CHAPTER III

PRESENT STUDY

Reading is a cognitive ability which underlies educational achievement. It involves a variety of cognitive functions including attention, concentration, overlapping subskills and abilities such as phonological awareness, rapid decoding, verbal comprehension and general intelligence. [Stanovich and Freeman, 1984].

Problem:

To study the psychosocial correlates of reading disability in rural children and to study the effectiveness of an intervention package aimed at improving reading skills.

Objectives:

Main:

(1) To develop a graded reading test in Malayalam to assess reading ability for rural children in Kerala.

(2) To determine some of the psychosocial correlates of reading.

(3) To develop an effective intervention programme to improve reading ability in children who have reading difficulty.

Subsidiary:

(1) To determine the difference in reading ability between rural and semi urban children.

(2) To determine the psychosocial correlates of reading for rural and semiurban children.

(3) To determine the difference in reading ability between boys and girls.
(4) To determine the psychosocial correlates of reading for boys and girls.

**Operational Definitions:**

**Reading:**

It is the ability to interpret or clarify a code, which is a symbol. It is putting symbols and signs together and extracting meaning whereby graphemes are converted to sound [Spache, 1964].

**Reading Disability:**

It is defined as a type of learning disability in which children fail to master basic processes such as ‘letter recognition’ and ‘sound blending’ despite adequate intelligence and educational opportunity.

**Semi Urban:**

They are areas which are situated within the periphery of the urban area and managed by the taluk office.

**Taluk:**

The governing body of the township which includes the rural and urban areas.

**Rural:**

They are areas managed by the village panchayats.

**Panchayat:**

Each village unit was called ward. Ten to twelve such wards together are called panchayat. These wards are managed by panchayat office, run by the elected members of the board.
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**Semi Urban Primary Health Center (PHC):**

Primary health centres are health clinics situated in semi urban areas and managed by the city's medical college. They have in-patient facilities as well as an out-patient clinic.

**Rural Primary Health Centres (RPHC):**

They are health centres like PHC but, they are placed in rural areas and cater to the needs of the people of that area. However serious cases are mostly referred to the nearest PHC or to the nearest hospitals. They have only out-patient facilities.

**Research Design:**

To meet the objectives, the study was conducted in several stages. Figure I gives a diagrammatic representation of the entire research design.

**FIGURE I FLOW CHART SHOWING THE ENTIRE RESEARCH DESIGN - VARIOUS STAGES:**

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STAGE I
1. Determination of psychosocial correlates of reading ability

STAGE II
2. Effect of Intervention Programme Aimed at Increasing Reading Skills
   - Experimental group (n=41)
   - Control Group (n=17)

STAGE III
3. Analyzing the data obtained from different sources to determine the psychosocial correlates of reading

STAGE IV
4. Administration of the pre-intervention test battery

STAGE V
5. Post Intervention Testing n=(41+17)=58

STAGE VI
6. Analysis of data to determine the effectiveness of the intervention
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*Note: The diagram is simplified for clarity and does not represent the actual data flow or process.*
DESIGN:

Stage I: Development of the Reading Test.

Because of a lack of a standardized test in Malayalam, the aim of this stage was to develop a graded reading test in Malayalam which could then be used to detect reading disability.

Stage II: Screening and Testing the Main Sample.

Using the voters list, the subjects who met the inclusion-exclusion criteria were determined. Data was collected using (i) Screening interview with the subject’s mother or any significant other from the family to elicit relevant social and demographic details. (ii) Administration of the psychological tests and interview of the index child who was assessed for reading ability and other psychological correlates and (iii) rating of the index child by the teacher on behaviour of the subject.

Stage III: Analysis of the Data.

The data obtained from the different sources were analyzed to determine some of psychosocial correlates of reading ability.

Stage IV: Sample for Intervention Programme.

The sample for the intervention programme was determined depending on the results of the reading test. Subjects who scored low and fitted the criteria adopted were contacted for further testing and for allotment to the experimental and control groups.
Stage V  Intervention Programme.

The aim of the intervention programme was to teach reading skills to enable the child to learn to read. Two groups: the experimental [who received the intervention] and the control group (who did not receive the intervention) were formed. The experimental group was sub-divided into smaller groups based on the level of reading disability.

Stage VI  Post Intervention.

The efficiency of the intervention programme was assessed using the pre-post research design.

