Chapter VI

SUMMARY AND CONCLUSIONS

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SUMMARY AND CONCLUSIONS

The purpose of the present study was to find out the effectiveness of the developed Multi Sensory Strategy on academic achievement of primary school students with Learning Disability. A brief summary of the study along with the major findings and conclusions arrived at, implications of the study and suggestions for further research are presented in this chapter.

6.1 Study in Retrospect

An overview of the various stages in the present study is given in the following heads.

6.1.1 Statement of the Problem

The present study is entitled “EFFECTIVENESS OF A DEVELOPED MULTISENSORY STRATEGY ON ACADEMIC ACHIEVEMENT OF CHILDREN WITH LEARNING DISABILITY AT PRIMARY LEVEL”.

6.1.2 Objectives of the study

The objectives formulated for the study are:-

1. To identify students with Learning Disability at primary level.

2. To develop a design on Multi Sensory Strategy for children with Learning Disability at primary level.

3. To determine the effectiveness of Multi Sensory Strategy on Academic achievement among children with Learning Disability at primary level.
4 To determine the effectiveness of Conventional Activity Oriented Method on Academic achievement among children with Learning Disability at primary level.

5 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Academic achievement among children with Learning Disability at primary level.

6 To compare the effectiveness of Multi Sensory Strategy on Academic achievement among children with Learning Disability at primary level on the basis of gender.

7 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in English among children with Learning Disability at primary level.

8 To compare the effectiveness of Multi Sensory Strategy on Achievement in English among children with Learning Disability at primary level on the basis of gender.

9 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in English with regard to components - reading comprehension, vocabulary and grammar among children with Learning Disability at primary level.
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10 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in Malayalam among children with Learning Disability at primary level.

11 To compare the effectiveness of Multi Sensory Strategy on Achievement in Malayalam among children with Learning Disability at primary level on the basis of gender.

12 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in Malayalam with regard to the components- grahanam, padaprayogam and vyakaranaparam among children with Learning Disability at primary level.

13 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in Mathematics among children with Learning Disability at primary level.

14 To compare the effectiveness of Multi Sensory Strategy on Achievement in Mathematics among children with Learning Disability at primary level on the basis of gender.

15 To compare the effectiveness of Multi Sensory Strategy and Conventional Activity Oriented Method on Achievement in Mathematics with regard to components- place value, multiples and factors; and word problems among children with Learning Disability at primary level.
16 To find out whether there is any relationship between Achievement in English and Achievement in Malayalam among children in the Experimental group with Learning Disability at primary level.

17 To find out whether there is any relationship between Achievement in Reading Comprehension in English and Achievement in Grahanam in Malayalam among children in the Experimental group with Learning Disability at primary level when taught using Multi Sensory Strategy.

18 To find out whether there is any relationship between Achievement in Vocabulary in English and Achievement in Padaprayogam in Malayalam among children in the Experimental group with Learning Disability at primary level when taught using Multi Sensory Strategy.

19 To find out whether there is any relationship between Achievement in Grammar in English and Achievement in Vyakaranaparam in Malayalam among children in the Experimental group with Learning Disability at primary level when taught using Multi Sensory Strategy.

6.1.3 Hypotheses of the study

The hypotheses formulated for the present study were :-

1. Multi Sensory Strategy (MSS) will be more effective than Conventional Activity Oriented Method (CAOM) on Academic Achievement as a whole on children with Learning Disability at primary level.
2. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Academic Achievement as a whole on the basis of gender.

3. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English than those taught using Conventional Activity Oriented Method (CAOM).

4. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English on the basis of gender.

5. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English with respect to Reading Comprehension than those taught using Conventional Activity Oriented Method (CAOM).

6. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English with respect to Vocabulary than those taught using Conventional Activity Oriented Method (CAOM).

7. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in
English with respect to Grammar than those taught using Conventional Activity Oriented Method (CAOM).

8. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam than those taught using Conventional Activity Oriented Method (CAOM).

9. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam on the basis of gender.

10. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Grahanam than those taught using Conventional Activity Oriented Method (CAOM).

11. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Padaprayogam than those taught using Conventional Activity Oriented Method (CAOM).

12. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Vyakaranaparam than those taught using Conventional Activity Oriented Method (CAOM).
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13. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics than those taught using Conventional Activity Oriented Method (CAOM).

14. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics on the basis of gender.

15. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics with respect to Place value than those taught using Conventional Activity Oriented Method (CAOM).

16. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics with respect to Multiples and Factors than those taught using Conventional Activity Oriented Method (CAOM).

17. Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics with respect to Word problems than those taught using Conventional Activity Oriented Method (CAOM).
18. There will be significant relationship between Achievement in English and Achievement in Malayalam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

19. There will be significant relationship between Achievement in the component of English -Reading Comprehension and Achievement in the component of Malayalam -Grahanam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

20. There will be significant relationship between Achievement in the component of English -Vocabulary and Achievement in the component of Malayalam -Padaprayogam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

21. There will be significant relationship between Achievement in the component of English -Grammar and Achievement in the component of Malayalam - Vyakaranaparam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

Methodology in brief

Survey and experimental methods were used for collecting relevant data for the present study. The survey method was adopted for identifying Children with Learning Disability at primary level. The experimental method was found to be the most appropriate design for finding out the effectiveness of the developed Multi Sensory Strategy (MSS). The experimental design used for the present study was pre test-post test non-equivalent design. The
sample for the study was the primary school students in Kottayam District. For the experiment, 66 students with Learning Disability were identified from the total sample by administering the Diagnostic Test for Learning Disability (DTLD), Intelligence Test, Achievement Motivation Scale and Learning Problem Checklist. The identified learning disabled students were divided into experimental group and control group. The experimental group was taught using the developed Multi Sensory strategy (MSS) and the control group with the Conventional Activity Oriented Method (CAOM). Before starting the experimental treatment, the standardised academic achievement tests were administered to the students in both groups as pre-tests and after the treatment, the same tests were conducted as post tests.

**Tools Used in the Study**

The following tools were used in the present study for the collection of data.

1. Diagnostic test for Identifying Learning Disability (DTLD) prepared and standardized by the investigator

2. Raven’s Standard Progressive Matrices (RSPM) to assess the general intelligence of the students (Raven, 1938).

3. Learning Problem Checklist (Mathew, 2000)

4. Achievement Motivation Scale (Shah, 1996)

5. Interview schedule prepared by the investigator

6. Lesson transcripts based on Multi Sensory Strategy (MSS)
7. Lesson transcripts based on Conventional Activity Oriented Method (CAOM)

8. Academic Achievement Tests on English, Malayalam and Mathematics, prepared and standardized by the investigator

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**Statistical Techniques Used**

The data collected is analysed using the statistical techniques of paired t-test, ANOVA and ANCOVA.

**6.2 Major Findings of the Study**

The major findings evolved from the study are presented in the following heads.

**6.2.1 Findings based on the comparative analysis of Academic Achievement as a whole**

**6.2.1.1 Comparison of Academic Achievement as a whole**

6.2.1.1.1 The analysis of the pre-test scores of Academic Achievement revealed that the groups did not have significant difference. The ‘t’ value obtained (0.251) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the experimental group and control groups do not differ significantly in their pre-test scores.

6.2.1.1.2 The comparison of the post-test scores (t= 13.633) and gain scores (t= 16.588) of Academic Achievement revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory
Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to academic achievement.

6.2.1.1.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Academic Achievement ($F_x=0.063$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=185.864$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Academic achievement as a whole.

6.2.1.1.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=298.816$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.1.1.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value ($t=17.312$) is significant at
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0.01 level. This shows that the experimental group is superior to the control group with respect to Academic achievement.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Academic Achievement.

6.2.1.2 Comparison of Academic Achievement as a whole based on gender

6.2.1.2.1 The analysis of the post-test scores of Academic Achievement of the experimental group on the basis of gender revealed that they did not differ significantly. The ‘t’ value obtained (0.915) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the boys and girls do not differ significantly in their academic achievement when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on the basis of gender. It can be used successfully for both boys and girls.

6.2.2 Findings based on the comparative analysis of Academic Achievement under different subjects and its components

6.2.2.1 Comparison of Achievement in English

6.2.2.1.1 The analysis of the pre-test scores of Achievement in English revealed that the groups did not have significant difference. The ‘t’ value obtained (0.188) is not significant at 0.05 and 0.01 levels.
Thus it can be stated that the experimental group and control groups do not differ significantly in their pre-test scores.

6.2.2.1.2 The comparison of the post-test scores (t= 7.853) and gain scores (t= 9.992) of Achievement in English revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in English.

6.2.2.1.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in English ($F_x$=0.035, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y$= 61.67, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in English.

6.2.2.1.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}$= 103.008, significant at 0.01 level). This shows that the final mean scores of students in experimental
and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.1.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value (t= 10.156) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in English.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in English.

6.2.2.2 Comparison of Achievement in English based on gender

6.2.2.2.1 The analysis of the post-test scores of Achievement in English of the experimental group on the basis of gender revealed that they did not differ significantly. The ‘t’ value obtained (0.005) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the boys and girls do not differ significantly in their Achievement in English when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in English on the basis of gender. It can be used successfully for both boys and girls.
6.2.2.3 Comparison of Achievement in the selected components of English

6.2.2.3.1 Comparison of Achievement in the component of English - Reading Comprehension

6.2.2.3.1.1 The analysis of the pre-test scores of Achievement in the component of English- Reading Comprehension revealed that the groups did not have significant difference. The ‘t’ value obtained (t=0.233) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in English, under the component Reading Comprehension, prior to the treatment.

6.2.2.3.1.2 The comparison of the post-test scores (t= 6.566) and gain scores (t= 8.422) of Achievement in the component of English- Reading Comprehension revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in English under the component Reading Comprehension.

6.2.2.3.1.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test

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scores of the two groups with respect to Achievement in the component of English- Reading Comprehension ($F_x=0.054$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=43.118$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in the component of English- Reading Comprehension.

6.2.2.3.1.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=71.405$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.3.1.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value ($t=8.454$) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in the component of English- Reading Comprehension.
From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of English-Reading Comprehension.

