CHAPTER - III

METHOD

3.0.0 INTRODUCTION

The rationale of the present study along with its objectives and hypotheses has been given in Chapter I. The Second Chapter was devoted to the review of studies related to the work. The present chapter is devoted to the description of site, sample, design, tools, procedure of data collection and data analyses. The details in respect of each of them are given in different captions.

3.1.0 SITE DESCRIPTION

The current study was conducted in the state of South Carolina, USA, having students from five elementary schools in the neighboring districts of Williamsburg, Florence and Georgetown. The actual site was the district library in one of the districts (name is not being mentioned to maintain confidentiality) and partially in the respective classrooms of the students involved in the study.

Intervention to the students and training sessions to the parents and teachers were conducted at the library; and the observation of students by the researcher, teachers and parents was done at the respective school sites. Educational achievement tests were also administered at school sites.

3.2.0 SAMPLE

The total sample size was of 120, including girls and boys. The sample was divided in three groups, one experimental and two controlled.

<table>
<thead>
<tr>
<th>Table A: Data Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with ADHD (Experimental)</td>
</tr>
<tr>
<td>Intervention</td>
</tr>
<tr>
<td>40 Boys &amp; Girls</td>
</tr>
</tbody>
</table>
These 120 students, (83 boys and 37 girls) were selected from five elementary schools from three adjoining school districts in South Carolina. Students were in elementary grades, attending grade second to fifth; age range was 7 to 11 years, with mean age of 98.5 months (SD = 6.2). Ninety two students were African-American and 28 students were Caucasians. All the students were from middle socio-economic strata and a total of 36 (19 boys and 17 girls) were in foster care. None of the students with and without ADHD were receiving any prescription medication. None of the students had co-morbid Mental Retardation, Autism, Cerebral Palsy, Neurological Impairment/illness, Conduct Disorder and Anxiety Disorder. All the students had a percentile point of 75 and above on Raven’s Colored Progressive Matrices (CPM), (Raven, 2003). All the students in the three groups were regular education students i.e. no special educational support was being provided in the school. There were 40 students in each of the three groups, Experimental Group (students with ADHD with intervention), Control Group1 (students with ADHD, no intervention) and Control Group2 (students without ADHD, no intervention).

Following a purposive sampling technique, students were identified initially from teachers’ report. The students who were identified as students with possible ADHD by the home room teachers were further screened. Parent consent was taken before the screening by the parents and the teacher. The sample parent consent letter is appended on page (i) in appendix section. To maintain homogeneity, the students who were not on any prescription medication, were not receiving school based special education services, did not have co-morbid Mental Retardation, Autism, Cerebral Palsy, Neurological Impairment / illness, Conduct Disorder and Anxiety Disorder were screened on CADS-P/T1 (Conners’ ADHD/DSM-IV Scales–Parent/Teacher versions (Auxiliary Scales of Conner’s Rating Scale – Revised; CRS-R) (Conners, 1998). For the purpose of uniformity the CADS will be written as CRS-R in the rest of the dissertation text. Details on CADS-P/T and CRS-R are given Section 3.4.2 on page 63.
1997). Ratings were collected from the teachers and the parents. Students with high scores (more than 2 SD) were then observed and rated on CRS-R by the researcher in classroom setting; and those who had scores of more than 2 SD by all the three raters were kept in the pool for students in Experimental Group and Control Group1. Following DSM - IV criteria for ADHD - combined type, and following a score of 75 and above percentile point on Raven’s CPM, a total of 87 students were identified as students with ADHD for Control Group1 and Experimental Group. The 44 students whose parents agreed to bring them for the intervention procedure at a central place (district library) for one hour, three days in a week (after the school hours) were selected for Experimental Group. Other 43 students were selected for Control Group1. Some of the students had a medical diagnosis for ADHD. Based on rating by teachers, parents, and final observation and rating by the researcher, 45 students who had a score of less than 1 SD, by all the three raters, were selected from all five schools for the Control Group2 (students without ADHD, no intervention). A total of six students (from all the three groups) moved to different districts and thus their scores were deleted from the study. In the Experimental Group, one student moved out of district, two of the students discontinued as their parents were not able to bring them, and one student missed ten sessions from a total of 70 sessions in the span of six months. Finally for the Experimental Group, scores of remaining 40 students were selected for final data analysis. Mean attendance was 67.5 sessions by all other 40 students. In Control Group1, one student moved out of district and two students started taking medication for the ADHD. This finally left 40 students in the Control Group1. In the Control Group2, four students moved out of district and one student was frequently absent from the school for various reasons, thus data of 40 students was finally analyzed.