VARIABLES:

Psychological Variables:

1. Reading Ability
2. Vocabulary.
3. Intelligence.
4. Concentration.
6. Handedness.
9. Speech and Language.
Demographic Variables:

2. Parental occupation.
3. Religion.
4. School and standard in which the child is.
5. Order of Birth.
6. Age.
7. Sex.

Hypotheses:

Main:

1) The psychological and social variables studied will help account for a part of the variance in reading ability.
2) There will be a significant relationship between intelligence and reading ability.
3) There will be a significant relationship between reading ability and vocabulary.
4) There will be a significant relationship between neuropsychological development and reading ability.
5) There will be a significant relationship between visual discrimination and reading ability.
6) There will be a significant relationship between auditory discrimination and reading ability.
7) There will be a significant relationship between speech and language and reading ability.

8) There will be a significant relationship between visual motor functioning and reading ability.

9) There will be a significant relationship between concentration and reading ability.

10) The intervention programme will bring about a significant difference in children’s reading ability.

Subsidiary:

1) There will be a significant difference between rural and semi-urban children in their reading ability.

2) There will be a significant difference between the psychosocial correlates of reading ability of rural and semi-urban children.

3) There will be a significant difference in the reading ability of boys and girls.

4) There will be a significant difference in the psychosocial correlates of reading ability of boys and girls.

Procedure:

Stage I:

Aim:

The aim of this stage was to develop a reading test in Malayalam. In spite of the need for a reliable and valid measure of reading ability in school children, very few have been developed in India’s regional languages. As there is no such test
available in Malayalam, there was a need to develop a new test for the purpose of the study.

Sample:

The sample for the first stage consisted of 300 subjects studying classes I to X in a rural school, with 15 boys and 15 girls in each standard.

Method:

To develop the test, words were chosen from the Malayalam readers prescribed by the board of education [Govt. of Kerala for the year 1993] for standard I to X. With the help of an educationist, words were chosen from the text books prescribed for each standard. In all, 70 words were selected for use with young children. These 70 words ranged from 2 syllable words to 8 syllables. They were arranged in increasing order of difficulty and proceeded from concrete to abstract in content. These words were all presented to the sample using the flash card technique.
Table 3.1  Showing the Mean Age and SD for stage I Sample.

<table>
<thead>
<tr>
<th>Standard</th>
<th>n</th>
<th>Mean Age (months)</th>
<th>SD</th>
<th>n</th>
<th>Mean Age (months)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>15</td>
<td>65.0</td>
<td>4.86</td>
<td>15</td>
<td>64.0</td>
<td>3.72</td>
</tr>
<tr>
<td>II</td>
<td>15</td>
<td>76.0</td>
<td>4.44</td>
<td>15</td>
<td>88.1</td>
<td>6.77</td>
</tr>
<tr>
<td>III</td>
<td>15</td>
<td>98.7</td>
<td>10.8</td>
<td>15</td>
<td>90.0</td>
<td>18.58</td>
</tr>
<tr>
<td>IV</td>
<td>15</td>
<td>114.9</td>
<td>5.66</td>
<td>15</td>
<td>117.5</td>
<td>6.72</td>
</tr>
<tr>
<td>V</td>
<td>15</td>
<td>125.3</td>
<td>6.34</td>
<td>15</td>
<td>124.6</td>
<td>8.38</td>
</tr>
<tr>
<td>VI</td>
<td>15</td>
<td>135.6</td>
<td>4.92</td>
<td>15</td>
<td>137.1</td>
<td>5.87</td>
</tr>
<tr>
<td>VII</td>
<td>15</td>
<td>142.6</td>
<td>5.11</td>
<td>15</td>
<td>142.2</td>
<td>5.18</td>
</tr>
<tr>
<td>VIII</td>
<td>15</td>
<td>154.9</td>
<td>3.23</td>
<td>15</td>
<td>149.4</td>
<td>4.37</td>
</tr>
<tr>
<td>IX</td>
<td>15</td>
<td>157.1</td>
<td>3.44</td>
<td>15</td>
<td>158.1</td>
<td>4.20</td>
</tr>
<tr>
<td>X</td>
<td>15</td>
<td>176.4</td>
<td>4.6</td>
<td>15</td>
<td>173.5</td>
<td>4.34</td>
</tr>
</tbody>
</table>

Analysis:

Each word presented, when correctly read and pronounced was given a score of 'one'. The total score for each word was calculated [i.e., number of children passing that item] across all ages. The analysis was done: (1) by calculating the percentage of subjects who passed, each item.
(2) These percentages were subtracted from 50 which is the mid point of the normal curve. The value received is ‘Z’ value. This value is used to get ‘x’ value by referring the table for the area under normal curve (Kothari, 1988).

