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A STUDY OF MECHANICAL APTITUDE AMONG STUDENTS WITH LEARNING DISABILITIES AND WITHOUT LEARNING DISABILITIES

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Abstract

In the present study, the researchers attempted to assess and compare mechanical aptitude among students with learning disabilities and without learning disabilities. Descriptive method was used in the study. Sixty samples consisting of thirty students having learning disabilities and another thirty students without learning disabilities. It was with the help of Block Resource Centre (BRC) that the researchers selected the students with learning disabilities. Descriptive statistics, independent 't' test and ANOVA were used to analyse the data. Result reveals that, the mechanical aptitude of the students with learning disabilities is higher than the students without learning disabilities. The gender is an influencing factor in mechanical aptitude of students. The age is not a determining factor in mechanical aptitude of students with learning disabilities. The classes in which they are studying have no significant influence in the mechanical aptitude of students with learning disability.

INTRODUCTION

Learning disability is one of the major disabilities discussed in the world today. And unless we identified this disability in its initial stage, then it will adversely affect the future life of the child. The defects which occur in basic mental process related to learning can be considered as learning disabilities. The defect which is expressed in various learning process like listening, thinking, talking, memory power, reading, writing, pronunciation, mathematical skills, understanding the things are the best examples of learning disabilities.

Many celebrities, famous figures from history struggled with learning disabilities such as Alexander Graham bell, Thomas Alva Edison, and Albert Einstein. The mentioned figures became famous through their inventions. From this what we can understand is that these people with learning disabilities had high mechanical ability too. Mechanical ability means that one can understand mechanical principles, devices and tools and the everyday physics that make them work, and also possess the ability to reason and understand the direction or movement or gears in a system. In addition, one can see the patterns of moving parts in engines and machines.

As the investigators closely related with the disability studies, they are very much interested in class room teaching of children with special needs and also concerned with academic achievement of the exceptional children. And hence the researchers decided to conduct a study of the mechanical ability of normal children and the children with learning disabilities.

NEED AND SIGNIFICANCE OF THE STUDY:

In the early 1960s we shared the frustration of many of clinical and teaching professionals who recognized the distinctive problems and needs of the learning disabled child but found little help or guidance either in theory or in applied techniques. In subsequent years we progressed through a number of research experiences, trying to discriminate fact from fiction and perceive order in chaos. It has to be continued to use our specialized training to improve the efficiency of youngsters with specific learning disabilities.

In previous years many studies have been done in this area. The symptoms of learning disabilities can be seen in a child from his childhood onwards (6-7). Even though learning disabilities cannot be cured completely, but a child can overcome it to a certain extent through proper training.

Researchers selected this topic for various reasons. Mainly, a very limited number of studies have been done regarding the mechanical ability of children with learning disability. And no attempt has been made to construct a proper tool to assess the mechanical aptitude of children with learning disabilities so far.

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If it is possible to find out the mechanical aptitude of children with learning disabilities then it will enable to develop a particular curriculum and teaching strategies for children with LD. Children with learning disabilities often remained unidentified in many schools and are treated in a derogatory way in class rooms.

OBJECTIVES OF THE STUDY

1. To assess the mechanical aptitude in children with and without learning disabilities
2. To analyze the mechanical aptitude in children with learning disabilities with regard to their gender.
3. To analyze the mechanical aptitude in children with learning disabilities with regard to their age.
4. To analyze the mechanical aptitude in children with learning disabilities with regard to their class of study.

HYPOTHESES OF THE STUDY

1. There will be no significant difference in mechanical aptitude among children with and without learning disability.
2. There will be no significant difference in mechanical aptitude among children with regard to their gender.
3. There will be no significant difference in mechanical aptitude among children with regard to their age group.
4. There is will be no significant difference in mechanical aptitude among children with regard to their class of study.

METHODOLOGY

Descriptive research method was adopted for the investigation. Random sampling techniques were used in the study.

Sample of the Study:

Sample size of the present study is 60. Samples were selected from high schools in Kottayam district. Among them 30 were normal boys and girls and 30 were learning disabled boys and girls belonged to the age group of 12-15 yrs.

Exclusion:

Children with Psychiatric disorder, Mental retardation, Visual impairment, Hearing impairment, and intractable major physical illness.

Tools Used:

- Personal Data Sheet
- Mechanical Aptitude Scale (Differential Aptitude Scale)

Statistical Techniques Used:

Descriptive statistics (Mean, Standard division etc), 't' test and ANOVA.