After the initial screening, and before starting the pre intervention assessments, informed consent was taken by the parents, that they understand
the risks attached, cost (of transportation) attached and give their consent for the participation.

3.3.0 DESIGN OF THE STUDY

The present research used pre and post true experimental design. The study consisted of one experimental group and two control groups to compare their scores on various assessment measures, before and after the study. The subjects in experimental group were initially put under controlled condition and measured on various pre-decided dependent variable criteria. Subjects were then placed under experimental condition and were introduced to the independent variables. Finally subjects were measured again on the dependent variable criteria. The design is accordingly called as pretest- posttest true experimental design. (Mohsin, 1982.)

3.3.1 Dependent Variables

i. Academic learning as assessed by the standardized tests of achievement;

ii. Academic performance as assessed by Class based grades (% of marks);

iii. Attentive behaviours, impulsive behaviours and hyperactive behaviours, as assessed by researcher’s, parents’ and teachers’ ratings about the child's behaviour.

3.3.2 The Independent Variables

i. Multimodal Intervention Program consisting of

   a. Study Skills Training

   b. Training to increase auditory attention and processing skills

   c. Training to reduce hyperactive behaviours (behaviour modification)

   d. Environmental Structuring

   e. Parent Training

   f. Teacher Training.
3.4.0 TOOLS

3.4.1 DSM - IV Diagnostic Criteria

The Diagnostic and Statistical Manual of Mental Disorders, 4th. ed. (APA, 1994), commonly known as the DSM-IV, categorizes all psychiatric disorders, is published by the American Psychiatric Association and covers all mental health disorders for both students and adults. It also lists known causes of these disorders, statistics in terms of gender, age at onset, and prognosis as well as some research concerning the optimal treatment approaches. The DSM uses a multi-axial or multidimensional approach to diagnosing because rarely do other factors in a person's life not impact their mental health. It assesses five dimensions as described below:

Axis I : Clinical Syndromes

Axis II : Developmental Disorders and Personality Disorders

Axis III : Physical Conditions which play a role in the development, continuance, or exacerbation of Axis I and II Disorders

Axis IV : Severity of Psychosocial Stressors

Axis V : Highest Level of Functioning

The tool is appended on page (viii-x) in the appendix A.

3.4.2 Connor’s Rating Scale (Revised Version- Short Form)

For the screening purpose current study uses CADS-P/T² (Conners’ ADHD/DSM-IV Scales–Parent/Teacher versions), which are the auxiliary scales of Conner’s Rating Scale – Revised; CRS-R. Conners' Rating Scales-Revised (CRS-R), developed by C. Keith Conners, (Conners et al., 1997) are the sets of paper and pencil screening questionnaires designed to be completed by parents and teachers to assist in evaluating students for attention-

²For the purpose of uniformity the CADS will be written as CRS-R in the rest of the dissertation text.
deficit/hyperactivity disorder (ADHD). The CSR-R is used as part of a comprehensive examination and is designed to be easily administered and scored. The total scales have five other auxiliary scales, which are brief and are recommended to use in screenings, treatment monitoring or limited time availability. All the scales, including long and short versions, are tools to assist in determining whether students between the ages of three and 17 years might suffer from ADHD.

The parents' version CADS-P (auxiliary scale of CRS-R) contains 26 items and it features the option of administering both or just one of its two subcomponents. The 26 items on this scale consist of 12 ADHD Index items and the 18 item DSM-IV Symptom subscale. The teachers' version CADS-T (auxiliary scale of CRS-R) has 27 items and has 12 items from ADHD Index and 18 items from DSM-IV Symptom subscale.

Both the forms are single-paged, and numbers circled on the front are automatically transferred to a middle section for use by the clinician. The column scores can then be converted to a T-score. T-scores are standardized scores with a mean of 50 and a standard deviation of 10. These can be further converted to percentile scores as needed. As a rule, T-scores above 60 are cause for concern and have interpretive value. Interpretable scores range from a low T-score of 61 (mildly atypical) to above 70 (markedly atypical). However, again, this information should not be used in isolation to make a diagnosis. The tools are appended on page (v-vi) in the appendix section.

