EFFECT OF ACTIVITY BASED INTERVENTION PROGRAMME ON MOTOR SKILLS OF PRIMARY SCHOOL STUDENTS WITH DYSPRAXIA IN DYNAMIC ENVIRONMENT

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ABSTRACT

Early intervention is the most effective form of addressing the special needs of children. Learning disabilities such as autism, Down's syndrome, attention deficit disorder or specific learning disorders like Dyslexia, Dysgraphia, Dyspraxia and Dyscalculia can be addressed effectively with appropriate intervention measures. This paper is an attempt to study the effect of activity based intervention programme on motor skills of primary school students with dyspraxia in dynamic environment. Sample of 60 dyspraxic students from 04 schools was collected through random as well as purposive sampling methods. Data was collected through Teacher's Referral Form, Standard Progressive Matrices and MABC-2 Checklist Findings show the positive effect of activity based intervention programme on motor skills of dyspraxic students in dynamic environment.

KEYWORDS: Dynamic (Active), Motor Skills, Dyspraxia, Intervention Programme

INTRODUCTION

Education has been recognized as a fundamental right by the 86th Constitutional Amendment Act (2002), for all citizens of India including those with disabilities. The National Education Policy (2020) aims to universalize the pre-primary education by 2025 and provide foundational literacy and numeracy for all by 2025. In India, approximately there are ninety million people with various degrees of learning

disability (Fuchs et. al., 2003). Education of the disabled population group is the main concern of all developing countries. National Education Policy (2020) aims at equitable and inclusive education for every child in India.

The domain of learning disabilities is still a grey area in India. There has been a scarcity of remedial programmes for various learning disabilities. Early identification of children with various disabilities is the most crucial step and therefore has been a major topic of discussion in the area of special education for the past few years. The early detection of any type of handicap has received wide support from the field of medicine, psychology and education and it is recognized that early diagnosis and intervention of a specific condition can lead directly to treatment. In India, out of 121 Cr population, 2.68 Cr persons are disabled which is 2.21% of the total population (Census of India, 2011).

About 10% of people have some degree of dyspraxia, while approximately 2% have it severely. If the average classroom has 30 children, there is probably one child with dyspraxia in almost each classroom (Jones, 2005). In addition to motor difficulties; children with dyspraxia may experience low self-esteem, social isolation and poor academic achievement. Dyspraxia may also affect behaviour. Therefore, dyspraxia may affect any or all areas of development may be physical, intellectual, social, emotional, sensory and language as well as may impair the normal process of learning (Udoh and Okoro, 2013).

Dyspraxia is a difficulty with planning movements (Cermak, 1991) and children with dyspraxia are those who, in the absence of physical and/or neurological disorder, have difficulties in control and co-ordination of voluntary motor activity. The condition is developmental rather than acquired" (Brown, 1994). Cermak (1991) defined dyspraxia as "a difficulty in planning and carrying out skilled, non-habitual motor acts in the correct sequence". Dyspraxia is a problem with motor skill development of a child. "This difficulty (Dyspraxia) generally occurs along with some other learning disabilities, and affects the basic functions of the person in his daily routine tasks" (Orton, 1937). The condition may lead to the problems with language, perception and thought. This problem of dyspraxia affects about 6-10 % of all children. The prevalence

rate of dyspraxia is greater than 6-10% because many children with symptoms have never been officially diagnosed (Sayammagaru, 2017).

According to Spache (1976), there are relatively few different treatment methods available, but still there is general disagreement on the effectiveness of each one. So, there is a need to develop an intervention programme that can cater to the motor problems of students with Dyspraxia. It is in this context that the investigators developed a remedial programme for the children who have dyspraxia. A modest attempt was made to study the problems, assessment and management of dyspraxia in regular classrooms to improve the motor performance of students with Dyspraxia.

OBJECTIVES OF THE STUDY

The objectives of the present study were:

- To identify the students with Dyspraxia at primary level.
- To assess the motor skills of students with Dyspraxia at primary level.
- To develop an activity based intervention programme for children with Dyspraxia to improve their motor skills.
- To study the effect of the activity based intervention programme on motor skills of primary school students with dyspraxia.

HYPOTHESES OF THE STUDY

To achieve the objectives of the study, following hypotheses were formulated:

1. There exists no significant differences among the motor skills of students with dyspraxia of experimental group and control group before the implementation of activity based intervention programme in dynamic environment.
2. There exists no significant difference among the motor skills of students with dyspraxia of experimental group and control group after the implementation of activity based intervention programme in the dynamic environment.

