt.isrj.org

GRT Golden Research Thoughts

ISSN: 2231-5063 Impact Factor : 4.6052(UIF) Volume - 6 | Issue - 6 | December - 2016

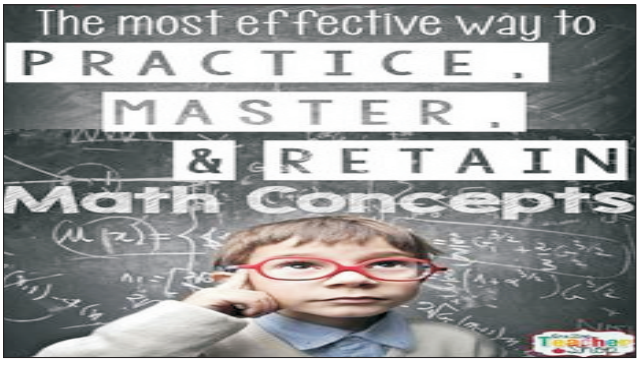
EFFECTIVENESS OF DIAGNOSIS BASED REMEDIATION ON ATTAINMENT OF MLL IN FRACTIONS, DECIMALS AND PERCENTAGES COMPETENCY OF MATHEMATICS AMONG V STANDARD STUDENTS

Dr. Prakasha K.
Assistant Professor.

ABSTRACT

Present study is aimed to assess the effectiveness of diagnosis-based remediation programme in improving the proportionate of students mastering Fundamental operation competency (percentage of competency mastered) by the group of V standard students in the selected This is an experimental study with pre and post test design. Among the selected 100 non-mastered students, 50 non masters formed control group and another 50 formed experimental group. After 15 days of intervention for the experimental group, the investigator conducted post test for both controlled and experimental groups. The controlled group students were attending regular classes whereas students from experimental group were attending the intervention class outside the class room which was taken by the investigator himself. MLL based test developed by Kashinath (2005) was adapted and used for assessing selected MLL competencies, which had Competency (Fractions, decimals and percentages). The results showed that experimental group had gained significantly higher competencies in Fundamental operation competency scores than the control group. Further, male students of experimental group had substantial gain compared to all other groups.

KEYWORDS:*diagnosis-based, Fractions, Decimals , Percentages Competency.*



INTRODUCTION

Primary education in particular has remained a serious concern of the nation since independence. A large number of programmes and schemes have been initiated both by the Central and State Governments to realize the goal of the universalization of primary education. This has led to the opening of a large number of schools with emphasis on enrolment and retention coupled with focus on quality of education. The quantitative expansion seems to have diluted the quality of education. Research studies conducted both at national and state levels point out low level of learning in schools and the situation becomes worse as children move to higher classes. Poor level of achievement at primary stage is a big de-motivating factor resulting in repetition and drop out from the schools. Mathematics, by and large, is taught in a stereotyped and mechanical way in schools "Experience has shown that the majority of students normally fail in Mathematics at the end of class X (NCERT, 2000). Amid term National survey on learning Achievement of class V Children (2008) states that (i) National average in Mathematics was 48.46% indicating an increase of 1.95% from Base Line Achievement measured in year 2001-02.(ii)There was no significant difference between boys and girls. In achievement however, rural children scored significantly better than

their urban counterparts. Urban girls scored significantly better than urban boys. (iii) The performance of children is the poorest in Mathematics and better in Language. The National Resource Group of SSA (2008) advised Central and State Governments on all aspects of quality improvement in elementary education, through SSA and related programmes, with special reference to Laying down of minimum levels of learning and their incorporation in curricula, textbooks and teaching process and Monitoring learner achievement vis-à-vis MLL's and action for improving attainment levels.

OBJECTIVES

1. To know the significant difference between control and experimental group in the effect of diagnosisbased remediation programme in improving the proportionate of students mastering competency of the group of Vstandard students in the selected (experimental) schools of Shimoga District.
2. To know the level of gain equally after remediation programme in improving the Fundamental Operation competency in Mathematics among the male and female students.