(3) The item analysis was done by using the formula \( \Delta = 13 + 4(x) \). This method employed by educational testing service in its test development, uses a unit designated by the Greek letter Delta (\( \Delta \)). Because item difficulties expressed in terms of the normal curve (\( \sigma \) - units) involve negative values and decimals, they are usually converted into a manageable scale. The constant 13 and 4 are mentioned arbitrarily in order to provide a scale that eliminates negative values and yields a range of integers wide enough to permit the dropping of decimals. The \( \Delta \) scale is a scale in which practically all items fall between 1 and 25 and the mean difficulty value within any given group corresponds to 13 [Anastasi, 1988] The value of ‘x’ is been substituted in the formula.

The ‘\( \Delta \)’ scores obtained were then ranked. The words were arranged according to their ranks. If two or more words had the same ranking, only one of them was randomly selected. Thus 40 words were chosen for the final list and was used for further testing. Details of the analysis are presented in Appendix ‘A’. The reliability of the test was calculated using the split half co-efficient and test re-test co-efficient.

The retest was done after a gap of twelve months. The test re-test reliability is 0.69 and shows that it is highly significant. This indicates that the test is reliable
and stable. The test would yield the same result if it is conducted on this sample at different times.

An odd even split was done as words were arranged in increasing difficulty and the Spearman-Brown co-efficient obtained is 0.96 which is highly significant.

The alpha co-efficient was also calculated. This is a procedure to find the variance of all individual’s scores of each item and then to add these variances across all items. The alpha co-efficient obtained is 0.983 which shows that it is highly significant and thus the test is reliable.

Stage II Testing The Main Sample

Aim:

The aim of this stage was to determine the reading ability and to study the psychosocial correlates of reading ability.

Sample:

The sample for stage II consisted of 1152 children between the age of 8 and 12 years.

Sampling Technique:

To obtain the sample, two panchayats were randomly drawn from a rural primary health centre (RPHC) and two from semi urban primary health centre (PHC). Within each panchayat, households were selected from the voters list, which was obtained from the taluk office (Appendix B). Using random number tables, all households were visited until 300 subjects from each panchayat were contacted. Thus in all 1,200 children were contacted. Out of these, 48 were deleted as they
scored high on the mental retardation scale. Thus 1,152 children comprised the sample.

The inclusion/exclusion criteria for sample selection were:

1. **Age:**

The age of the sample chosen was between 8 and 12 years. This is because most children are admitted to a school only when they are 6 or 6.5 years old. The lower criteria was chosen as 8 years so that all children would have undergone a minimum of 1 year of schooling and would be familiar with the alphabets. The upper limit was 12 years as children who cannot read after they are 12 years automatically drop out from school.

2. **Area of Residence:**

Individuals staying in the selected area for at least 4 nights a week, for the last 6 months were selected and this constituted the area of residence. Thus, children living away from their parents house in the selected area were excluded from the study.

3. **The TQ (Ten Questions) Questionnaire (Belmont 1984) (Appendix 6)** administered consists of ten questions regarding the child’s self help, measures milestones of development, and his abilities. It was used to screen out cases of severe mental retardation. This instrument has been validated in 9 developing countries including India. A sensitivity of 1.0 was achieved in most countries; specificity varied between 0.66 and 0.97.
Thus children with mental retardation were excluded from the sample.

Table 3.2 shows the sample description.

<table>
<thead>
<tr>
<th></th>
<th>RURAL</th>
<th>SEMI URBAN</th>
<th>(x^2) chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>n</strong></td>
<td>676</td>
<td>476</td>
<td></td>
</tr>
<tr>
<td><strong>SEX</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>360</td>
<td>235</td>
<td>1.7</td>
</tr>
<tr>
<td>Females</td>
<td>316</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td><strong>RELIGION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindus</td>
<td>247</td>
<td>246</td>
<td>27.68**</td>
</tr>
<tr>
<td>Muslims</td>
<td>420</td>
<td>228</td>
<td></td>
</tr>
<tr>
<td>Christians</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Father’s Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Lower Professional</td>
<td>47</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Skilled Manual</td>
<td>145</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Semi Skilled Manual</td>
<td>116</td>
<td>86</td>
<td>8.7</td>
</tr>
<tr>
<td>Unskilled Manual</td>
<td>290</td>
<td>171</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>59</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Dead</td>
<td>16</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Mother’s Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lower Professional</td>
<td>15</td>
<td>7</td>
<td>8.02</td>
</tr>
<tr>
<td>Skilled Manual</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Semi Skilled Manual</td>
<td>18</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Unskilled Manual</td>
<td>30</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>603</td>
<td>443</td>
<td></td>
</tr>
</tbody>
</table>

