



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; SP-10(5): 341-344
© 2021 TPI
www.thepharmajournal.com
Received: 21-03-2021
Accepted: 25-04-2021

Dr. S Radhika
School Assistant, Department of
school Education, Andhra
Pradesh, India

Effect of cognitive intervention on class room adjustment of children with reading and mathematical disabilities

Dr. S Radhika

Abstract

The aim of this experimental study is to evaluate the effect of Cognitive Intervention in 8–10-Year-Old Children with class room adjustment of children with Reading, math problem in Telangana govt. schools. This research consisted from 160 participants, children with ages differing between 8- 10 years. Cognitive Intervention Program has been applied to 80 children with reading and math learning disabilities that are in the experimental group. Other 80 children in the control. Learning Disabilities Diagnostic Inventory (LDDI) (1997), General Mental Ability Test Sri Vatsava R.P. and Saxsena.K (2005) and Classroom adjustment intervention by Sinha& Singh (2006) tests were performed pre and after intervention. The results of analysis showed that there was significant difference between pre and post score of experimental group with improvement in class adjustment, reading and math performance of school children.

Keywords: Learning disability, Intervention Program, classroom adjustments

Introduction

Education is the fundamental right of every child. Programmes on universalization of primary education are being carried out worldwide. The primary education scenario in India is very encouraging with increase in number of school, enrolment now out of 200 million children in age group of 6-14 years, 144 million children are attending school.

Learning disabilities are heterogeneous with different manifestations. The hard fact is that learning disability (LD) is real and a stumbling block for a nations development process. The LD movement in India is of a recent origin and is today comparable with that of its Western counterpart. Reports of lower incidences of LD learning disability in the Eastern world were attributed by Western scholars to the general lack of awareness and sensitivity among educationists to the specific difficulties faced by children learning to read in overcrowded classrooms. The Nalanda Institute report has highlighted that in India during the last two-decade or so, there has been an increasing awareness and identification of children with learning disability.

Children struggle to cope up with the demands of the classroom for many different reasons, specially if they have poor working memory skills. Presenting as an inability to stay on a task and complete everyday classroom activities, working memory impairments are relatively common and represent a significant risk factor for educational failure for many children. For typically developing children, working memory capacity increases steadily upto 14/15years of age where it reaches adult level. (Alloway& Pickering, 2006) ^[1]. However in some children, working memory follows an atypical developmental trajectory that results in a smaller capacity than is typical for their age. Deficits in working memory are common feature of specific learning disorder.

Cognitive strategies are useful tools in assisting students with learning problems. The term "cognitive strategies" in its simplest form is the use of the mind (cognition) to solve a problem or complete a task. Cognitive strategies may also be referred to as procedural facilitators, proceduralprompts.

The use of cognitive strategies can increase the efficiency with which the learner approaches a learning task. These academic tasks can include, but are not limited to, remembering and applying information from course content, constructing sentences and paragraphs, editing written work, paraphrasing, and classifying information to be learned.

In a classroom where cognitive strategies are used, the teacher fulfills a pivotal role, bridging

Corresponding Author:
Dr. S Radhika
School Assistant, Department of
school Education, Andhra
Pradesh, India

the gap between student and content/skill to be learned.

Cognitive strategy is a mental process or procedure for accomplishing a particular cognitive goal. For example, if students' goals are to write good essays, their cognitive strategies might include brainstorming and completing an outline. The cognitive strategies that students use influence how they will perform in school, as well as what they will accomplish outside of school. Researchers have found that effective learners and thinkers use more effective strategies for reading, writing, problem solving, and reasoning than ineffective learners and thinkers. The role of effective strategies in learning and thinking is emphasized by most theories of learning and development.

The present study introduces strategies that would help in reading and mathematical comprehension. The aim of present study is to improve the cognitive development of learning disabled children through cognitive remedial intervention which helps the students academic success making necessary classroom adjustments.

Review of Literature

Supriya Sharma (2018) ^[6] Effect of Academic Cognitive Remedial Interventions on the Skills of Children with Special Need. The study results revealed that academic interventions were highly effective in enhancing the developmental skills of CWSN' students as well cognitive intervention.