**6.2.2.3.2 Comparison of Achievement in the component of English -Vocabulary**

6.2.2.3.2.1 The analysis of the pre-test scores of Achievement in the component of English-Vocabulary revealed that the groups did not have significant difference. The ‘t’ value obtained (t=0.237) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in the component of English-Vocabulary, prior to the treatment.

6.2.2.3.2.2 The comparison of the post-test scores (t = 4.026) and gain scores (t = 4.167) of Achievement in the component of English-Vocabulary revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of English-Vocabulary.
6.2.2.3.2.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in the component of English-Vocabulary ($F_x=0.056$, significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=16.210$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in the component of English-Vocabulary.

6.2.2.3.2.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=21.010$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.3.2.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘$t$’ value ($t=4.584$) is significant at 0.01 level. This shows that the experimental group is superior
to the control group with respect to Achievement in the component of English-Vocabulary.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of English-Vocabulary.

6.2.2.3.3 Comparison of Achievement in the component of English - Grammar

6.2.2.3.3.1 The analysis of the pre-test scores of Achievement in the component of English- Grammar, revealed that the groups did not have significant difference. The ‘t’ value obtained (t= 0.194) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in the component of English- Grammar, prior to the treatment.

6.2.2.3.3.2 The comparison of the post-test scores (t= 4.685) and gain scores (t= 4.563) of Achievement in the component of English-Grammar revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method
6.2.2.3.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in the component of English-Grammar ($F_x=0.038$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=21.951$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in the component of English-Grammar.

6.2.2.3.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=27.317$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.3.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups
differ significantly. The obtained ‘t’ value (t= 5.234) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in the component of English- Grammar.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of English- Grammar.

6.2.2.4 Comparison of Achievement in Malayalam

6.2.2.4.1 The analysis of the pre-test scores of Achievement in Malayalam revealed that the groups did not have significant difference. The ‘t’ value obtained (0.14) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the experimental group and control groups do not differ significantly in their pre-test scores.

6.2.2.4.2 The comparison of the post-test scores (t= 9.394) and gain scores (t= 10.337) of Achievement in Malayalam revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in Malayalam.
6.2.2.4.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in Malayalam \( (F_x=0.019, \text{ not significant even at 0.05 level}) \). But there was significant difference between the means of post-test scores of the two groups \( (F_y=88.252, \text{ significant at 0.01 level}) \). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in Malayalam.

6.2.2.4.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups \( (F_{yx}= 114.689, \text{ significant at 0.01 level}) \). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.4.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value \( (t= 10.725) \) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in Malayalam.
From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in Malayalam.

6.2.2.5 Comparison of Achievement in Malayalam based on gender

6.2.2.5.1 The analysis of the post-test scores of Achievement in Malayalam of the experimental group on the basis of gender revealed that they did not differ significantly. The ‘t’ value obtained (1.046) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the boys and girls do not differ significantly in their Achievement in Malayalam when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in Malayalam on the basis of gender. It can be used successfully for both boys and girls students.

6.2.2.6 Comparison of Achievement in the selected components of Malayalam

6.2.2.6.1 Comparison of Achievement in the component of Malayalam - Grahanam

6.2.2.6.1.1 The analysis of the pre-test scores of Achievement in the component of Malayalam - Grahanam, revealed that the groups did not have significant difference. The ‘t’ value obtained (t=0.383) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ
significantly on Achievement in the component of Malayalam - Grahanam, prior to the treatment.

6.2.2.6.1.2 The comparison of the post-test scores (t= 6.576) and gain scores (t=7.592) of Achievement in the component of Malayalam - Grahanam revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of Malayalam - Grahanam.

6.2.2.6.1.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in the component of Malayalam - Grahanam ($F_x=0.147$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=43.243$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in the component of Malayalam - Grahanam.
6.2.2.6.1.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=67.496$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.6.1.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value ($t=8.24$) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in Malayalam under the component- Grahanam.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in Malayalam under the component- Grahanam.

6.2.2.6.2 Comparison of Achievement in the component of Malayalam - Padaprayogam

6.2.2.6.2.1 The analysis of the pre-test scores of Achievement in the component of Malayalam - Padaprayogam, revealed that the groups did not have significant difference. The ‘t’ value obtained
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(t=0.336) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in the component of Malayalam - Padaprayogam, prior to the treatment.

6.2.2.6.2.2 The comparison of the post-test scores (t= 6.049) and gain scores (t= 5.151) of Achievement in the component of Malayalam - Padaprayogam revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of Malayalam - Padaprayogam.

6.2.2.6.2.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in the component of Malayalam - Padaprayogam (Fₐ=0.113, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups (Fᵧ=36.595, Vyakaranaparam significant at 0.01 level). Hence it can be concluded that the experimental group is superior...
to the control group in their post-test scores on Achievement in the component of Malayalam - Padaprayogam.