** p < 0.01

Techniques:

A preliminary screening interview was first conducted with the subject’s mother or significant other.
The screening questionnaire consisted of the household questionnaire developed by the World Health Organization (WHO, 1986) for use in developing countries (Appendix C). This elicits data concerning demographic and social characteristics including community, caste, occupation and household data as well as questions about the education of the index child and his parents.

The Rutter's (1970) A2 (parents completed) scale translated into Malayalam (Hackett Latha and Richard, 1988-89) was administered. It is a questionnaire which elicits information regarding the child's behaviours. The questions concern his behaviour at home and with his family. The parent of the child is expected to complete the questionnaire. There are altogether 19 questions. The scoring is such that for every affirmative answer (i.e., if a particular behaviour problem is present) a score of 'one' is given, otherwise a 'zero' is given. The scores can range from 0 to 19 depending upon the problems he has. The score is such, that a cut off score of 12 and above indicates that the child has behavioural problems in the home environment. This test has demonstrated a sensitivity of 0.66 and specificity of 0.77 (Appendix C).

The index child was given the following instruments:

(1) Graded Reading Test:

The reading test developed in stage I consisted of 40 words arranged in increasing order of difficulty. These words were presented using the flash card technique to each child who was asked to read out the word. Each word which was correctly read and pronounced was ticked in the response sheet as a correct
response. Every correct response was given a score of one. Scores could therefore range from 0 to 40. Higher the score, better was the reading ability.

(2) Vocabulary Test:

Every alternate word of the reading test was used for the vocabulary test. The test consisted of 20 words arranged in order of increasing difficulty. Care was taken to see that the meanings of the words were concrete in nature. This is because according to Piaget's theory of cognitive development, children between the ages of 8-11 are in the concrete operational stage. The subjects were expected to give the meaning of the words and explain the word they had read. The rationale for scoring was similar to the Vocabulary subtest of the Wechsler Intelligence Scale for Children (WISC). The scoring system (2, 1 and 0) took into account the quality of the response. Two points were awarded for good synonyms, major uses or general classifications, whereas one point was given for vague responses, less pertinent synonyms or minor uses. Thus the score could range from 0-40. Higher the score, the better was the vocabulary ability.

(3) The Coloured Progressive Matrices (CPM)

The CPM, 1990 edition (Raven, Court, and Raven) was administered. The CPM is designed for use with young children and old people. It can be used satisfactorily with people of any language, thus being a culture-fair test.

The three sets of 12 problems constituting the CPM are arranged to assess the chief cognitive processes, which children under 11 years of age are usually capable of. The three sets together provided three opportunities for a person to
develop a consistent theme of thought. The scale of 36 problems as a whole is
designed up to intellectual maturity.

The test consists of 36 matrices in which one part is missing in each. Below
the design are 6 designs from which the subject has to select one that completes the
picture or matrix both horizontally and vertically. The subject can perform at his
own pace, however, he/she is asked to complete all the 36 pictures without skipping
any. It was used as an un-timed test.

Referring to the key, responses were scored. Scores can range from 0-36.
Higher the score better the performance.

(4) The Short Form Of The Oseretsky Test Of Motor Proficiency [Rutter,
Graham and Yule, 1970].

This test was used to determine the visual motor co-ordination and
Handedness of the subject, and therefore to give some idea about
neuropsychological development.

From Sloan’s 1955 revision of the Oseretsky test, Rutter et. al (1970)
selected 12 items which would discriminate motor proficiency in the age range of 9-
11 years. This test requires as little equipment as possible. The scoring criteria used
is similar to the original version.