Nora Schneider *et al.* (2018) ^[5] studied on A Combined Dietary and Cognitive Intervention in 3–5-Year-Old Children in Indonesia: A Randomized Controlled Trial. The study results revealed that experimental group compared to the control group displayed a significantly higher increase in intelligence quotient as well as a significantly larger reduction in attentional problems after the intervention. These results indicate that low-level cognitive stimulation in combination with nutritional supplementation during early childhood can be an effective intervention that improves global cognitive functioning in healthy developing children.

Ema Skeja (2014) ^[4] studied on the impact of cognitive intervention program and music therapy in learning disabilities. The results revealed that experimental group resulted with significant difference from control group, $p=,002$. Based on the findings of this study it can be suggested that interconnection of Music Therapy with Cognitive Intervention Program enables children with learning disability to be a step ahead in four problem areas, since intervention in these areas is twofold and can cover weaknesses of each other.

Alireza, B., Prakash, P., and Gowramma, I. P. (2010) ^[2] investigated the impact of remedial intervention on students performance with dyscalculia in teaching addition and subtraction. Results revealed significant improvement in the addition test performance after remedial intervention for the experimental group ($F=23.40$; $p < 0.00$). The mean pre and post-test scores of experimental group were found to be 5.75 and 10.55 respectively, whereas for the control group they were 6.25 and 6.75. For subtraction test scores ANCOVA showed significant improvement in the subtraction test performance after intervention for the experimental group ($F=30.91$; $p < 0.000$). Thus a significant improvement was observed in the experiment group for mathematical addition and subtraction who underwent remedial teaching. Therefore, it proves the effectiveness of the remedial programme employed in the study.

Methodology

A sample of 160 academically low achieving students studying in the grade 3 were selected from Four large Government Primary Schools belonging to Amberpet and Malakpet Divisions of Hyderabad. Students in the age range of 8-10 years from schools that were offering English Medium along with state syllabus were selected. Students were divided into four groups i.e 2 experimental and 2 control groups based on scores obtained on diagnostic inventory.

Experimental group I i.e the reading disability consists of 40 children with reading disabilities and experimental group II consists of 40 children with math disabilities. The selected subjects belong to both the reading and maths, Experimental groups. They were given remedial intervention to upgrade their learning skills while other two groups of 40 students in each group i.e Reading disability control group and math disability control group, who were not given any kind of intervention. A pre post intervention design was used for the study.

Tools

1. Learning Disabilities Diagnostic Inventory (LDDI) (1997)
2. General Mental Ability Test Sri Vatsava R.P. and Saxsena.K (2005)
3. Classroom adjustment intervention by Sinha& Singh (2006)

Cognitive interventional plan

Intervention programme was planned for the period of 10 months for the learning-disabled students. Intervention was conducted in 3 phases as cognitive strategies utilized are different in each phase of instruction. Phase I consisted of 20 sessions where phonemic awareness enhancement, words and sentence reading through cognitive strategies. Phase II from 21-40 sessions included enhancing sentence and paragraph reading skills through cognitive strategies and phase III i.e 41-60 sessions comprised enhancing comprehension of paragraphs through cognitive strategies. For mathematics disabled students, Phase I of 1-20 sessions included Error analysis, Phase II from 21-40 sessions concentrated on developing conceptual Base and Phase III from 41-60 Sessions included teaching Multiplication and Division through use of cognitive strategies. At the end of 10 months intervention and one month of no intervention the subjects were re administered all the scales. These scores formed the post test scores.

Results and Discussion

Table 1: Mean differences in class room adjustment between reading and math experimental groups and control groups in three terms

Group	Term	Mean	SD	t value	p value
Experimental	Pre	39.35	5.63	0.43	0.66
Control group		40.8	5.8		
Experimental	Mid	37.4	5.2	2.32	0.04*
Control group		38.8	3.84		
Experimental	Post	26.9	4.9	3.56	0.006**
Control group		38.8	4.1		
Experimental	Pre	38.27	4.25	-0.181	0.85
Control group		38.45	4.6		
Experimental	Mid	33.42	4.19	2.79	0.03*
Control group		38.3	4.4		
Experimental	Post	26.25	3.68	3.76	0.005**
Control group		37.67	4.3		

* $p < 0.05$ level of significance ** $p < 0.01$ level of significance

High scores indicate low adjustment according to EAISS material.

