

Effect of Academic Cognitive Remedial Interventions on the Skills of Children with Special Need

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ABSTRACT

The present study was a single-group pre and post-test design study. It was conducted to see the impact of academic remedial interventions on the developmental skills (adaptive, personal-social, communication, motor, and cognitive) of children with special need (CWSN). Ten children with special need were identified through subjective ratings based on teacher's appraisal and attained achievement scores in respective grades and scores attained on Raven's Standard Progressive Matrices (SPM; Raven, Court, & Raven, 1977) during screening. Boys (n = 6) and girls (n = 4) of ages ranging from seven years to fourteen years of age were purposefully selected from Bhopal Manovikas Inclusive & Rehabilitation Center, Bhopal. Skills of CWSN were measured by Malin's Intelligence Scale for Indian Children (MISIC). Quantitative analyses revealed that academic interventions were highly effective in enhancing the developmental skills of CWSN' students as well cognitive intervention.

Keywords: *Children with Special Need, Academic Interventions, Developmental Skills*

The Origin of the term 'children with special needs'(CWSN) and special education is one of the more recently developed areas in the field of education and psychology. The scientific study of this aspect of education can be traced to the beginning of the last century. Whilst children with special needs have always existed, special education programs are a relatively recent development. Considerable controversy exists about the history of this field, and its legal and moral implications (Armstrong, 2003). Defining the Term 'Special Educational Needs' the definition of 'special education' has raised considerable debate among professionals, parents and the individuals directly involved. Certain terminologies have emerged to describe those people needing particular types of education, including: 'exceptional children', and 'children with special education needs'. These children are recognized as having mental, emotional, physical or social needs. Diagnosis may require therapeutic intervention or special care by qualified specialists (Foreman, 2009).

The term 'Children Special Educational Needs' (CSEN) was proposed by the Warnock in an attempt to raise social acceptance of individuals with disabilities, as well as to reconceptualize special education in Britain (Adams, Swain and Clark, 2000). Students with

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Received: March 25, 2023; Revision Received: December 27, 2023; Accepted: December 31, 2023

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below average cognitive abilities whom we cannot term as disabled are called CWSN learners. They struggle to cope with the traditional academic demands of the regular classroom. Actually, CWSN learners are normal students but the problem is that they are simply not interested in studying under traditionally accepted system of education. CWSN Slow learners should not be confused with intellectually impaired students. CWSN learners are also labeled as borderline IQs children, dull, below average children. They are generally CWSN learner when they are faced with tasks requiring abstract, symbolic, and conceptual skills (Lowenstein, 2003).

Research indicates that academically CWSN learners pose significant educational and behavioral difficulties in the schools because of their deficiencies in intellect and psychosocial skills (Anastasia, Elein, & Effi, 2006; Shaw, 2008). This is also well documented that CWSN learners do work at their ability level but below their grade level, which in turn leads to their adjustment problems in mainstream class rooms (Krishnakumar et al., 2006). Their deficit in skills (e.g. inadequate coping mechanisms, poor self-image, immature interpersonal relationships, troubled communications, and inappropriate social role ideology) make them vulnerable or at risk of several psychosocial problems. These problems could only be addressed by incorporating interventional teaching strategies in the inclusive classrooms for their accommodation and to enhance the rate of their adequate psychosocial development i.e., better adult and peer interactions, enhanced receptive and expressive communication, and modesty of self-concept, and social role by expressing logical reasoning and understanding of environmental demands (Anastasia et al., 2006).

Majority of these children, are initially not identified as suppressed learners requiring special education and specifically designed interventions (Shaw, 2008). This is probably because of the fact that they are able to understand things up to some level and do not present serious problems in their functional skills; these children function normally and they have physical agility and adeptness in different situations. Moreover, they also demonstrate common sense and appear to have adequate memory (Mroczka, 2003). However, the typical problems in general cognitive function are more evident, when they are required to perform a task requiring higher mental processes; they fail to accomplish the task, mainly due to deficits in abstract thinking, organizational skills, and generalization of information, which creates hurdles in their academic success (Balado, 2003).

To ensure slow learners' success in schools, their rate of slower learning needs to be accommodated through specifically designed interventions in accordance with their ability level (Shaw, 2008).