In some sub-tests, the preferred hand and foot was treated differently from
the other. “Preferred” is the hand or foot which the subject spontaneously uses for
the first trial. Since the test is primarily one of motor proficiency and not of
intelligence, it is important to minimize the influence of verbal comprehension on
subject's performance of each task. Therefore, anything that could be done to assist the subject in understanding the task is permitted. The items are arranged in approximate order of difficulty and were administered in the order presented. Every effort was made to minimize the influence of fatigue.

The scoring and recording procedure for each item of the scale was done as prescribed in the manual. The scoring criteria for pass and fail is explicit, where the score for each item can range from 0-3 and the total score can range from 0-36. (Appendix D). Higher the score the better is the neuropsychological development.

Teacher's Rating:

The Rutter's B2 (teacher completed) scale translated into Malayalam (Hackett, Iatha and Richard, 1988-89) was administered. The scale determines children with behaviour problems at school. It assesses the child on behaviour disturbances as rated by the teacher. It has 14 items in total. A score of 'one' is given if a particular problem or item is present in the child. Thus the score can range from 0-14. It has demonstrated a sensitivity of 0.86 using a cut off score of 6 and above. This indicates that if a child scores 6 or more, he/she has a behaviour problem.

General Procedure:

The entire data collection took 12 months. The entire testing and preliminary screening was done at the subject's house. The time required to test each child was approximately 35-45 minutes.
A number of difficulties were encountered during the process of data collection. As the entire survey was done in rural and semi-urban dwelling, the terrain was a new experience, where a lot of places could be accessed only by walk. Most of the houses were widely spread out and a vast stretch of area had to be covered, which was time consuming. Moreover most of the people in the area were apprehensive to entertain a stranger in their house and give information which were sometimes personal.

Occasionally the children would not come to be tested as they felt it was a medical check up, which they were used to and which ultimately ended with a vaccination or an injection which was painful. Therefore much coaxing had to be done and the testing equipment had to be shown to the child before the actual testing was done. This was done to reduce his apprehensions and anxiety and to make him feel relaxed.

Every child was tested at home, as testing in the school in the presence of his teachers and peers would make the subject anxious. Moreover, subjects who were constant absentees would also be excluded and this would have led to a biased sample.

Stage : III

The objective of this stage was to analyze the data obtained from the different sources and to determine some of the psycho-social correlates of reading ability.
Stage IV:

Aim:

The objective of this stage was to study the children with reading disability and to determine the sample for the intervention programme. Since it was a pre-post research design, baseline assessment prior to intervention was also made.

Sampling Technique:

Based on the results of the reading test subjects who scored below the 25th percentile (10 and below) were determined. This was done using the frequency distribution where all the Q₁ subjects were included as subjects below 25th percentile. From this group, based on the exclusion/inclusion criteria, two subgroups, experimental and control groups were obtained. The inclusion criteria were (1) all the children had to be from the same area, so that the accessibility to them was good, and (2) students had to belong to the same school. This ensured that the school environment remained the same.

Description of the Sample:

The sample consisted of 58 subjects. These subjects were divided into two groups (1) Experimental group (n = 41, m = 27, f = 14) and (2) control group (n = 17, m = 9, F = 8). All these subjects were given a battery of tests to further investigate some of the correlates of reading disability.

Assessment Tools:

The Pre-intervention test battery consisted of:
(1) The Reading Test:

The Graded Reading Test was administered once again to the sample to ensure stability of reading scores across time (around 1 year time lapse between stage II and stage IV).

While testing, apart from the total score, qualitative analysis based on blending and alphabet recognition was also done to facilitate grouping for the intervention programme.

(2) Number Cancellation:

This test was used as a test of concentration. This is a critical part of perception because it determines what information enters the system to be processed. The test consists of numbers from 1 to 9 randomly arranged. The subject is asked to cancel out numbers 2 and 3 for a period of one minute. The subject is encouraged to work as fast as he can within the prescribed time limit. The responses are scored for number of correct cancellations, the errors (numbers other than 2 and 3 cancelled) and omissions (number 2 and 3 not cancelled). The index of concentration was calculated by subtracting the errors (omissions and errors) from the number of numbers correctly cancelled.

(3) Index Of Specific Learning Disability: (Appendix F)

The index of specific learning disability, developed by Kapur et. al (1991) at the Department of Clinical Psychology NIMHANS was used. Changes were made in the test in consultation with the author so that it could be used with the present
which sound the same except for slight variations. These words are orally presented and the subject has to respond by saying whether they are the same or different.

The scoring is such that 5 or more errors by children aged 6 or older suggests difficulty with auditory discrimination.