METHODOLOGY

This is an experimental study with pre and post test design. In this study the investigator has selected Fundamental operation competency from V standard text book of mathematics. This Fundamental operation competency was selected because in all the selected schools this competency was taught in first semester. Based on these MLL competency investigator adapted a standard test developed by Dr. H. M. Kashinath (2005). The adaptation was made in the light of competency taught. The adapted test was also tried out on 30 V standard students. The test finalized by dropping the competencies which were very easy and ware very difficult. The opinion of various experts was also taken for finalizing the adapted test. The test was used as pre and post test for assessing the effectiveness of the intervention for learning non mastered competency. The investigator developed teaching strategies for teaching each sub-competency selected. The investigator used these strategies for all non-masters from experimental group. The investigator took one session in each school on alternative days for the experimental group. In this way the investigator covered all the non-mastered competencies during two months of intervention. After 15 days of intervention for the experimental group, the investigator conducted post test for both controlled and experimental groups. The controlled group students were attending regular classes whereas students from experimental group were attending the intervention class outside the class room which was taken by the investigator himself. The performance of the students from pre and post tests was analyzed to assess the effectiveness of intervention on learning. The experimental group had gained significantly higher competency in Fractions, decimals and percentages than the control group. Further, male students of experimental group had substantial gain compared to all other groups.

SAMPLE

In order to serve the objective of the study, 4 schools out of 196 schools were randomly selected from Shimoga district. On the basis of performance on competencies included in the pre- test of Mathematics the masters and non-masters identified were listed. Those students who were found achieving less than 80% of the competencies were non-masters and they were considered for experimental group. Among 100 non-masters from 4 schools 50 non masters considered for experimental group and remaining 50 non-masters constituted as control group.

TOOL

MLLCompetency Based Test in Mathematics: For assessing, MLLcompetencies taught in first semester were made as base for adapting the test which was developed by H.M. Kashinath, et: al. (2005). The investigator confined to the competencies taught only in I semester to V standard students. Competency covered by the Test was: Fundamental operations.

RELIABILITY OF THE ACHIEVEMENT TEST

"The reliability of a test or any measuring instrument depends upon the consistency with which it gauges the ability to which it is applied" (H. E. Garret,1986). In this study the coefficient of internal consistency has been obtained by using the split-half method. Reliability refers to the consistency with which a test measures whatever it measures. There are a number of approaches to assess the reliability of test. The choice of approach depends on the type of information one is seeking. The test scores can be interpreted when it possesses substantial internal consistency. In this study the coefficient of internal consistency was obtained by the investigator, found out internal consistency through using the split half method. The reliability was found as 0.77. Thus the test has a high reliability

VALIDATION OF THE TEST

The test is valid if the scores it assigns to examinees are free from constant and systematic errors and hence the interference based on these scores was justified. Copies of the this test were distributed, along with the copies of the list of competencies selected to six content specialists in mathematics education and mathematics teachers of Regional Institute of Education and Subject Inspector and experts in mathematics in Shimoga district. The experts are requested to judge the relevance of each item in the test and to critically examine them to ascertain the adequacy and clarity of the items. Based on the opinion of the content experts, suitable modifications were made in the test.

REMEDIATION PROGRAMME

In remedial instruction, we provide remedial alternatives matched to each of the objectives/items, so when the student makes an error in the test item, a remedial alternative is provided. This alternative may be chosen according to its suitability to the learner, e.g. if the learner prefers to learn in the programme learning style, he/she is provided instruction in the programmed learning material (PLM) form. But this provision may not solve her/his difficulty in learning the concept, for here, it is not just the method that is inappropriate but, rather the diagnosis is not deep enough to spot out the source which has created the error. Hence, unnecessarily wasting time by trying out alternative ways of teaching would be ridiculous. Therefore, time could be saved if more efforts are put forth to locate the source of the error before choosing the method of presentation. Based on the pre test it was found that students were lacking in competency (major and minor competency) in solving problems in the selected competencies. The intervention for developing non-mastered competencies was given through teaching strategies which had 8 components i.e. sequencing and segmenting, drill-repetition and practice-review, directed questioning and responses, control difficulty or processing demands of the task, use of technology, group instruction, supplements to teacher and peer involvement, strategy cues to the experimental groups for a period of 15 days in the two schools selected each from rural and urban. The teaching strategies for mastering the non-mastered competencies were prepared by the help of available library information and discussed with the guide and experts in mathematics teaching. The investigator requested the authorities to allow him to teach the experimental groups according to the features of the teaching strategy. One mathematics class was taken in each school on alternative days for both urban and rural schools which represent experimental group and the control groups were taught as usual by the regular teachers