6.2.2.6.2.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=38.527$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.6.2.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value ($t=6.226$) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in the component of Malayalam - Padaprayogam.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of Malayalam - Padaprayogam.
6.2.2.6.3 Comparison of Achievement in the component of Malayalam-Vyakaranaparam

6.2.2.6.3.1 The analysis of the pre-test scores of Achievement in the component of Malayalam - Vyakaranaparam, revealed that the groups did not have significant difference. The ‘t’ value obtained (t= 0.32) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in the component of Malayalam - Vyakaranaparam, prior to the treatment.

6.2.2.6.3.2 The comparison of the post-test scores (t= 4.376) and gain scores (t= 4.464) of Achievement in the component of Malayalam - Vyakaranaparam revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in the component of Malayalam - Vyakaranaparam.

6.2.2.6.3.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in Malayalam under the component- Vyakaranaparam (F_x=0.102 ,
significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups (F_y=19.151, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in the component of Malayalam - Vyakaranaparam.

6.2.2.6.3.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups (F_{yx}=23.588, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.6.3.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value (t= 4.864) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in the component of Malayalam - Vyakaranaparam.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented
Method (CAOM) with respect to Achievement in the component of Malayalam - Vyakaranaparam.

6.2.2.7 Comparison of Achievement in Mathematics

6.2.2.7.1 The analysis of the post-test scores of Achievement in Mathematics of the experimental group on the basis of gender revealed that they did not differ significantly. The ‘t’ value obtained (0.183) is not significant at 0.05 and 0.01 levels. Thus it can be stated that the experimental group and control groups do not differ significantly in their pre-test scores.

6.2.2.7.2 The comparison of the post-test scores (t= 11.057) and gain scores (t= 13.099) of Achievement in Mathematics revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in Mathematics.

6.2.2.7.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in Mathematics ($F_x=0.033$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the
two groups ($F_y=122.268$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in Mathematics.

6.2.2.7.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=208.351$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.7.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value ($t=14.455$) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in Mathematics.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in Mathematics.

6.2.2.8 Comparison of Achievement in Mathematics based on gender

6.2.2.8.1 The analysis of the post-test scores of Achievement in Mathematics on the basis of gender revealed that the groups did not have significant difference. The ‘t’ value obtained (1.399) is
not significant at 0.05 and 0.01 levels. Thus it can be stated that the boys and girls do not differ significantly in their Achievement in Mathematics when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in Mathematics on the basis of gender. It can be used successfully for both boys and girls students.

6.2.2.9 Comparison of Achievement in the selected components of Mathematics

6.2.2.9.1 Comparison of Achievement in the component of Mathematics - Place value

6.2.2.9.1.1 The analysis of the pre-test scores of Achievement in component of Mathematics- Place value revealed that the groups did not have significant difference. The ‘t’ value obtained (t=0.198) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in component of Mathematics- Place value, prior to the treatment.

6.2.2.9.1.2 The comparison of the post-test scores (t= 9.230) and gain scores (t= 7.342) of Achievement in component of Mathematics- Place value revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to
Conventional Activity Oriented Method (CAOM) with respect to Achievement in component of Mathematics- Place value.

6.2.2.9.1.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in component of Mathematics- Place value ($F_{x} = 0.039$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_{y} = 85.202$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in component of Mathematics- Place value.

6.2.2.9.1.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx} = 105.865$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.

6.2.2.9.1.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups
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differ significantly. The obtained ‘t’ value (t=10.291) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in component of Mathematics- Place value.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in component of Mathematics- Place value.

6.2.2.9.2 Comparison of Achievement in the component of Mathematics-Multiples and Factors

6.2.2.9.2.1 The analysis of the pre-test scores of Achievement in component of Mathematics - Multiples and Factors, revealed that the groups did not have significant difference. The ‘t’ value obtained (t=0.441) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in component of Mathematics - Multiples and Factors, prior to the treatment.

6.2.2.9.2.2 The comparison of the post-test scores (t= 8.493) and gain scores (t= 9.500) of Achievement in component of Mathematics-Multiples and Factors revealed that the Experimental and Control groups differ significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more
advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in component of Mathematics - Multiples and Factors.

6.2.2.9.2.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in component of Mathematics - Multiples and Factors ($F_x=0.195$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y=72.129$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in component of Mathematics - Multiples and Factors.

6.2.2.9.2.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx}=123.778$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.
6.2.2.9.2.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value (t=11.154) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in component of Mathematics - Multiples and Factors.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in Mathematics under the component- Multiples and Factors.

6.2.2.9.3 Comparison of Achievement in the component of Mathematics - Word Problem

6.2.2.9.3.1 The analysis of the pre-test scores of Achievement in component of Mathematics - Word problem revealed that the groups did not have significant difference. The ‘t’ value obtained (t= 0.267) is not significant at 0.05 and 0.01 levels. This shows that the experimental and control groups do not differ significantly on Achievement in Mathematics, under the component- Word problem, prior to the treatment.

6.2.2.9.3.2 The comparison of the post-test scores (t= 9.170) and gain scores (t= 9.196) of Achievement in component of Mathematics- Word problem revealed that the Experimental and Control groups differ
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significantly at 0.01 level. Thus it can be tentatively interpreted that the Multi Sensory Strategy (MSS) is more advantageous to Conventional Activity Oriented Method (CAOM) with respect to Achievement in component of Mathematics - Word problem.

