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## Comparison of the experimental and control groups with respect to pre-test, post-test and gain scores on achievement in English

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### Abstract

Every person has a basic need for education. Through education, one can develop or mature in all spheres of life, including the social, economic, intellectual, physical, and psychic. Only an educated populace can spur a country's development. Every nation works arduously to educate all of its people. In order to educate all of its residents, Universalization of Elementary Education was established in India. In the last 60 years, this field has experienced significant expansion. Does this education empower all citizens in the same way, including those who are able and those who are disabled? It is in fact a contentious topic. Others object that particular groups, such as persons with disabilities, are overlooked when others claim that everyone should receive an education to enable them to stand on their own two feet, or to earn a job. The goal of "education for all" is still a long way off, and for people with learning disabilities, it is even further away. With a population of over a billion, a nation like India frequently experiences issues like unemployment, illiteracy, and poverty. It is challenging to educate a normal child in such a large population and in such extreme poverty; hence, raising special needs children is incredibly challenging. Many kids exhibit typical behaviour yet perform poorly academically compared to their peers.

**Keywords:** Academic achievement, experimental and control groups

### Introduction

The goal of "education for all" is still a long way off, and in India, it is much further away for those with disabilities. According to a recent study by the National Centre for Promotion of Employment for Disabled People (NCPEDP), only 1.2% of disabled people in India have received any kind of schooling. NCPEDP discovered that, of the 89 schools it surveyed, 34 lacked even a single impaired student, and regrettably, 18 of them had a policy against admitting such students.

Children with specific learning disabilities are those who display an educationally significant gap between their predicted intellectual potential and actual level of performance, according to Bateman (1965). The major characteristics of LD are: (a) a clear discrepancy between expected and actual levels of achievement; (b) people with ordinary to above average intelligence; and (c) the lack of sensory abnormalities.

Since it just recently began, the LD movement in India has grown to rival its Western equivalent. Western academics have attributed reports of lower rates of LD in the East to a

general lack of understanding and sensitivity among educators to the unique challenges faced by children learning to read in packed classrooms. According to the Nalanda Institute report, awareness and identification of children with LD have grown in India during the past two decades or more. India still lacks a thorough understanding of the incidence and prevalence of LD despite this increased interest. Epidemiological studies of LD are unfortunately difficult to conduct due to issues with sociocultural aspects specific to India as well as the definition, identification, and assessment of LD.

Around 13–14% of Indian schoolchildren have a learning problem. Unfortunately, the majority of the schools do not listen to their difficulties with compassion. These kids are labelled as failures as a result. The first step in dealing with these issues and overcoming them should be early discovery, acceptance by parents, widespread awareness among academic communities, and most importantly, a mature approach to the issues (Sakhuja, 2004). It is no secret that many students find the process of learning to be painful and draining. Numerous factors, including

insufficient prior knowledge, bad study habits, difficulties staying focused, cultural or linguistic disparities, and the presence of a hidden disability called a learning disability, make learning more challenging. Learning settings frequently leave students with learning disabilities feeling overwhelmed, impatient, and disorganised. When a student struggles with their memory, their capacity to perceive information visually or audibly, their ability to follow instructions, or their ability to complete activities using paper and pencil, learning may become a nightmare (i. e., writing compositions, note taking, doing written homework, taking tests etc). The dread of failure that these students themselves experience is another issue that makes things difficult for them. Due to their past academic difficulties, these students may think they are incapable of learning, that schoolwork is simply too difficult and not worth the effort, or that their success is solely the result of chance. They might not immediately see the link between their actions, their efforts, and their academic performance. This unfavourable mindset concerning their capacity for learning and the nature of learning itself may have long-lasting effects on their academic performance. Therefore, developing these kids' self-confidence for achievement is the most crucial responsibility in providing for them. This can only be accomplished if and when kids succeed in their academic endeavours, so any intervention plan should concentrate on teaching the most fundamental abilities like reading, writing, and math. As a scientific educator, the investigator is of the opinion that a child with a learning disability can only benefit from instruction that starts with language and maths, which are fundamental to learning science. In order to improve the academic performance of primary school students with learning disabilities, a study is therefore planned.

### Significance of the study

'Education for everyone' is still a distant idea and in India it is even more remote for disabled people. A new survey conducted by the National Centre for Job Promotion for Disabled People (NCPEDP), revealed that only In India, the percentage of disabled people had some sort of education. NCPEDP found that out of the 89 schools, 34 did not have a single disabled student and, sadly, 18 of them had a policy against admission (as cited in Sakhuja, 2004) in their attempt to have an all-India school level survey.

Children with particular learning difficulties are described by Bateman (1965) as those who display an educationally relevant difference between their expected intellectual ability and actual performance level. The key characteristics of LD are: (a) a distinct difference between the predicted degree of accomplishment and what is currently being done (b) people with average or above average intelligence (c) lack of sensory disability.