Volume - 6 | Issue - 6 | December - 2016

ANALYSIS OF RESULTS

Table -1 Mean of the pre and post- test scores on Competency (Fractions, decimals and percentages) scores of male and female in experimental and control groups

Groups	Gender	Sessions				Change/ gain
		Pre-test		Post-test		
		Mean	S.D	Mean	S.D	
Control	Male	2.41	0.85	1.77	1.11	-0.64
	Female	2.68	0.72	1.75	0.84	-0.93
	Total	2.56	0.79	1.76	0.96	-0.80
Experimental	Male	1.50	0.84	2.96	0.79	1.46
	Female	1.64	0.79	3.23	0.69	1.59
	Total	1.56	0.81	3.08	0.75	1.52
Overall	Male	1.90	0.95	2.44	1.11	0.54
	Female	2.22	0.91	2.40	1.07	0.18
	Total	2.06	0.94	2.42	1.08	0.36

Table-2

Result of repeated measure ANOVA for Mean pre and post- test scores on Competency- (Fractions, decimals and percentages) scores of male and female in experimental and control groups (within and between subject affects)

Source	Sum of Squares	df	Mean Square	F value	P value
Within subject effects					
Change	6.840	1	6.840	9.712	.002
Change * Group	65.744	1	65.744	93.344	.000
Change * Gender	.084	1	.084	.120	.730
Change * Group *Gender	.540	1	.540	.767	.383
Error (change)	67.615	96	.704		
Between subject effects					
Groups	1.586	1	1.586	2.312	.132
Gender	1.286	1	1.286	1.875	.174
Group * Gender	.072	1	.072	.105	.747
Error	65.843	96	.686		

In the case of Competency- (Fractions, decimals and percentages) in table 1 & 2 on the whole irrespective of the groups, the total mean pre-scores of 2.06 which increased to 2.42 in the post test. The gain of 0.36 scores was found to be statistically significant, as the observed 'F' value of 9.712 was found to be significant at 0.002 level. Further when change in the scores were verified against control and experimental groups, again we find a significant 'F' value of 93.344 (P = 0.000). From the mean values and gain scores it is clear that the control group has gained a mean total of 1.06 scores (pre = 2.50; post = 1.76) where as experimental group has gained 1.52 scores (pre = 1.56; post = 3.08). The substantial gain by experimental group can be attributed for effectiveness of diagnostic based remediation programmes. Gender wise no differential change was observed as

observed 'F' value of 0.120 failed to reach significance level criterion. Lastly the gain in the scores with respect to gender and groups wise was found to be non- significant as observed 'f' value of 0.767 failed to reach significance level criterion. In between subject effects only between experimental and control group, gender wise comparison and interaction between gender and groups were found to be non significant.

DISCUSSION

A main finding of the present study is experimental group had gained significantly higher competency in Fractions, decimals and percentages than the control group. Further, male students of experimental group had substantial gain compared to all other groups.