3.4.3 Raven’s Colored Progressive Matrices.

Raven’s Progressive Matrices are multiple choice intelligence tests of abstract reasoning, originally developed by Dr. John C. Raven in 1936 (Raven, 2003). In each test item, the subject is asked to identify the missing item that completes a pattern. Many patterns are presented in the form of a 4x4, 3x3, or 2x2 matrix, giving the test its name. The matrices are posed in three different forms for participants of different ability: Coloured Progressive Matrices,
Standard Progressive Matrices and Advanced Progressive Matrices. The current study used the Coloured Progressive Matrices (CPM). It is designed for younger students, the elderly, and people with moderate or severe learning difficulties, and contains sets A and B from the standard matrices, with a further set of 12 items inserted between the two, as set Ab. Most items are presented on a coloured background to make the test visually stimulating for participants. As reported by Kazem (2009), the test-retest reliability coefficient for CPM is 0.56. Split half reliability coefficients ranged between 0.705-0.858 with a median of 0.81-0.91 with a median of 0.88. Concurrent validity with overall achievement using Pearson’s coefficient was found to be 0.485 and it was statistically significant at p<0.01. Concurrent validity with other mental ability test, Otis-Linone Test were calculated to be 0.641, and was statistically significant p<0.01. Raven’s CPM is a very old tool, originally developed in 1936, yet it was selected in the current study due to its psychometric values (high reliability and validity index), and because it is a relatively ‘culture-fair’ test, little verbal instruction is needed and research has demonstrated that it is equally reliable for ethnic groups (Carlson and Jenson, 1981). Third reason to use it is the fact that the tool is easy to administer individually or in groups (15-30 minutes average time) and score (average 5 minute). The test also meets the purpose of assessment in the study, which was not to calculate IQ but to rule out any kind of mental deterioration, low intelligence or neuro-cognitive dysfunction, thus to identify the children with average intelligence range and no brain injury or dysfunction (Raven, 2003). The sample item from the tool is appended on page (vii) in the appendix section.

3.4.4 SCLAM Rating Scale

SCLAM Rating Scale (Swanson, Conners, Loney and Milich) (Swanson, 1992) is a 23 item rating scale based upon Abbreviated Conners’ Rating Scale, IOWA Conners’ Rating Scale and Loney & Milich’s and Swanson's research on these two scales. It is to be used by teachers in the classroom settings. Norms on Inattention & Deportment (over activity) are provided
(Swanson, 1992). Items are rated on a 4 point scale: 0 = not at all, 1 = just a little, 2 = pretty much, to 3 = very much. The tool is appended on page (xi) in appendix section.

### 3.4.5 SKAMP Rating Scale

SKAMP (Swanson, 1992) - The SKAMP (Swanson, Kotkin, Angler, M-Flynn, and Pelham Scale) is a 10 item scale designed to assess impairment associated with specific context-bound ADHD classroom behaviours. Teachers rate the severity of the 10 items, (6 for attention and 4 for deportment such as ‘difficulty remaining quiet according to the classroom rules’) on a 4 point scale: 0 = not at all, 1 = just a little, 2 = pretty much, to 3 = very much. It should be noted that subsequent versions of SKAMP have been developed, including one with a 7-point scale and the addition of individualized write-in item. This study used the original version of the SKAMP (Swanson, 1992), which is sometimes embedded in the SNAP-IV. Parents were asked to base their ratings on the observation of the student over the previous 4 weeks. SKAMP has been found to be related to both teacher and parent versions of the SNAP-IV (r = 0.93 and 0.79 for Inattention and Hyperactivity/ Impulsivity). Reliability index is reported to be 0.98 for overall scores, 0.96 for Deportment and 0.95 for inattention (Murray et al., 2009). The tool is appended on page (xii) in appendix section.

### 3.4.6 SNAP-IV Rating Scale

The MTA version of SNAP-IV Rating Scale was used to obtain the symptom rating from the researcher. The 26 items of the MTA SNAP-IV include 18 ADHD symptoms (9 for inattentive, such as ‘often fidgets with hands or feet, squirms in the seat’) and 8 oppositional defiant disorder (ODD) symptoms, such as ‘often looses temper,’ specified in DSM-IV. Items are rated on a 4-point scale system from 0 = not at all, 1 = just a little, 2 = pretty much, to 3 = very much. The coefficient alpha for parents and teacher rating were
observed to be 0.94 and 0.97 for SNAP-IV (Murray et al., 2009). The tool is appended on page (xiii) in appendix section.