6.2.2.9.3.3 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANOVA revealed that there was no significant difference between the mean pre-test scores of the two groups with respect to Achievement in component of Mathematics - Word problem ($F_x = 0.071$, not significant even at 0.05 level). But there was significant difference between the means of post-test scores of the two groups ($F_y = 84.086$, significant at 0.01 level). Hence it can be concluded that the experimental group is superior to the control group in their post-test scores on Achievement in component of Mathematics - Word problem.

6.2.2.9.3.4 The comparison of the pre-test scores and the post-test scores of experimental and control groups using ANCOVA revealed that there was significant difference between the means of post-test scores of the two groups ($F_{yx} = 107.654$, significant at 0.01 level). This shows that the final mean scores of students in experimental and control groups differ significantly after they were adjusted for the difference in the pre-test scores.
6.2.2.9.3.5 The comparison of the adjusted means for the post-test scores of the experimental and control groups revealed that the groups differ significantly. The obtained ‘t’ value (t= 10.399) is significant at 0.01 level. This shows that the experimental group is superior to the control group with respect to Achievement in component of Mathematics - Word problem.

From the above analysis, it can be concluded that the Multi Sensory Strategy (MSS) is more effective than the Conventional Activity Oriented Method (CAOM) with respect to Achievement in component of Mathematics - Word problem.

6.2.3 Findings based on the correlational analysis

6.2.3.1 The correlational analysis between the Achievement in English and achievement in Malayalam of the experimental group using Pearson product moment coefficient of correlation revealed that there is no significant relationship between the two variables. The obtained ‘r’ value (0.335) and the obtained ‘t’ value (1.97) are not significant even at 0.05 level. This means that increase or decrease in the Achievement in English of primary school students with Learning Disability will not affect their Achievement in Malayalam when taught using Multi Sensory Strategy (MSS).

6.2.3.2 The correlational analysis between the Achievement in Reading comprehension in English and Achievement in Grahanam in
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Malayalam of the experimental group using Pearson product moment coefficient of correlation revealed that there is moderate correlation between the two variables. The obtained ‘r’ value (0.543) and the obtained ‘t’ value (3.6) are significant at 0.01 level. This means that there exists a substantial but small relationship between Achievement in Reading comprehension in English and Achievement in Grahanam in Malayalam among students with Learning disability when taught using Multi Sensory Strategy (MSS).

6.2.3.3 The correlational analysis between the Achievement in Vocabulary in English and Achievement in Padaprayogam in Malayalam of the experimental group using Pearson product moment coefficient of correlation revealed that there is no significant relationship between the two variables. The obtained ‘r’ value (0.119) and the obtained ‘t’ value (0.607) are not significant even at 0.05 level. This means that increase or decrease in the Achievement in Vocabulary in English of primary school students with Learning Disability will not affect their Achievement in Padaprayogam in Malayalam when taught using Multi Sensory Strategy (MSS).

6.2.3.4 The correlational analysis between the Achievement in Grammar in English and Achievement in Vyakaranaparam in Malayalam of the experimental group using Pearson product moment coefficient of correlation revealed that there is no significant relationship between
the two variables. The obtained ‘r’ value (0.082) and the obtained ‘t’ value (0.458) are not significant even at 0.05 level. This means that increase or decrease in the Achievement in Grammar in English of primary school students with Learning Disability will not affect their Achievement in Vyakaranaparam in Malayalam when taught using Multi Sensory Strategy (MSS).

6.3 Tenability of the Hypotheses

The tenability of the hypotheses are stated below

6.3.1 Hypothesis I

Multi Sensory Strategy (MSS) will be more effective than Conventional Activity Oriented Method (CAOM) on Academic Achievement as a whole on children with Learning Disability at primary level.

The findings numbered 6.2.1.1.1, 6.2.1.1.2, 6.2.1.1.3, 6.2.1.1.4 and 6.2.1.1.5 shows that the Multi Sensory Strategy (MSS) is more effective than Conventional Activity Oriented Method (CAOM) on Academic Achievement as a whole on children with Learning Disability at primary level. Hence the first hypothesis is accepted.

6.3.2 Hypothesis II

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Academic Achievement as a whole on the basis of gender.
The finding numbered 6.2.1.2.1 show that the boys and girls do not differ significantly in their Academic Achievement as a whole when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in English based on gender. Hence the second hypothesis is accepted.

6.3.3 Hypothesis III

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.1.1, 6.2.2.1.2, 6.2.2.1.3, 6.2.2.1.4 and 6.2.2.1.5 show that the Achievement in English among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in English. Hence the third hypothesis is accepted.

6.3.4 Hypothesis IV

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English on the basis of gender.
The finding numbered 6.2.2.2.1 show that the boys and girls do not differ significantly in their Achievement in English when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in English based on gender. Hence the fourth hypothesis is accepted.

6.3.5 Hypothesis V

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English with respect to Reading Comprehension than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.3.1.1, 6.2.2.3.1.2, 6.2.2.3.1.3, 6.2.2.3.1.4 and 6.2.2.3.1.5 show that the Achievement in English with respect to Reading Comprehension among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in English with respect to Reading Comprehension. Hence the fifth hypothesis is accepted.