METHODOLOGY

Hypothesis

Slow learners will show higher level of cognitive skills in post-test assessment as compared to pre-test assessment.

Sample

CWSN learners ($N = 10$), both boys ($n = 6$) and girls ($n = 4$), were purposefully selected from Bhopal Manovikas Inclusive and Rehabilitation Center, Bhopal. In order to have a homogeneous control sample for comparison, the children were matched for age (07 year to 14 years of age), grade (5th grade), high socioeconomic status (above Rs. 55, 000/- per month), and mother tongue as Hindi. Eight participants were identified as slow learners on the basis of Raven's Standard Progressive Matrices (CPM; Raven et al., 1977) scores i.e.,

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scoring between 10th to below 25th percentile and teacher's appraisal; teacher appraisals based on the consideration of the child performance in curricular and recreational interests and overall academic performance in the class, designated as dull or below average in comparison to class mates.

Tools

- **Demographic data sheet**
- **Raven's Standard Progressive Matrices**
- **Malin's Intelligence Scale for Indian Children**
- **Cognitive interventional plan**

Raven's Standard Progressive Matrices

It was developed by Raven first in 1960. It consists of 60 matrices or designs, from each of which a part has been removed and has been mixed up in the alternatives given below the design. The subject has to choose the missing part from six or eight given alternatives. The items are grouped into five series termed as A, B, C, D and E, each containing 12 matrices of increasing difficulty but similar in principle. The earlier series require accuracy to discriminate the latter; more difficult series involve analogies, figure permutation and alteration of pattern, and other logical relations. The test requires education of relations among abstract items. It is a non-verbal test and has been claimed to be a language-free, education-free and culture-free test. It was administered in groups' setting with no time limit. Percentile norms are provided for each half-year interval between 6 and 14 years and for each five years interval between 20 and 65 years. The scale consists of 60 problems divided into five sets of 12. In each set, the first problem is, as nearly as possible, self-evident. The problems which follow become progressively more difficult. The order of the test provides the standard training in the method of working. The five sets provide five opportunities for grasping the method and five progressive assessments of a person's capacity for intellectual activity.

Administration of the Test for conducting the test

The test booklets and record forms are distributed to the respective group of students. The students are asked to fill in the information at the top of the record form. The testing session are held in respective classrooms with adequate facilities for ventilation and proper setting arrangements. All the necessary instructions are given to the students. Although there is no time limit to administer the test, subjects are asked to complete test as early as possible. (iii) Scoring of the Test The scoring of the Raven's Standard Progressive Matrices is completed with the help of scoring key given in the manual. Each correct answer is awarded one score and zero score is given to the wrong answer. A total single score for each subject is obtained on this test. The necessary percentile scores for the individual and group tests between the ages of 6 and 65 are shown in Table III, IV and V in manual. Slow learners were assessed for their key developmental skills through.

Malin's Intelligence Scale for Indian Children

(MISIC), an adaptation of the Weschler Intelligence Scale for Children developed by in 1966 to assess the cognitive abilities of the child. This is used for children aged 6 to 15 years. This battery comprises 11 sub-tests, 6 of which form the verbal scale and 5 on the performance scale. The tests in the verbal scale include information, comprehension, analogies, arithmetic, vocabulary and digit span. The tests on the performance scale include picture completion, block design, object assembly, mazes and coding. The

neuropsychological functions tapped by the various sub-tests include attention, concentration, working memory, vigilance, recall, mathematical reasoning, judgment, visuo-spatial construction and visual integration. The score on each subtest yields an IQ score for each age group. The reliability of the battery by the test-retest method yielded a Pearson's product moment correlation coefficient of 0.91 for the Full scale IQ results.