India's LD movement is of recent origin and is comparable today to that of its Western counterpart. Western scholars have attributed evidence of lower LD incidences in the Eastern world to the general lack of knowledge and sensitivity among educators about the particular difficulties children face in learning to read in overcrowded classrooms. The Nalanda Institute study highlighted that there has been an growing understanding and recognition of children with LD in India over the last two decades or so (Sakhuja, 2004).

India still does not have a good idea about the incidence and prevalence of LD, despite this increasing concern. Sadly, LD epidemiological studies are fraught with problems ranging from the Identification, evaluation, very meaning of LD, to socio-cultural factors special to India.

### Materials and Methods

The study sample was for primary school students in the Kerala. For gathering pertinent information for the current investigation, survey and experimental methods were employed. For the purpose of identifying primary-aged children with learning disabilities, the survey approach was used. The most effective way for determining the efficacy of the created Multi Sensory Strategy was discovered to be the experimental method (MSS). The before test-post test non-equivalent design was the experimental strategy adopted in the current study. Primary school kids in the Kottayam District served as the study's sample population. By giving the Diagnostic Test for Learning Disability (DTLD), Intelligence Test, Achievement Motivation Scale, and Learning Problem Checklist to the entire sample, 66 kids with learning disabilities were found for the experiment. The pupils who were found to have learning disabilities were split into an experimental group and a control group. The control group received instruction using the conventional activity-oriented method, while the experimental group received instruction utilising the developed Multi Sensory strategy (MSS) (CAOM). The students in both groups took the standardised academic achievement assessments as pre-tests before the experimental therapy began, and the same tests were taken again as post-tests.

Data analysis is the methodical application of logical and/or statistical approaches to describe and demonstrate, summarise and assess, and assess data. The appropriate and accurate analysis of study findings is a crucial part of preserving data integrity. Inadequate statistical analyses distort scientific results, confuse casual readers, and may have a detrimental impact on how the general public views research. The data are described by the descriptive statistics. They do not make inferences about the data, but they can provide the researcher with information about the variable's central tendency, or the typical participant performance on a particular study measure. The researcher can also determine the range in which scores appear or the distribution of scores on a particular study measure. Descriptive statistics can also be used to inform the researcher about how frequently particular replies or scores appear on a particular study measure.

By using inferential statistics, the researcher was able to start drawing conclusions about the hypothesis from the gathered data. This indicates that the researcher is drawing inferences about the entire population while using inferential statistics to analyse the data. Inferential analysis seeks to infer characteristics of populations from observations of samples (Best and Kahn, 2004). Inferential statistics look for patterns that might exist in the target population by extrapolating beyond the study's data.

The main goal of this study is to determine whether the established Multisensory method has a positive impact on the academic performance of primary school students with learning disabilities. A pre-post non-equivalent group design

with one experimental and one control group was used in the study. The conventional activity-oriented method (CAOM) and the multisensory strategy (MSS) were used, respectively, to teach the experimental group and the control group. 60 pupils were selected from the identified learning impaired students as samples for the experimental therapy, 30 for the experimental group and 30 for the control group. In order to compare student achievement before and after the experiment, the researcher created standardised academic achievement exams, which were utilised as pre-tests and post-tests. The efficiency of the Multi Sensory Strategy was determined by comparing the difference between the pre-test and post-test scores using the appropriate statistical methodologies (MSS). The next sections include the results of the analysis done in this regard.

**Variables used in the study**

Variables of science are scientific variables that can assume various values and impact the outcomes of experimental study. The independent variables are the conditions or features manipulated or regulated by the experimenter in his or her attempt to determine their relationship to observed phenomena. The dependent variables are the circumstances or features that, as introduced by the experimenter, appear, vanish or change. The independent variables in the present analysis are the teaching strategies, Multi Sensory Strategy (MSS), Traditional Activity Based Approach (CAOM), and Academic Achievement is the dependent variable.

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**Basic level**

In Kerala, the term "primary level" refers to the first through eighth standards of education. Students in standard VI were chosen by the researcher as the representative group for the current investigation.

**Results and Discussion**

The pre-test, post-test, and gain scores of the experimental and control groups were compared and are reported in the following headings in order to determine the effectiveness of Multi Sensory Strategy (MSS) on the English Achievement of Students with Learning Disabilities.

Using the t-test, compare the pre-test, post-test, and gain scores of the experimental and control groups on the achievement in English scale.

Using ANCOVA, compare the post-test Achievement in English scores between the experimental and control groups. Comparison of the experimental group's post-test Achievement in English results by gender. Below is a list of the analyses done in each heading.

**Genuineness of the mean difference in achievement in English of experimental and control groups**

By merely comparing the post-test scores, it cannot be inferred that the students in the two groups significantly differed in their performance on the post-test because the two groups chosen for the study were non-equivalent groups

and their means of achievement in the pre-test scores varied slightly.