6.3.6 Hypothesis VI

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in
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English with respect to Vocabulary than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.3.2.1, 6.2.2.3.2.2, 6.2.2.3.2.3, 6.2.2.3.2.4 and 6.2.2.3.2.5 show that the Achievement in English with respect to Vocabulary among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in English with respect to Vocabulary. Hence the sixth hypothesis is accepted.

6.3.7 Hypothesis VII

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in English with respect to Grammar than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.3.3.1, 6.2.2.3.3.2, 6.2.2.3.3.3, 6.2.2.3.3.4 and 6.2.2.3.3.5 show that the Achievement in English with respect to Grammar among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with
respect to Achievement in English with respect to Grammar. Hence the seventh hypothesis is accepted.

6.3.8 **Hypothesis VIII**

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.4.1, 6.2.2.4.2, 6.2.2.4.3, 6.2.2.4.4 and 6.2.2.4.5 show that the Achievement in Malayalam among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Malayalam. Hence the eighth hypothesis is accepted.

6.3.9 **Hypothesis IX**

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam on the basis of gender.

The finding numbered 6.2.2.5.1 show that the boys and girls do not differ significantly in their Achievement in Malayalam when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy
(MSS) does not vary in its effect on Achievement in Malayalam based on gender. Hence the ninth hypothesis is accepted.

6.3.10 Hypothesis X

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Grahanam than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.6.1.1, 6.2.2.6.1.2, 6.2.2.6.1.3, 6.2.2.6.1.4 and 6.2.2.6.1.5 show that the Achievement in Malayalam with respect to Grahanam among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Malayalam with respect to Grahanam. Hence the tenth hypothesis is accepted.

6.3.11 Hypothesis XI

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Padaprayogam than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.6.2.1, 6.2.2.6.2.2, 6.2.2.6.2.3, 6.2.2.6.2.4 and 6.2.2.6.2.5 show that the Achievement in Malayalam with respect to
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Padaprayogam among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Malayalam with respect to Padaprayogam. Hence the eleventh hypothesis is accepted.

6.3.12 Hypothesis XII

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Malayalam with respect to Vyakaranaparam than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.6.3.1, 6.2.2.6.3.2, 6.2.2.6.3.3, 6.2.2.6.3.4 and 6.2.2.6.3.5 show that the Achievement in Malayalam with respect to Vyakaranaparam among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Malayalam with respect to Vyakaranaparam. Hence the twelfth hypothesis is accepted.

6.3.13 Hypothesis XIII

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in
Mathematics than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.7.1, 6.2.2.7.2, 6.2.2.7.3, 6.2.2.7.4 and 6.2.2.7.5 show that the Achievement in Mathematics among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Mathematics. Hence the thirteenth hypothesis is accepted.

6.3.14 Hypothesis XIV

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics on the basis of gender.

The finding numbered 6.2.2.8.1 show that the boys and girls do not differ significantly in their Achievement in Mathematics when taught using Multi Sensory Strategy. Thus it can be interpreted that Multi Sensory Strategy (MSS) does not vary in its effect on Achievement in Mathematics based on gender. Hence the fourteenth hypothesis is accepted.

6.3.15 Hypothesis XV

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in
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Mathematics with respect to Place value than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.9.1.1, 6.2.2.9.1.2, 6.2.2.9.1.3, 6.2.2.9.1.4 and 6.2.2.9.1.5 show that the Achievement in Mathematics with respect to Place value among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Mathematics with respect to Place value. Hence the fifteenth hypothesis is accepted.

6.3.16 Hypothesis XVI

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics with respect to Multiples and Factors than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.9.2.1, 6.2.2.9.2.2, 6.2.2.9.2.3, 6.2.2.9.2.4 and 6.2.2.9.2.5 show that the Achievement in Mathematics with respect to Multiples and Factors among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented
Method with respect to Achievement in Mathematics with respect to Multiples and Factors. Hence the sixteenth hypothesis is accepted.

6.3.17 Hypothesis XVII

Children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) will have significantly higher Achievement in Mathematics with respect to Word problems than those taught using Conventional Activity Oriented Method (CAOM).

The findings numbered 6.2.2.9.3.1, 6.2.2.9.3.2, 6.2.2.9.3.3, 6.2.2.9.3.4 and 6.2.2.9.3.5 show that the Achievement in Mathematics with respect to Word problem among children with Learning Disability at primary level taught using Multi Sensory Strategy (MSS) is significantly higher than those taught using Conventional Activity Oriented Method (CAOM). That is, the Multi Sensory Strategy is superior to Conventional Activity Oriented Method with respect to Achievement in Mathematics with respect to Word problem. Hence the seventeenth hypothesis is accepted.

6.3.18 Hypothesis XVIII

There will be significant relationship between Achievement in English and Achievement in Malayalam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

The finding numbered 6.2.3.1 show that there is no significant relationship between the Achievement in English and achievement in Malayalam. That is, an increase or decrease in the Achievement in English of
primary school students with Learning Disability will not affect their Achievement in Malayalam. Hence the eighteenth hypothesis is accepted.