POPULATION AND SAMPLE

- **Population:** This study was conducted in only one district of Punjab namely

Nawanshahr. The population of the present study consisted of all the students of Grade III studying in CBSE affiliated English Medium Public Schools of Nawanshahr.

- **Sample:** In the present study, initially the random sampling technique was used to select the schools. At the first stage, the investigator selected four CBSE affiliated English Medium Public Schools from Nawanshahr district randomly. Further, the purposive sampling method was used by the investigator to identify the Dyspraxic children.

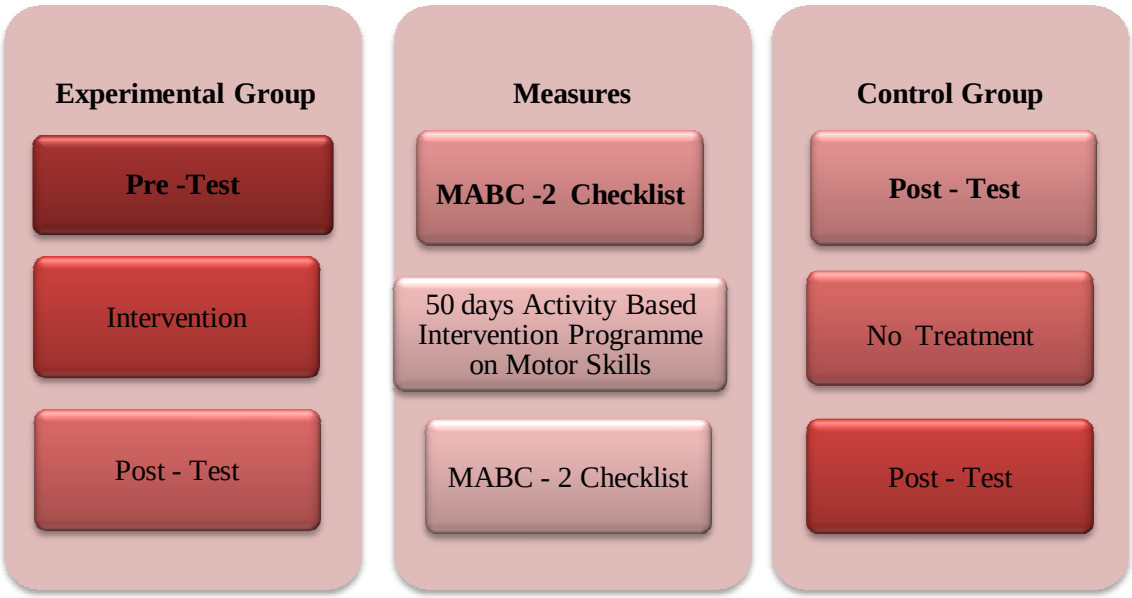
TOOLS USED

Following tools were used to collect the data:

- Raven's Standard Progressive Matrices (SPM)
- Teacher's Referral Form: developed by the researcher.
- MABC-2 (Movement Assessment Battery for Children-2) Checklist

DESIGN OF THE STUDY

In the present study, the pre-test post-test control group design was used.



Following were the four operational stages in the study:

I Identification

II Pre-Testing Stage

III Intervention Stage

IV Post- Testing Stage

Stage I: Identification Stage

The purpose of Identification and Pre-Testing Stage was to identify the students with 'dyspraxia'. This stage included the following phases:

- **Phase I:** Screening the students having problems with motor skills on the basis of Teacher's Referral Form.
- **Phase II:** Assessing the level of Intelligence Quotient of referred students on the basis of Standard Progressive Matrices (SPM).
- **Phase III:** Identification of Dyspraxic Students.

On the basis of above criteria of identification of dysraxic students, the description of prevalence rate of dyspraxia among the primary school students is given in the following table:

Table -1

Prevalence Rate of Dyspraxia

Name of the School	Total No. of Students in Grade III	Students Referred by the Class Teacher	No. of Dyspraxic Students	Percentage of Dyspraxic Students
KC Public School, Nawanshahr	121	**27**	**15**	12.4
KC Global Public School, Dhagam, Nawanshahr	97	**24**	**12**	12.4
BM Public School, Banga , Nawanshahr	102	**25**	**13**	12.7
Guru Ram Das International Public School, Nawanshahr	176	**29**	**22**	12.5
Total	**496**	**105**	**62**	**12.5**

The result of this stage shows that the prevalence rate of dyspraxia among Grade III students is 12.5% which is above the rates of prevalence found in most of the related studies. Meachon (2018) concluded that dyspraxia is a condition prevalent in approximately 10% of the main population of the United Kingdom. According to Gibbs et.al. (2007) dyspraxia is a hidden problem. The estimated prevalence rate is approximately 10%. Sayammagaru (2017) concluded that this problem of dyspraxia affects about 6-10 % of all children. The prevalence rate of dyspraxia is greater than 6-10% because many children with symptoms have never been officially diagnosed.