### 3.4.7 WIAT- II Achievement Test

WIAT- II - Wechsler Individual Achievement Test, 2nd ed. (WIAT-II), (Wechsler, 2001) was developed by David Wechsler. It assesses the academic achievement of students, adolescents, college students and adults, aged 4 through to 85. The test enables the assessment of a broad range of academics skills or only a particular area of need. The suggested use of the WIAT-II is in settings such as schools, clinics, private practices and residential treatment facilities. These facilities can use the WIAT-II in order to assist with diagnosis, eligibility, placement, and decisions regarding interventions. It is encouraged to use this assessment with behavioural observation, history, and additional measures. There are four basic scales: Reading, Math, Writing and Oral Language. Within these scales there is a total of 9 sub-test scores. It offers standard scores, percentile ranks, stanines, and other scores, based either on the student’s age (four-month intervals for ages 4 through 13, one-year intervals for ages 14 through 16, and one interval for ages 17 through 19) or the student’s grade (fall, winter, and spring norms for grades Pre-K through 8, full-year norms for grades 9 through 12, and separate college norms). Internal consistency ranges from 0.80-0.98 and Test-retest reliability ranges from 0.85-0.98. (Wechsler, 2005). Subtests used in the current study are - Word Reading, Pseudoword Decoding, Reading Comprehension, Spelling, Written Expression, Math Calculation, Math Reasoning. The tool – front cover and a sample report is appended on page (xv-xvi) in appendix section.

### 3.4.8 Class Based Grades

Class based grades (% of marks), given by the teachers on the teacher made assessment of performance on state based standards, (topics to be taught, as outlined by the state of South Carolina) were used as assessment of performance in the academic skill areas of English Reading, English Writing,
English Spellings, Math Calculation and Math Application. A sample report is appended on page (xxxv) in appendix section.

3.5.0 DATA COLLECTION PROCEDURE

Students were identified based on teacher information, Parental consent was then sought to do further screening and ratings on the respective students. After consent, final identification was completed through observations by the researcher, and ratings by the parents and teachers using CRS-R, followed by the use of DSM-IV criteria. An Informed Consent Form was sent to the parents to provide them the information about the program as well as to seek their consent for their and their wards’ participation. Teachers and parents of all identified students were given the rating scales, SCLAM and SKAMP, respectively to give details about the behaviour of the students. WIAT (II) was administered on all the students (in all three groups) before the start of the study. Two university post graduate intern students (final semester of M.A. Psychology) administered WIAT (II). Current researcher rated student behaviour for all students on the rating scale SNAP-IV. After the initial data collection, interventions were given for a total of 70 sessions during a span of six months. Following the interventions, all the tests (WIAT II and rating scales) were re-administered. Teachers, parents and researcher completed the rating scales, SCLAM, SKAMP and SNAP-IV respectively. Psychology interns completed the administration of WIAT (II) on all students. There was a total time gap of nine to ten months between the two administrations of WIAT (II). There was a total time gap of six to seven months between the two ratings obtained by the parents and the teachers; and of seven to eight months between the ratings carried by the researcher. Students’ class based grades were collected from the teacher-made school report cards.

Over all, time-lined sequencing of the tasks is as follows: initial screening took approximately 2 months; Pre intervention assessment took 3 months, followed by the actual intervention which took next 6 months. Post
intervention assessment took the next 3 months. Overall it took almost 14 months to implement the entire intervention.

After the entire intervention, an informal closing session was held with all the students in the three groups, separately for each group and they were given a general idea that how their scores have improved and what areas they need to improve. They were also given a brief idea that how their participation would help other kids in future.

3.5.1 Intervention Procedure

It was a multi modal intervention procedure. Students in the Experimental Group were given the training to improve attention span, reduce hyperactivity and study skills to practice. Direct interventions to the students were given and monitored by the researcher and one certified special education teacher. Each intervention session was of 70 minutes; where 50 minutes were spent in active work, 10 minutes in maintaining and discussing the behaviour chart for all the tokens the students received as a part of token-system followed; and rest 10 minutes were spent as change over time in-between various activities. Students in Experimental Group were divided into two intervention groups of 22 each. Both groups were given interventions three days a week (on alternate days) by both the researcher and the special education teachers together. A total of 70 sessions of direct interventions were given to each group over a span of six months. Teachers were given training in total of five sessions about the symptoms and causes of ADHD and basic classroom strategies they could use to work with the student with ADHD. Parents were also given the training for a total of six sessions about the symptoms and causes of ADHD and basic behaviour management strategies they could use at home to work with the students. Class room setting was partially changed as a part of interventions. Students with ADHD were seated near the teacher, had less material on their desks (only required text book and notebook) to avoid overstimulation and distractibility, and were not facing the door or the window.
3.5.2.i Intervention with the Students:

Activity 1 : 5 minute Listening Skill task

Activity 2 : 10 minute Word Copying task: Guided Practice

Activity 3 : 20 minute Reading Skill task: Direct Instructions and Guided Practice

Activity 4 : 15 minutes Mathematics Skill Training

Activity 5 : 10 minutes: Token and Behaviour Chart Management

Samples of weekly behaviour chart, listening skills task, math skills task, reading intervention technique, word copying tasks are appended on pages (xvi - xxxiv) in appendix section. Description of the activities is as follows.

Activity 1: 5 minute Listening Skill task

Students were read random words by the researcher/ special education teacher where various nouns and action words (verbs) included in between. The reading speed was almost 2 words per second. These were not in the sentence format, as that would give predictability to the students about the occurrence of the verb in a sentence. The words were selected from the state-standard based books of grade one and two. Students had to listen to all the words and had to be very careful while listening that they don’t miss any of the selected action words for that day. They had to listen carefully and had to put tally marks on the list of action words given to them. The purpose of the exercise was to develop the listening comprehension skills and to provide them the training so that they can transfer this skill (listening and listening comprehension) in the classroom setting and are able to listen and follow the auditory instructions given by the teacher. Errors of omissions were counted and were told to students (immediate feedback). Students were motivated verbally every day before and after the start of exercise that they have to perform better next day/
better than the previous day. They were encouraged to decrease their error count.

**Activity 2: 10 minute Word Copying task: Guided Practice**

Purpose of the activity was to improve the writing skill as well as to improve basic (visual sustained) attention span. Students were given the passages from the state-standard based books of grade level one. The students had to read the words and copy them in their journal (note-book) (made for this activity). Gradually, the students were to copy the words of their own difficulty level, varying from 2-3 grade level also in comparison to the starting task of first grade level. They were encouraged to read one to three words at-a-time, remember them and write them, instead of copying one word at a time. Towards the end some of students were asked to read the entire sentence, remember that in the short term memory and to write it on their notebook. Total numbers of word written in each day for ten minutes were counted and students were constantly encouraged to write more words than they had written the previous day, using word count from each day. While the students were copying/ writing, their movements were monitored by the researcher and the special education teachers. A frequency count was noted of all irrelevant movements. This made the students very conscious as they knew that their movements were noted, and resultantly their irrelevant movements declined while working on given activities.

**Activity 3: 20 minute Reading Skill task: Direct Instructions and Guided Practice**

To enhance reading skill, students were divided in three groups based on their level of reading. The groups were given practice of reading words in the following order, CVC words with all word families, CVCE words, blends, diagraphs, multisyllabic words and reading the sentences. All the students were given practice in small group of seven to eight to read and practice the words with the researcher and the special education teachers. This activity was
divided in two parts of approximate 10 minutes each, direct instructions and guided practice. A task analysis approach was used while teaching the decoding and reading skill to the students. To enhance the learning, difficult word families/ blends/ diagraphs were highlighted with red and blue inks, while the basic text was in black ink. Students were constantly motivated to do better and were appreciated verbally for all the learning. Positive attitude while reading and training was the major crux of this activity. Every now and then, when student would learn a relatively difficult word family or diagraph, the trainer would acknowledge by saying, ‘see you could do it so well.. smart student.. you were just afraid for no reason, see – you can learn anything..’. These kind of direct and indirect motivational appreciation was very helpful in developing and maintaining student motivation for the various activities.

Activity 4: 15 minutes Mathematics Skill Training:

For this activity, students were sub-grouped in 3 groups of 7, 7 & 8 in each group, based on their performance level. Students were given the training and practice for the basic math operations questions for 15 minutes, where 5 minutes were skill training and 10 minutes were independent practice. On certain days, based on the student performance for that group or individual student, time was adjusted for instruction, guided practice or the independent practice. For independent practice, students were encouraged to do as many questions as they could, out of 30 questions printed on a set of sheet. They were given different sheets every day. There were five difficulty levels: single digit, addition and subtraction; two and three digit addition and subtraction; two and three digit addition with carry over; two and three digit subtraction with borrow; multi-digits, carry and borrow, addition and subtraction mixed. On the first day of each difficulty level, students were given training on that skill and then they had to practice under the guidance of the researcher and the special education teacher to improve their scores on that difficulty level until they reached the next. Students were constantly appreciated for the all the work that they could do right and were motivated to do better each day. During
independent practice time, all irrelevant movements were counted, which made students, conscious of the movements and gradually helped in reducing the number of movements during the sessions.