6.3.19 Hypothesis XIX

There will be significant relationship between Achievement in the component of English -Reading Comprehension and Achievement in the component of Malayalam -Grahanam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

The finding numbered 6.2.3.2 show that there is moderate correlation between the Achievement in Reading comprehension in English and Achievement in Grahanam. That is, there exists a substantial but small relationship between Achievement in Reading comprehension in English and Achievement in Grahanam in Malayalam among students with Learning disability. Hence the nineteenth hypothesis is not accepted.

6.3.20 Hypothesis XX

There will be significant relationship between Achievement in the component of English -Vocabulary and Achievement in the component of Malayalam -Padaprayogam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

The finding numbered 6.2.3.3 show that there is no significant relationship between the Achievement in English with regard to Vocabulary and Achievement in Malayalam with regard to Padaprayogam. That is, an increase or decrease in the Achievement in English with regard to Vocabulary
of primary school students with Learning Disability will not affect their Achievement in Malayalam with regard to Padaprayogam. Hence the twentieth hypothesis is accepted.

6.3.21 Hypothesis XXI

There will be significant relationship between Achievement in the component of English -Grammar and Achievement in the component of Malayalam - Vyakaranaparam in children with Learning Disability when taught using Multi Sensory Strategy (MSS).

The finding numbered 6.2.3.4 show that there is no significant relationship between the Achievement in English with regard to Grammar and Achievement in Malayalam with regard to Vyakaranaparam. That is, an increase or decrease in the Achievement in English with regard to Grammar of primary school students with Learning Disability will not affect their Achievement in Malayalam with regard to Vyakaranaparam. Hence the eighteenth hypothesis is accepted.

6.4 Conclusions of the Study

The major conclusions that emerged from the study are given below.

- The Multi Sensory Strategy is found to be more effective than Conventional Activity Oriented Method on Academic Achievement among children with Learning disability at primary level.
Summary and Conclusions

• The Multi Sensory Strategy is more effective than Conventional Activity Oriented Method on both Achievement in English as a whole and Achievement in English under different components namely, Reading comprehension, Vocabulary and Grammar among children with Learning disability at primary level.

• The Multi Sensory Strategy is more effective than Conventional Activity Oriented Method on both Achievement in Malayalam as a whole and Achievement in Malayalam under different components namely, Grahanam, Padaprayogam and Vyakaranaparam among children with Learning disability at primary level.

• The Multi Sensory Strategy is more effective than Conventional Activity Oriented Method on both Achievement in Mathematics as a whole and Achievement in Mathematics under different components namely, Place value, Multiples and Factors, Word problem among children with Learning disability at primary level.

• Based on gender of children with Learning disability, Multi Sensory Strategy does not vary in its effect either on Academic Achievement as a whole or on Achievement in various subjects-English, Malayalam, and Mathematics.

• The study concluded that there is no relationship between Achievement in English and Achievement in Malayalam among children with
Learning disability at primary level when taught using Multi Sensory Strategy. That is, Achievement in English will not affect the Achievement in Malayalam of a learning disabled student when taught using Multi Sensory Strategy.

- Achievement in the component of English- Reading comprehension has a significant relationship with Achievement in component of Malayalam- Grahanam among children with Learning disability at primary level when taught using Multi Sensory Strategy. It can be hence concluded that Achievement in Reading comprehension (English) will influence the Achievement in Grahanam (Malayalam) of a learning disabled student when taught using Multi Sensory Strategy.

- Achievement in the component of English- Vocabulary is not related with Achievement in the component of Malayalam- Padaprayogam among children with Learning disability at primary level when taught using Multi Sensory Strategy. That is, Achievement in Vocabulary (English) will not affect the Achievement in Padaprayogam (Malayalam) of a learning disabled student when taught using Multi Sensory Strategy.

- Achievement in the component of English- Grammar is not related with Achievement in the component of Malayalam- Vyakaranaparam among children with Learning disability at primary level when taught using Multi Sensory Strategy. That is, Achievement in Grammar
(English) will not affect the Achievement in Vyakaranaparam (Malayalam) of a learning disabled student when taught using Multi Sensory Strategy.

6.5 Educational Implications of the Study

Children with Learning Disability need special care to progress in their academics. Unfortunately most of them are not getting it. Some parents are willing to help their learning disabled children but most of them do not know how. Even the government is trying to help them by inclusive education. Still the system is not able to render much help to these children. It is because of the rigidness in curriculum, lack of enough special educators in schools, lack of resources etc. One main reason adding to this is the ignorance about the instructional strategies to be used for such students. Even though a good number of instructional strategies have been developed all over the world, most of the teachers are unaware of the strategies that have effect on children with Learning Disability. While selecting an instructional strategy, the teachers have to consider their adaptability to the prevailing conditions and the target group (students). These strategies should be modified and tested for their efficiency in Indian conditions for the benefit of the children with Learning Disability. The present study is an attempt to do the same with Multi Sensory Strategy. It is intended to equip the teachers, administrators, and policy makers with an instructional strategy that can be used to render special
attention to the children with Learning Disability. The implications of the study are given below.