Stage II: Pre-Testing Stage

After identification of students with dyspraxia and formation of experimental and control groups, the next stage was to compare the motor skills performance of students of both the groups. It was compared on MABC-2 Checklist to find out whether there was any significant difference between the mean performances of both the groups. The scores of MABC-2 obtained during the identification phase were taken as pre-test scores.

Mean Differentials of Motor Skills Scores of Experimental and Control Groups in Dynamic Environment (Pre- Testing)

The mean differentials (t-test) of experimental group and control group on MABC-2 Checklist were calculated before the implementation of the intervention programme in dynamic environment. These values are shown in the following table:

Table – 2

Significance of Difference between Mean Scores of Experimental Group and Control Group in Dynamic Environment on MABC-2 Checklist (Pre-Testing)

Groups	N	Mean	S.D.	t-value
Experimental	30	31.53	5.31	1.25*
Control	30	28.83	4.71	

*Not Significant at 0.05 level

It is evident from the table - 2 that the means of pre – test scores of experimental group and control group on Movement Assessment Battery for Children-2 Checklist in

dynamic environment are 31.53 and 28.83 respectively with standard deviations (SDs) 5.31 and 4.71 respectively. The calculated 't'- value is recorded as 1.25 that is much below the t- value at 0.05 level of confidence. Hence, there exists no significant difference between the mean performances of both the groups in dynamic environment on 'MABC-2 Checklist' before the implementation of the intervention programme in motor skills. It means that whatever difference between their mean scores exists; they are only due to chance factor.

Comparison of Mean Scores of various Movement Areas of Motor Skills of Experimental and Control Groups in Dynamic Environment (Pre- Testing)

The pre-test mean scores of various movement areas of motor skills of students of the experimental and control groups in dynamic environment were compared. Results are shown in the table-3.

Table – 3

Significance of Difference between Mean Scores of various movement areas of Experimental Group and Control Group on MABC-2 Checklist in Dynamic Environment (Pre-Testing)

Area	Group	N	Mean	S.D.	t-value	Level of Significance
Self-Care Skills	Experimental Group Control Group	30 30	10.47 8.8	1.78 1.62	1.3*	*Not Significant
Ball Skills	Experimental Group Control Group	30 30	11.07 10.67	2.05 1.51	0.84*	*Not Significant
Recreational Skills	Experimental Group Control Group	30 30	9.97 9.17	2.40 2.02	1.38*	*Not Significant

Table 3 reveals that the means of pre-test scores for self – care skills of experimental and control groups in dynamic environment are 10.47 and 8.8 respectively and standard deviations are calculated to be 1.78 and 1.62 respectively. The 't' value is calculated as 1.3 indicating a non significant difference in self – care skills of experimental and control groups before the implementation of Activity based Intervention Programme. Further, the means of pre-test scores for ball skills of experimental and control group in

dynamic environment are 11.07 and 10.67 respectively and standard deviations are 2.05 and 1.51 respectively. The obtained 't' value is 0.84 which shows a non significant difference in ball skills of experimental and control groups before the implementation of Activity based Intervention Programme at 0.05 level of significance . Also, the means of scores for recreational skills of experimental and control groups during pre – testing in dynamic environment are 9.97 and 9.17 respectively and standard deviations are 2.4 and 2.02 respectively. The obtained 't' value is 1.382 indicating no significant difference in recreational skills of experimental and control groups before the implementation of Activity based Intervention Programme at 0.05 level of significance. This indicates that before implementation of Activity based Intervention Programme there exists no significant difference in motor skills of the students with dyspraxia in dynamic environment.

Stage III: Intervention Stage

After pre-testing stage, the investigators developed and implemented the 'Activity Based Intervention Programme' for improving motor skills of students with dyspraxia. The duration of the whole programme was 50 days. The experimental group was taught through this activity based intervention programme for Gross and Fine Motor Skills in dynamic environment. This programme comprised of different activities based on various remedial strategies. The duration of each activity was not fixed. Different instructional strategies and various kinds of study materials, sports materials as well as other daily routine materials were used during the sessions.

Stage IV: Post-testing Stage

After the completion of the intervention programme, the following tests were re-administered to the experimental group and control group to study the effectiveness of Activity Based Intervention Programme on motor Skills of the students with dyspraxia in dynamic environment.

Comparison of Motor Skills of Experimental and Control Group Students in Dynamic Environment (Post - Testing)

The post- test mean scores of the experimental group and control group were compared to find out the impact of treatment measure i.e. 'Activity Based Intervention

Programme' on motor skills performance of students with dyspraxia in Dynamic Environment.