Furthermore, the use of the Multi Sensory Strategy (MSS) by itself cannot account for the experimental group's students' higher post-test scores than those of the control group's pupils. In this situation, it was necessary to analyse the data using the statistical method known as Analysis of Covariance (ANCOVA), which allows for comparison of the two groups' baseline status differences.

The ideas of partial correlation are applied to analysis of covariance (ANCOVA). It is especially suitable when it is discovered that the subjects in two or more groups differ on pre-test or other starting variables. The results of the adjusted means of the post-test scores were compared after the effects of the pre-test and other pertinent variables were partially eliminated in this instance. Thus, the analysis of the current study justifies the use of the statistical approach ANCOVA.

**Comparison of the post-test scores on achievement in English of the experimental and control groups using ANCOVA**

With the aid of one-way ANCOVA, the English Achievement of the Experimental Group and Control Group were analysed. This was done to compare the Multi Sensory Strategy (MSS) to the Conventional Activity Oriented Method (CAOM) in terms of how well the learning disabled children performed in English.

**The sub-heads provide the ANCOVA statistical technique**

- Analysis of Variance
- Covariance Analysis
- Comparison of Adjusted Mean Scores

**Analysis of variance**

Total sum of squares, mean square variances, and F-ratios for the pre- and post-test English achievement scores of the Experimental and Control groups were computed in this section of the analysis. The Analysis of Variance table for the learning disabled kids who were members of the experimental and control groups is shown in table -1 below for the pre-test scores (x) and the post-test scores (y).

**Table 1:** Summary of analysis of variance of the pre test and post test scores on achievement in English of students in the experimental and control groups with learning disability

Source of Variation	df	SSx	SSy	MSx(vx)	MSy(vy)
Among Means	1	0.244	649.227	0.244	649.227
Within Groups	59	439.879	673.758	6.875	10.527

$F_x = 0.035$   $F_y = 61.67$

For df 1/59, the table value of F is 3.99 at the 0.05 level and 7.05 at the 0.01 level.

The calculated result,  $F_x = 0.035$ , is lower than the number in the table and, even at the 0.05 level, is not significant. It demonstrates that there is no discernible difference between the academic achievement pre-test scores. The calculated result,  $F_y = 61.670$ , exceeds the value in the table and is significant at the 0.01 level. Therefore, it may be said that there are significant post-test score differences between the Experimental and Control groups.

**Comparison of adjusted mean scores**

The significant F ratio requires that the difference be tested individually using the "t" test. Students in the experimental and control groups had their post-test scores adjusted means (y means) calculated. The significance of the variations between the corrected y means was evaluated. Table -2 presents the information and findings.

**Table 2:** Data for adjusted means of post test scores on achievement in English of students in the experimental and control groups with learning disability and results of test of significance

Group	N	Mx	My	My.x	't'
Experimental	30	15.305	23.123	23.074	10.156
Control	30	15.183	16.848	16.899	

At the 0.01 level, the calculated t value of 10.156 is significant. It demonstrates that for students with learning disabilities, the Multi Sensory Strategy (MSS) may be more effective than the Conventional Activity Oriented Method (CAOM) for English Achievement. Additionally, the MSS Group's adjusted mean English achievement score is 23.123, which is much better than the CAOM Group's adjusted mean English achievement score of 16.848. It denotes a large disparity between the MSS Group and CAOM Group's adjusted mean Achievement in English scores. The key finding from the study above is that teaching using the Multi Sensory Strategy (MSS) may have enabled the experimental group to outperform the control group who were taught using the Conventional Activity Oriented Method (CAOM) in terms of English Achievement.

**Conclusion**

The main goal of research is to examine data that will improve comprehension and identify effective procedures or goods for which there is already a body of prior knowledge created by other researchers. When planning, conducting, interpreting, and reporting their research, researchers frequently turn to the professional literature as a primary resource. Children with learning disabilities generally struggle because although having normal intelligence, they cannot follow the teaching methods used by their teachers. According to Kishore, if a child is unable to learn using traditional methods, then teach that child how he or she learns best. However, because kids with learning disabilities are seen as having normal intelligence, even parents and teachers anticipate that they will succeed without any further support. Teachers are becoming more conscious of the need for this extra attention as learning disabilities have gained prominence in recent years. Still, the majority of them are unsure about what or how it should be delivered. As a result, the researcher works to create a multisensory strategy that will serve as a manual for aiding kids with learning disabilities.

Due to their lack of social development, four elementary-aged resource LD students (3M/1F) were chosen for the study by teacher and parent referral. Each child's target behaviours were chosen based on how well they supported good peer interaction. A 12-week intervention was offered throughout the spring semester. After nine weeks in the autumn semester, follow-up was conducted. Discussion, clarification, prompting, corrective feedback, verbal rehearsal, and systematic desired behaviours across each of

the trained environments were all used during the training by the LD teacher in the resource room, and it was shown that the target behaviours could be generalised to environments other than those trained. Over the course of the final observation, subjects also demonstrated a high level of mastery in the skill of interest.

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