- The children with Learning Disability can meet their ‘special educational needs’ either in a mainstream school with extra support or in a special school. Since the society would not treat a child in a special school as normal, the parents of children with Learning Disability are reluctant to admit their normal intelligent children to such schools. The only option left behind is mainstream school with extra help. But most of the schools claiming to provide inclusive education lack this extra support. The findings of the study revealed that Multi Sensory Strategy is superior to Conventional Activity Oriented Method in improving the academic achievement of children with Learning Disability. Hence this strategy can be adopted by schools to render extra support to these children. The students’ attention span also improves with the use of Multi Sensory Strategy. It will help these children to bypass and compensate their weaker areas by utilizing the appropriate senses.

- The design based on Multi Sensory Strategy is a major contribution of the present study. Although there are predictable expectations for growth and change in children, not all children progress at the same rate. This challenge is met by adopting RTI approach in the present study. The RTI approach in the design ensures that even in a large heterogeneous class, special attention is rendered to each individual.
Hence educators should adopt this design in their lessons and implement it successfully to improve the academic performance of children with Learning Disability.

- Another main contribution of the study is the Diagnostic Test for Learning Disability for children at primary level. The tool can be used by the primary schools to identify such children and also for further research in this area.

- Children with Learning Disability often experience frustration and failure in their academics. Multi Sensory Strategy helps them to reduce their academic anxiety to a great extent as they come across frequent success. Also learning becomes fun when it is done through games and activities. This will in turn help to develop their self-confidence and self-reliance.

- The developed Multi Sensory Strategy design does not vary in its effect on academic achievement of children with Learning Disability on the basis of gender. This implies that the design can be adopted to render special care to students with Learning Disability irrespective of their gender.

- According to the study, achievement in English, Malayalam and Mathematics of children with Learning Disability taught using Multi Sensory Strategy is higher than those taught using Conventional
Activity Oriented Method. Hence primary schools should adopt the
design and provide facilities required to implement the same in order to
cater the special needs of their students regarding the academics in
these subjects.

• The superiority of Multi Sensory Strategy is remarkable in the
achievement of different components in English, Malayalam and
Mathematics. This shows that the Multi Sensory Strategy can be
implemented successfully to improve achievement in all these areas
where Learning Disabled students face learning difficulty.

• The ignorance of teachers is a major hurdle in the development of a
student with Learning Disability. Teachers need ongoing training in
multi sensory strategies, structure, environmental modification,
curriculum adaptations, and support that will allow children with
Learning disability to achieve. Hence in-service should be conducted
to enlighten the teachers on the same.

• The teachers must be encouraged to use instructional strategies like
Multi Sensory Strategy for helping the children with Learning
Disability. They should be familiarised with the strategies and given
time to practise it. Though it seems like a lot of work initially, it saves
time and energy of both teachers and learners in the long run.
• The present study paves a path to administrators, policy makers, authorities and teachers in their attempt to provide inclusive education for all. Inclusive education will serve in its true sense only if it provides special care to the disabled children. The study reveals that Multi Sensory Strategy will ensure special attention to the needy.

6.6 Suggestions for Further Research

Research studies on Learning Disability are found in few numbers, especially in India. Even though the awareness on Learning Disability among teachers and parents are reaching new heights, the measures to minimise it are almost unknown. The present study would pave path for further studies in the area of Learning Disability. Some suggestions for further research are given below.

• The findings of the study revealed the effectiveness of the developed Multi Sensory Strategy on academic achievement of students with dyslexia, dysgraphia and dyscalculia. Specific learning disabilities like dyspraxia and dysphasia can be explored.

• The present study revealed effectiveness of Multi Sensory Strategy in academic achievement. Similarly effectiveness of Multi Sensory Strategy in minimising Learning disability can be investigated.

• Review of related literature indicated the lack of proper diagnosis of Learning Disability. Hence research study can be conducted to develop
Diagnostic test for identifying Learning disability. Diagnostic Test for Learning disability for children of age group 10-12 years was constructed and standardised in the present study. Similarly diagnostic test for identifying Learning disability at secondary level can be constructed and validated.

- The present study focuses on the academic achievement of children with Learning Disability. Impact of remedial behaviour modification techniques for learning disabled children with emotional problems can also be explored.

- The current prevalence rate of Learning Disability is considered to be indefinite. The prevalence rate of Learning Disability in Kerala is further vague. A study can be conducted to find out the prevalence of Learning Disability in Kerala.

- Studies can be conducted to find out the effectiveness of Multi Sensory Strategy on academic achievement of the learning disabled students with different learning styles.

- The present study was conducted among students following Kerala State syllabus, it can be extended to other streams like, CBSE, ICSE etc.

- The inclusive education in its true sense remains in documents and it has become a means to marginalize the ‘vulnerable’ children.
Labelling ‘vulnerable’ invites negative attitude and acceptance from peer and the society which again act as a hurdle for these children. Hence the role of inclusion in current educational system to meet special educational needs of learning disabled students can be investigated.

- Influence of factors like parental involvement, socio-economic status, exposure to remedial measures, facilities at home etc on Learning disability can be explored.