**Activity 5: Token and Behavior Chart Management: 10 minutes**

Students were given the three points for decreasing body movements, not leaving desk and not talking during each activity (listening, word copying, reading skill and math skill). They could get a total of 12 points. 4 points could get them 1 token. More points not converted into tokens were rolled over for the next day. Students would receive 1 token for increasing numbers of word noted while copying task. A total of 4 tokens could be obtained on each day. 4 token could fetch a reward of sticker, 8 tokens could fetch a reward of stickers and smiley cards. 12 tokens could fetch a reward of crayon box, colorful pencil, colorful shaped erasers and other similar educational accessory material along with sticker and the smiley card. Every day after the interventions, tokens were given and exchanged for rewards.

**3.5.2 ii. Training of Teachers: Five sessions, one hour each**

A total of nine teachers, teaching the students with ADHD in experimental group, were given training for five sessions of one hour each. Session 1 consisted of basic introduction about the program, general discussion in the group about the problems they face in the classroom followed by a presentation by the researcher about the symptom and causes of ADHD. Focus of the training was to communicate the message that ADHD and resultant behaviors are not done deliberately by the student, but are a part of their disorder. Difference between ADHD, Oppositional Defiant disorder (ODD), and Conduct Disorder (CD) were also discussed in session 1. Session 2 and 3 consisted of class-room based behavior management strategies teachers could use, followed by the discussion among the group members. Focus was on developing patience and developing the nonverbal friendly reminder/ cue between the teacher and the student to remind the student to stay on task.
Teachers were also motivated to convey the students that they are loved and respected by the teacher, despite of their problems and that their teachers expect better from them. Teachers were given training to present the segmented task to the students instead of longer tasks/ assignments or of reduced assignments. Teachers were asked to change the seating in the classroom to a quieter place with-in the classroom and to give lesser work at one time. Teachers were also asked to reduce the amount of direct instruction in terms of word-use. Instead of using long sentences, they were asked to give shorter instructions while teaching. Teachers were suggested to decrease the light in the classroom around the seat of the indexed student to make the environment calmer and less distractible for the student during the independent practice time. Session 4 consisted of the presentation by each of the teacher about his/her experience in the class-room following the strategies discussed during the training sessions. Session 5 was a closing session where the group discussed how they modified their teaching strategies and the changes they noticed in the student performance and behavior. Student grades, and improvements and persisting problems were also discussed in the fifth session.

3.5.2 iii. Training of Parents: Six sessions, one hour each

Parents were given training in a total of 12 sessions of twenty two parents in each group, thus each parent received a training of six sessions. Session 1 consisted of general discussion; problems faced by the parents at home, and a brief presentation by the researcher about the symptoms and causes of ADHD. Focus was to convey that ADHD is neither their, nor the child’s fault. Purpose was to eliminate the guilt and the anger for themselves and or for the child. Session 2 again focused on the symptoms, causes and behavior modification strategies for ADHD. Session 3 consisted of developing behavior charts to be managed at home. Session 4 and 5 consisted of problems faced by the parents at home while implementing behavior charts and the possible changes in the implementation. Session 6 was a closing session and the parents discussed overall change in behavior at home and school and
changes in the grades. Apart from regular sessions, several informal discussions were held with the parents regarding the behavior intervention plan implementation at home, usually before or after the training session for the students.

3.6.0 DATA ANALYSIS

Mean scores and standard deviations were calculated using the raw scores of all the students (40 in each group) for all the rating scales, academic performance on class-tests and academic learning on standardized tests.

To study the significance of difference between the pre and post intervention mean scores of Experimental Group, Control Group1 and Control Group2 respectively correlated t test was used for all the criteria.

To study the significance of difference among the three groups in the mean scores at pre and post intervention on all the criteria, F test, 2X3 Factorial Design ANOVA was used.

To study the significance of effect of multimodal intervention program, considering the effect of pre-multimodal intervention program assessment scores on the post assessment scores, on all criteria (individually), where the respective pre-score was taken as a covariate 2X3 Factorial Design ANCOVA was used.