The above table 1 shows comparison of Means, S.D and ‘t’ values of the Experimental and Control Groups (R&M) on pre, mid and post intervention classroom adjustment tests. It can be seen from the above table that the Experimental group R pretest mean score was 39.35 & S. D=5.63 whereas the Control Group obtained scores $\mu=40.8$ and $\sigma=5.8$. The obtained ‘t’ value was 0.43 and $p=0.6$ showed insignificant difference between Experimental and control groups R. In mid test the experimental group scored (mean 37.4 &SD=5.2) while control group mean score =38.8, SD=3.8. The t value obtained was 2.32 and $p<0.05$ indicated a significant difference between the two groups. This shows in mid test the adjustments of the experimental R improved due to improved academics. The post test mean scores of experimental group was 26.9 and SD=38.8. The control group mean was same 38.8 SD=4.1. When the two-group means was compared the t test result obtained was $t= 3.56$ and $p= 0.006$ indicating a significant difference between them. The experimental group R showed better classroom adjustments than the control group.

The experimental group M mean scores in pre test was 38.27, SD= 4.25 while control group mean = 38.4, SD= 4.6. The t value was found to be 0.181, $p= 0.85$ indicating no significant differences between the two group. During the mid-test the experimental group M mean= 33.4, SD=4.19 while the control group mean was 38.3 and SD 4.4. The t test revealed significant difference with t value of 2.79 and $p= 0.03$. The experimental group M showed improved adjustments than the control group. The post test scores of experimental group M mean=26.25 SD= 3.68 while control group mean=37.67 and SD= 4.3. When the two means were compared t value obtained was 3.76 and $p=0.005$, which means a significant differences between the two groups. The experimental group M which received intervention improved their academic effecting the class room adjustments. The control group which didn’t receive any intervention showed no improvement in academics or classroom adjustments. Thus, the study concludes that cognitive intervention has effect on class room adjustments of learning-disabled children.

Table 2: Shows Mean differences for pre, mid and post scores of reading skills assessment between experimental group and control group (R)

Group	Term	Mean	SD	t value	p value
Experimental	Pre	42.5	5.3	-1.75	0.08NS
Control group		44.7	6.4		
Experimental	Mid	46.25	5.5	1.1042	0.273NS
Control group		44.75	6.6		
Experimental	Post	52.9	4.75	6.66	0.001*
Control group		45.27	6.22		

$p<0.01$ level of significance, NS- Not significant R= reading disabled

Table 2 gives the comparison of scores of experimental and control group on reading assessment in order to know the impact of intervention on the reading skills. From the results of analysis it was clearly evident that the pre mean score of experimental group was 42.5 (SD=5.5) and control group mean was 44.7 (SD=6.6) did not show significant difference. The ‘t’ value obtained was 1.1 and $p=0.273$. The mid assessment of the mean scores of experimental group was 46.25 and SD= 4.75 whereas the mean scores of control group remained almost same. ‘t’ value was found to be 1.10, not

significant at 0.01 level. However, a significant difference between experimental and control group was not found. Intervention seems to be not effective in both pre and mid condition for improving Reading skills when GLAD was taken.

In post intervention assessment the score of experimental group showed a marked progress (mean=52.9, SD=4.75) whereas the control group mean scores was found to be 45.27 and SD=6.22.

When test of significance was taken into consideration for both the groups the t values in the post test ($t= 6.61$, $p<0.01$) showed a significant difference between the groups. Hence it was clear that cognitive intervention given in experimental group improved the reading skill of dyslexic children.