Table – 4

Significance of Difference between Mean Scores of Experimental Group and Control Group in Dynamic Environment on MABC-2 Checklist (Post-Testing)

Group	N	Mean	S.D.	t-value
Experimental Group	30	18.53	2.81	10.19*
Control Group	30	28.46	4.38	

* Significant at 0.01 level

Entries in the table-4 show the mean differentials (t-test) of experimental group and control group in dynamic environment on Movement Assessment Battery for Children-2 Checklist during post testing. From the table, it is clear that mean and standard deviation for experimental group are found to be 18.53 and 2.81 respectively. Likewise, the mean and standard deviation for control group are found to be 28.46 and 4.38 respectively. 't'-ratio is calculated as 10.19 which is greater than the 't'- value at 0.01 level of significance. This shows that the obtained 't'- value is significant at 0.05 and 0.01 levels of confidence. Therefore, it is clear from the results that mean scores of experimental group and control group differ significantly on Movement Assessment Battery for Children-2 in Dynamic Environment after the implementation of the intervention programme. Also, the post- test mean score of experimental group on 'Movement Assessment Battery for Children-2' Checklist is low in comparison to post – test mean score of control group. It indicates that the students of experimental group have performed better in dynamic environment after they were exposed to intervention programme.

Comparison of Mean Scores of various Movement Areas of Motor Skills of Experimental and Control Groups in Dynamic Environment (Post- Testing)

The post-test mean scores of various movement areas of motor skills of students of the experimental and control groups in dynamic environment were compared. Results are shown in the following table:

Table – 5

Significance of Difference between Mean Scores of Experimental Group and Control Group in various movement areas on MABC-2 Checklist in Dynamic Environment (Post-Testing)

Area	Group	N	Mean	S.D.	df	t-value	Level of Significance
Self-Care Skills	Experimental Group	30	6.03	1.75	58	7.26	Significant at 0.01 level
	Control Group	30	8.83	1.18			
Ball Skills	Experimental Group	30	6.7	1.62		8.51	Significant at 0.01 level
	Control Group	30	10.36	1.71			
Recreational Skills	Experimental Group	30	6.03	1.47		7.49	Significant at 0.01 level
	Control Group	30	9.3	1.89			

Table-5 illustrates that the means of post - test scores of self – care skills of experimental and control group in dynamic environment are 6.03 and 8.83 respectively and standard deviations are 1.75 and 1.18 respectively. The obtained 't' value is 7.26 indicating a significant difference in self–care skills of experimental and control groups in dynamic environment after the implementation of activity based intervention programme. Further, the post – test mean scores of ball skills of experimental and control groups in dynamic environment are 6.7 and 10.36 respectively and standard deviations are 1.62 and 1.71 respectively. The obtained 't' value is calculated as 8.51 indicating a significant difference in ball skills of both the groups in dynamic environment after the implementation of activity based intervention programme. The means of post – test scores of recreational skills of experimental and control groups in dynamic environment are 6.03 and 9.3 respectively and standard deviations are 1.47and 1.89 respectively. The obtained 't' value is 7.49 indicating a significant difference in recreational skills of experimental and control groups after the implementation of Activity Based Intervention Programme. This indicates that the Activity Based Intervention Programme leads to significant increase in motor skills of the students with dyspraxia in dynamic environment.

CONCLUSION

The findings of the present study show that the motor skills performance of the students of experimental group has improved in dynamic situations. The reason may be that the activities planned for the Motor Skills were related to their day to day life experiences and the students were involved in the various physical activities, self-care, various class activities and recreational activities etc. during the intervention programme. Many studies support the results of the present study. Jackson (1999) suggested that 'Sensory Stimulation Protocol' had an effect on the Motor Skills of the students with dyspraxia. He suggested the intervention focusing on the ability of the subjects by teaching strategies that facilitate the motor plans. Similarly, Revie and Larkin (1993) did a study on children with poor motor coordination and administered Task – Specific Intervention on these children with poor motor skills. The experiment resulted in significant gain for all the groups. Also, in a study conducted by McGlashan et al. (2017) on children of age group 8 to 10 years, the students in the intervention group showed improved manual dexterity on MABC-2 and children in the control group showed no improvement in the manual dexterity on MABC-2.

Motor skills problems are common. Dyspraxia was thought to be incurable but fortunately, early diagnosis, educational support and required treatment can help the affected individual overcome their motor skills problems. In a nutshell, it is evident from the results that activity based intervention programme has helped the students with dyspraxia in enhancing motor skills in the dynamic environment.

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