Cognitive interventional plan:

The following steps were undertaken to implement the academic and cognitive interventional plan:

- 1. Modification in the curriculum and study material:** The standard curriculum was modified as more pictures books, charts, models, and educational blocks (made of thermopile, plaster of Paris and wood), educational software of games (e.g., rays package of learning aid, old Mac-dot farm etc.), and Puzzles (letter and picture matching exercises in math, English, and Hindi; count and tell, tell before and after, Hundreds, tens, and ones, find the largest number, find the same or spot the different one) with the help of computers, educational rhymes, short stories, crayons, poster colors, and playful dough (clay) along with paper and pencil, were made part of study.
- 2. Modification in classroom environment:** A regular seat change plan was designed to be implementing on weekly basis. Slow learners were stipulated to be sitting in front whereas their peers had a weekly seat change program by rotation. Walls were decorated and painted with teaching material models, charts, pictures, and story characters.
- 3. Modification in time demands:** The deadlines for task completion/performance were designed to be lenient for slow learners as compare to other class fellows i.e., if normal average child needed 5 minutes for one problem solution then 7-8 minutes were given to slow learners.
- 4. Daily good behavior exercise:** In daily routine a 'model good behavior' was exercised through peer role play, which was monitored and nincorporated (imitated) in their routine behavior as a mode of social-skills training and social problem solving exercises. For example "how to take permission", "how to say good morning and good bye", "how to say sorry on your mistakes by accepting them", "how to pay gratitude by saying thank you", etc. These exercises aimed at helping slow learners in resolving problems related to interpersonal communication, problematic relations, and poor initiative taking and motivation issues.
- 5. Differential reinforcement and immediate feedback to reward (every) desirable behavior:** On each successful task accomplishment and initiative, immediate feedback (in form of praise from teacher and clapping from the peers was initiated) and encouragement were made part of intervention plan; to help boost their self-esteem and self-confidence.
- 6. Review of concepts on weekly basis:** At the last working day of week (on Friday's), the week plan was reviewed in a light/fun way with the help of various techniques such as drama, role-play, storytelling, and presentations. This exercise aimed at assisting children to develop associations between concepts with help of pictorial presentation of each concept and models of learning material.

Procedure

Written informed consent from the parent of slow learners was obtained before the start of this intervention program. At first step after sample selection of ten slow learners, baseline measurement (pre-test) of cognitive skills was carried out and slow learners were assessed through SPM and MISIC. At second step, after the completion of the intervention period,

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second baseline measurement (post-test) of cognitive skills of slow learners was taken through implement the academic and cognitive interventional plan. To assess the difference between two baseline measurements as an effect of academic interventions Malin Intelligence Scale for Indian Children test was applied on data.

RESULTS AND DISCUSSION

Table (a): Subtests of Malin's Intelligence Scale for Indian Children

Variables	Pre-Test of Cognitive Skills Slow Learner (n=10)	Post-Test of Cognitive Skills Slow Learner (n=10)	p value
VERBAL SCALE			
Comprehension	6.75	7.78(44)	<0.001***
Analogies	4.06	5.48(45)	<0.001***
Arithmetic	8.56(.49)	9.45 (.53)	<0.001***
Vocabulary	8.4(1.22)	13.34 (1.50)	<0.001***
Digit span	8.1 1(1.2)	9.53(.71)	<0.001***
PERFORMANCE SCALE			
Picture completion	9.3(.93)	11.2(.87)	<0.001***
Block design	4.43 (.36)	4.83 (.40)	1.01
Object assembly	9.77 (1.09)	13.68	<0.001***
Visual retention	9.47 (.99)	12.05 (1.04)	<0.001***
Mazes	8.9 (1.18)	8.6(1.41)	.219
Coding	4.6(1.7)	5.4(1.9)	<0.001***

Statistically significant differences were observed in raw scores on all subscale ($p < 0.001$). Table 1 shows enhanced scores of the slow learners on post intervention stage on all sub domains of MISIC. It appears to be a shift in the ranges of scores on all indices of development of cognitive skills.

CONCLUSION AND IMPLICATIONS

Different instructional strategies used in the academic interventional teaching plan for slow learners were found to be effective in terms of enhancing the cognitive skills level of slow learners. The findings indicate an expected increase in the range of scores on MISIC in post-test, compared to the pre-test scores. Hence, these findings support study assumption that slow learners cognitive threshold can be enhanced after having exposure to academic and cognitive exposed interventions.

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Sharma, S. & Malviya, L. (2023). Effect of Academic Cognitive Remedial Interventions on the Skills of Children with Special Need. *International Journal of Indian Psychology*, 11(4), 3162-3168. DIP:18.01.301.20231104, DOI:10.25215/1104.301