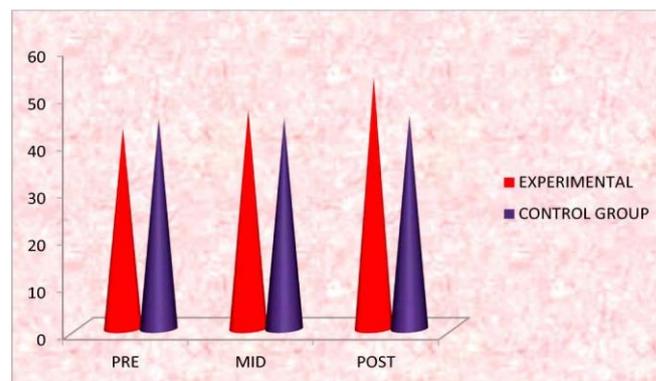


Fig 1: Comparison of mean scores of experimental and control group (R) on reading assessment in three terms

Table 3: Showing Mean, ‘t’ value between experimental and control group (M) Math achievement test

Group	Term	Mean	SD	t value	pvalue
Experimental	Pre	58.17	7.8	1.017	0.3 NS
Control group		56.32	8.5		
Experimental	Mid	62	8.1	3.35	0.04*
Control group		56	7.9		
Experimental	Post	66.75	8.5	5.77	0.001**
Control group		56.16	7.9		

* $p<0.05$ level of significance, ** $p<0.01$ level of significance

The results in the above table 3 shows pretest mean score 58.17 and 7.8 S.D. for the Experimental Group and Control Group mean score of 56.32 and S.D. 8.5. The ‘t’ value was found to be 1.017, $p>0.01$ ($p=0.3$) indicates that there was no significance difference during pre-test between Experimental and Control Groups. However, in the mid interventions the mean scores of Experimental Group was 52 and SD= 8.1 and mean score of Control Group was 56 with SD= 7.9. When the means scores was compared ‘t’ value obtained was 3.35 with $p<0.05$ ($p=0.04$) showing significant difference between the experimental and control groups. In case of post intervention, a mean score of Experimental Group was 66.75 (SD=8.5) and Control Group was 56.16 (7.9). The ‘t’ value was 5.77 and p value 0.001 indicating a significant difference between the experimental and control groups. The study concludes the math experimental group which received cognitive intervention showed a remarkable improvement in Maths achievement. Hence, from Table 2 and 3, it could be concluded that cognitive intervention strategies had significant effect in improving arithmetic skills of the selected sample (3rd Standard children who are having mathematical disabilities).

In a similar study Alireza, B., Prakash, P., and Gowramma, I. P (2010) ^[2] investigated the impact of remedial intervention on students' performance with dyscalculia in teaching addition and subtraction and the study found the significant improvement observed in the experiment group that underwent remedial teaching proved the effectiveness of the remedial program employed in the study.

In another study Melissa, M., (2008) examined the effects of Tier 2 intervention in a multitiered model on the performance of first- and second grade students who were identified as having mathematics difficulties.

Conclusion

The findings of the study reveal that cognitive intervention program focused on class room adjustment of children with reading and math problems of primary school children. The study revealed that after intervention significant differences were found between the two groups, which means the cognitive intervention strategies had significant effect in improving classroom adjustments of students. This indicates improvement in class room adjustment with increase in math and reading performance. so, it can be concluded that cognitive intervention program had positive effect on children with learning disabilities.

Reference

1. Alloway TP, Gathercole's., and Pickering's Verbal and visuo-spatial short term and working memory in children: Are they separable? *Child Development* 2006;77:1698-1716.
2. Alireza Beygi, Prakash Padakannaya, Gowramma IP. A Remedial Intervention for Addition and Subtraction in Children with Dyscalculia. *Journal of the Indian Academy of Applied Psychology* 2010;36(1) 09-17.
3. Diane Pedrotty Bryant *et al.* The Effects of Tier 2 Intervention on the Mathematics Performance of First-Grade Students who are at Risk for Mathematics Difficulties. *Sage Journals* 2008;31(2):47-63.
4. Ema Skeja. The Impact of Cognitive Intervention Program and Music Therapy in Learning Disabilities. *Procedia - Social and Behavioral Sciences* 2014;159:605-609.
5. Nora Schneider. A Combined Dietary and Cognitive Intervention in 3–5-Year-Old Children in Indonesia: A Randomized Controlled Trial. *Nutrients*. 2018;10(10):1394. doi: 10.3390/nu10101394.
6. Supriya Sharma. Effect of Academic Cognitive Remedial Interventions on the Skills of Children with Special Need. *The International Journal of Indian Psychology*. 2018;6(3). ISSN 2348-5396 (e) | ISSN: 2349-3429. DOI: 10.25215/0603.94 <http://www.ijip.in>.