DEVELOPMENT AND USE OF INTERVENTION MODULE FOR CHILDREN WITH DYSCALCULIA

ABSTRACT SUBMITTED
TO
DEPARTMENT OF HUMAN DEVELOPMENT AND FAMILY STUDIES
SCHOOL FOR HOME SCIENCES
BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY
(A CENTRAL UNIVERSITY, LUCKNOW
FOR THE AWARD OF THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

HOME SCIENCE (HUMAN DEVELOPMENT AND FAMILY STUDIES)

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2016

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Title of the thesis	DEVELOPMENT AND USE OF INTERVENTION MODULE FOR CHILDREN WITH DYSCALCULIA
Degree to which it is submitted	DOCTOR OF PHILOSOPHY
Major field	HUMAN DEVELOPMENT AND FAMILY STUDIES
Faculty	HOME SCIENCE
Major Advisor	DR(MRS.) SHALINI AGARWAL
University	BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY LUCKNOW
Year of submission	2016

ABSTRACT

Learning is a step by step, complex, interwoven and multilevel process. It comprises of the process of input, processing and output. Each of these has several essential components. The impairment or dysfunction of any one of these causes problems in learning. Every child is very precious, and needs to be carefully and lovingly nurtured to be able to develop to his or her fullest capacities. There are children with special needs, for whom the nature and intensity of required care is even more significant. They may alternately be trapped behind the wall of institutions; some loveless and ill-equipped, others technically strong, but still segregated from society.

Learning disability (LD) is defined as the brain's inability to receive process, analyze or store information. By definition, individuals were learning disability have near normal to normal intelligence. Such individuals may have difficulty in reading or writing. Learning disabilities are described as two main types: verbal and nonverbal. People with verbal LD, have difficulty with words, both spoken and written. 'Dyslexia' is the most commonly and best known type of learning disability. People with nonverbal learning disabilities have difficulty processing what they see (Lyon et al. 2008)

Dyscalculia is difficulty in learning or comprehending arithmetic such as difficulty in understanding numbers, learning how to manipulate numbers, and learning math's facts. It is generally seen as a specific developmental disorder like dyslexia. Dyscalculia is a mathematical learning disorder where the mathematical ability is far below expected for a person's age, intelligence and education.

While we recognize other definitions of dyscalculia, for our working practices the service will use the following definition of dyscalculia, which is currently recognized by the Department for Education: It is a condition that affects the ability to acquire arithmetical skills". Dyscalculic learners may have difficulty understanding simple number concept, lack an intuitive grasp of number, and have problems learning number facts and procedures. Even if they produce a correct answer, or use a correct method, they may do so mechanically and without confidence.' DfES (2001)

Approximately 6 % of the pupil population suffers from dyscalculia, which is about the same number as dyslexics (LDAM,2005). In Indian context prevalence estimate ranges from 9-39%. Between 3 and 8% of school-aged children show persistent grade-to-grade difficulties in learning some aspects of number concepts, counting, arithmetic, or in related math areas.(Badian NA,1983 & Kosc L,1974) These and other studies indicate that these learning disabilities, or dyscalculia, are not related to intelligence, motivation or other factors that might influence learning. The finding shows that 3 to 8% of children have dyscalculia are misleading in some respects. This is because most of these children have specific deficits in one or a few areas, but often perform at grade level or better in other areas. About half of these children are also delayed in learning to read or have a reading disability, and many have attention deficit disorder (Shalev RS et al. 1993).

Hence the present research was undertaken with the following objectives:
(1) To identify the children having problem in Mathematics.
(2)- To study the awareness of teachers regarding learning disability.
(3)- To develop an intervention module for dyscalculia children .
(4)-To administer and assess the impact of intervention module on identified sample.
(5)-Preparation of booklet for parents and teachers.

The pilot study was accomplished with 33 respondents to check the appropriateness of measuring tools. After that a structured checklist was prepared. This self structured checklist was used to check the awareness of teachers regarding learning disability. To select dyscalculia children Standardized Learning Disability Battery developed by R. L. Bhardawaj and Rajshree Bhargawa was used. It was an interventional study, for pretesting both

questionnaire were applied on 300 school going children and 30 teachers. Children were selected from three different boards: CBSE Board 100, ICSE Board and UP Board 100.Teachers were also selected from three different boards 10 from CBSE Board, 10 from ICSE Board and 10 from UP Board. After pretesting intervention was done on 62 students (31 case and 31 control) up to three months. After the intervention standardized learning disability battery were administered on the selected students to see the impact of intervention module.

The collected data was analyised with the help of different kinds of statistical tools such as mean, standard deviation, one way ANOVA, t-test, Chi-square test, regression, and Z test, for the purpose of drawing inferences form and full fill the objectives of the study.

The findings of the study revealed that during pre-test 42(14%) were having mild dyscalculia and 20(6.7%) had severe dyscalculia. After the administration of intervention module on experimental group 18(85.7%) mild dyscalculic respondents became normal , in case of severe dyscalculia after intervention 6(60%) respondents became normal while 1(10%) respondents had mild dyscalculia and only 3(30.0%) respondents had severe dyscalculia. In control group, 4 (19.0%) students with mild dyscalculia showed an upgradation to normal dyscalculia whereas 3 (14.3%) showed downgradation to severe dyscalculia. In students with severe dyscalculia, no categorical change was observed . On analyzing the data statistically, the change was not significant This proved that intervention is an effective method to bring awareness about mathematics among secondary school students having dyscalculia. Results also showed that there was significant impact of intervention was seen in both boys and girls, significant changes were also found in both age groups .Further computed paired‘t’ test value (16.70) revealed that following intervention, mean marks in cases were 16.39±2.74 as compared to 11.55±3.66 in controls. Statistically, the difference between two groups was significant ($p<0.001$).With respect to change following intervention, it was 4.06±2.26 in cases as compared to 0.07±2.06 in controls. Statistically, the difference between two groups was significant.

Findings also showed that teachers of all boards were aware about the term learning disability. From the results of the study it can be concluded that constant help and support in

form of intervention in schools and at home can bring improvement in children with dyscalculia. Outcomes of the study suggested that dyscalculia requires more intensive and longer attention.