ANALYSIS AND INTERPRETATION OF THE DATA

Table 1. Mean Values, Standard Deviation and 't' Value of Mechanical Aptitude among Normal Students and Students with Learning Disabilities

Group	N	Mean	SD	t value
Normal	30	11.41	5.05	7.342**
Learning Disability	30	25.38	9.11	

** Significant at 0.01 level

Table 1 indicates that the mean value of normal group is 11.41 and standard deviation is 5.05. The mean value and standard deviation of the learning disabled group are 25.38 and 9.11 respectively. The 't' value obtained is 7.342, which is highly significant at 0.01 level. It shows that there is high significant difference in the mechanical aptitude among children with and without learning disabilities. Hence the null hypothesis ('there will be no significant difference in mechanical aptitude of children with and without learning disabilities') is rejected. The mechanical aptitude of the students with learning disabilities is higher than the normal students.

Table 2. Mean Values, Standard Deviation and 't' Value of Mechanical Aptitude among Students with Learning Disabilities with respect to their Gender

Gender	N	Mean	SD	t value
Male	14	30.60	5.90	3.44**
Female	16	20.81	9.08	

** Significant at 0.01 level

The table 2 shows the mean, standard deviation and 't' value of the mechanical aptitude of learning disabled students with respect to their gender. The mean value and standard deviation of male group are 30.60 and 5.90 respectively, and mean value and standard deviation of female group is 20.81 and 9.08 respectively. From the test of significance, 't' value obtained is 3.44 which is significant at 0.01 level. The null hypothesis ('there will be no significant difference in the mechanical aptitude of children with regard to their gender') is rejected. It reveals that the gender is a significant influencing factor in the mechanical aptitude of children with learning disabilities. Hence we can conclude from the study, that the males have high mechanical aptitude than females.

Table 3. Mean Values and Standard Deviation and 't' value of Mechanical Aptitude among Learning Disabled Students with Respect to their Age

Age	N	Mean	SD	't' value
12-13	12	23.70	6.92	.817
14-15	18	26.50	10.35	

Table 3 shows the mechanical aptitude of learning disabled students with respect to their age. The mean value is 23.70 with a standard deviation of 6.92 in the age group of 12-13. In the second age group 13-14, the mean value is 26.50 and standard deviation is 10.35. The test of significance shows that there is no significant difference between the mechanical aptitudes of learning disabled students of these two age groups. Thus the null hypothesis is accepted and it reveals that age is not an influencing factor of the mechanical aptitude in learning disabled students.

Table 4. Mean Values and Standard Deviation of Mechanical Aptitude of Learning Disabled Students with respect to their Class of Study

Class	N	Mean	Standard deviation
VII	8	27.68	8.02
IX	15	25.00	8.75
X	7	23.57	11.65

Table 4 shows the mean and standard deviation of the mechanical aptitude of students with learning disabilities with respect to their class of study. For the 1st group (8th std) the mean value obtained is 27.68 and standard deviation is 8.02. In the 2nd group (9th std) the mean value and standard deviation are 25.00 and 8.75 respectively. The 3rd group (10th std) possess mean value of 23.57 and standard deviation 11.65.

Table 5. Summary of ANOVA of Mechanical Aptitude of Students with LD with respect to their Class of Study

Source of variation	Sum of squares	df	Mean square	F
Between Groups	67.65	2	33.82	
Within Groups	2340.18	27	86.67	.390
Total	2407.84	29		

As per the table 5 the F value in .390 which is not significant and hence the null hypothesis is accepted. It reveals that the class of study is not an influencing factor for the mechanical aptitude of children with LD.

FINDINGS OF THE STUDY

- The mechanical aptitude of the students with learning disabilities is higher than that of the students without learning disabilities.
- The gender is an influencing factor in the mechanical aptitude of the students. It also proves that the boys have higher mechanical aptitude than girls.
- The age is not a determining factor in the mechanical aptitude of the students with learning disabilities.
- The classes in which they are studying have no significant influence in the mechanical aptitude of students with learning disabilities.

CONCLUSION

This study was an attempt to investigate the mechanical aptitude of the students with learning disabilities. From the present study, we can understand that the mechanical aptitude of the students with learning disabilities is high when it compared to the students without learning disabilities. The gender plays very important role in the mechanical aptitude of the students. That is the male and female students with learning disabilities exhibits high mechanical aptitude than students without learning disabilities.

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