The substantial gain by experimental group over control group can be attributed for effectiveness of diagnostic based remediation programme. Hence hypothesis formulated as "There would be no significant effect of diagnostic based remediation programme in improving the proportions of students mastering Fundamental operation competency (percentage of competency mastered) by the group of Vstandard students in the selected (experimental) schools of Shimoga District'' is rejected. In India several studies have conducted on the effectiveness of several kinds of intervention programmes. Archana Srivastava (2004) study showed better achievement level on the part of students with mathematical disability after teaching them with the help of remedial programme. Sullivan (1987) found in his study that students who were thought through mastery learning method scored significantly higher in mathematics than students taught through traditional method. Research studies revealed that continuous use of manipulatives and concrete materials can bring good attainment results in mathematical competencies. If we consider Computation, Students learning computational skills tend to master and retain these skills more fully when manipulatives are used as part of their instruction (Carroll and Porter, 1997). Counting some children need to use manipulatives to learn to count (Clements, 1999). Research indicates that using manipulatives is especially useful for teaching low achievers (Marsh and Cooke, 1996; ruzic and O'connell, 2001). Why is it so difficult to teach students to solve fractions, decimals and percentages? Students who are poor mathematical problem solvers, as most students who are non-masters are, do not process problem information effectively or efficiently. They lack or do not apply the resources needed to complete this complex cognitive activity. Generally, these students also lack meta cognitive or self-regulation strategies that help successful students understand, analyze, solve, and evaluate problems. To help these students become good problem solvers, teachers must understand and teach the cognitive processes and meta-cognitive strategies that good problem solvers use. This is the content of math problem-solving instruction. Teachers must also use instructional procedures that are research-based and have proven effective. These procedures are the basis of cognitive strategy instruction, which has been demonstrated to be one of the most powerful interventions for non master students (Swanson, 1999). Carpenter (1983) found that males' performance was better than females through ages 9 to 13 the overall performance of males and females was not significantly different. Ten large-scale mainland-based U.S. studies involving at least 1,000 students each were identified and reviewed. For overall mathematics performance, Cole (1997), Nowell and Hedges (1998), Wilson and Zhang (1998), and the Office of Educational Accountability (2002) all found that males outperformed females. Dutta (2003) revealed that in rural areas, the performance of boys was better than girls. Further, when he compared overall performance (both urban and rural) again boys surpassed girls in mathematics achievement scores. In a study by Gupta (2004) it has been observed that boys get opportunity to continue their education in spite of their disadvantaged social family backgrounds because they are considered as assets of family for economic and social reasons. This is a reflection of social attitude, which definitely indicates bias against girls. Moss and Brown (1979) concluded that sex differences occur in academic achievement partially due to biases and stereotypes.

REFERENCE

1.Carrol,W.M. and Porter,D(1997). Invented strategies can Develop meaningful mathematical Procedure, Teaching Children Mathematics , 3(7), 370-374.

2.Clements, D.H (1999).Concrete Manipulatives, concrete ideas, Contemporary Issues in

Earlychildhood,1(1),45-60.
3.Cole, N. S. (1997). The ETS gender study: How females and males perform in educational settings (No. ED 424337). Princeton, NJ: Educational Testing Service.
4.Dutta, D.K (2003), Achievement Survey at the end of class V, Abstracts of Educational Research Studies conducted by SCERT, Assam.
5.Gupta Rumki (2004). Empowerment of Women in Terms of Education and their Deprivation. Issues on empowerment of Women, Utpal Kumar De and Bhola Nath Ghosh(Eds.). New Delhi : Mohit Publication.
6.Kashinath,H.M.(2005). Construction and validation of battery of tests in mathematics for II,V and VII standard based on KSQAO Competencies. Report of Karnataka School Quality assessment organization(KSQAO)Karnataka State Education Examination Board, Bangalore.
7.Kratch,M(1998).Teaching Fractions Using Manipulatives,Ohio Council of Teachers of Mathematics, 37,16-23.
8.Marsh,L.G. and Cooke, N.L.(1986). The effects of using manipulatives in teaching maths problem solving to students with learning
9.disabilities. Learning Disabilities Research and Practice,11(1), 58-65.
10.NCERT(2008). Baseline Achievement Survey, Learning Achievement of class Vchildren. New delhi.
11.Nowell, A., & Hedges, L. V. (1998). Trends in gender differences in academic achievement from 1960 to 1994: An analysis of differences in mean, variance, and extreme scores. Sex Roles, 39(1/2), 21-43.
12.Swanson, H.L. (1999). Instructional components that predict treatment outcomes for students with learning disabilities: Support for a combined strategy and direct instruction model. Learning Disabilities & Research, 14 , 129-140.