(iv) Auditory Memory Functioning:

The rationale of the test is to assess if there is any difficulty in following a sequence of directions and also difficulty in retrieving words which they recognize and understand.

The subtest consists of 8 simple sentences in Malayalam which the subject has to repeat after the experimenter reads it out, one after the other.

One or more errors in each of the 8 sentences suggests difficulty with auditory memory in children aged 5 and above.

(v) Speech And Language:

This test helps to understand the child’s verbal language expression. Here the child is shown three pictures and is asked to indicate orally, what they are, what they do and what can be done with it? The number of responses given by the subject are recorded verbatim.

The scoring is such that for children aged 7 and above, less than 6 responses totally suggests difficulty in verbal language expression.

(vi) Visual Motor Functioning:

This subtest assesses comprehension, visual-motor activity and eye-hand readiness skills. The test consists of 4 geometrical designs, and the subject is asked
to draw the design exactly the way it is seen. The subject is given 3 chances and the best effort is scored.

Difficulty with these designs after age 7, indicates a need for a program of comprehensive visual motor activities to develop eye hand readiness skills.

(4) Informal Reading Assessment:

An assessment list was developed using the rationale of the San Diego Quick assessment list [Elkwall and Shanker, 1983] and with the ideas from informal reading assessment test developed by Kapur et. al (1991). This was used to assess the subject’s reading grade, so as to group them for the intervention programme, according to their ability.

This list consists of 8 sets of 8 words each in Malayalam, from grade I to VIII. These sets of words were presented to the subject one by one until there was failure to read further.

The scoring criteria was as per the San Diego Quick assessment test (Appendix 6).

Stage V

Intervention:

After the pre-intervention assessment battery was given to all the 58 subjects, they were divided into the experimental and control groups randomly. The experimental group was then divided into subgroups (according to their ability) for further intervention.
Aim:

The aim of the intervention programme was to improve the reading skills of the children who had scored low in the reading test, indicating poor reading ability.

Sample:

The sample who underwent the intervention programme were 41 children (14 females and 27 males) who constituted the experimental group. Small homogeneous groups of 5 to 6 were formed. All members of the group belonged to the same sex, same level of reading ability and school. Based on these criteria, 9 groups were formed and the intervention package was planned in such a manner as to cater to the needs of each group.

Based on the informal reading test and qualitative analysis score, three levels of ability were obtained i.e., (1) alphabet knowledge (2) Blending ability and (3) informal reading grade.

(1) Alphabet Knowledge:

This group consisted of subjects who were not able to read more than two alphabets. These subjects in spite of being 8+ in age and attending school for at least two or more years were ignorant of the letters of the alphabet and their transcription.

There were 10 subjects (M = 5, F = 5) who did not have alphabet knowledge. They were divided into two homogeneous groups of 5 each. All members of the group belonged to the same sex and school. These two groups,
group I and group II had the greatest disability and as a primary step, alphabets had to be taught before they could start reading.

(2) Blending Ability:

Group III and IV subjects had blending difficulty. This groups consisted of 8 subjects \(M = 4, F = 4\). These subjects in spite of having good alphabet knowledge were unable to blend two or more syllables together to form a word.

For e.g. : \[ a \_ b_1 = a \_ (a) \_ v_2 + b_1 \_ (x) \_ l_3 = b_3 \_ 2 \_ (v_2 \_ l_3) \_ (N \_ E_1 \_ T) \]

Blending is the ability of an individual to incorporate one or more than one phoneme to form a word morpheme. Thus this group consisted of children who could read the individual alphabets but were unable to continue or blend them to form morphemes.

3) Informal Reading Grade:

Groups V to IX consisted of subjects who were below the grade on informal reading assessment. They comprised 23 subjects \([F = 5 \text{ and } M = 18]\). These subjects had the ability to read the alphabets and blend but they could not read as well as expected for their age.

Procedure:

The intervention programme was group based. It was decided to form groups whose size would range from 3 to 6. This would enable the investigator to have a one-to-one interaction with each child.
There were in all 9 intervention groups, based on these levels of ability. As it would be difficult to bring all the subjects to the same level, different goals were aimed at, for each level.

Each session lasted for 35 minutes (one class period) and the groups met every alternate day, three times a week, for 4 weeks. Thus each group met for a minimum of twelve sessions totally. The experimental group was divided into 9 subgroups. Thus there were a total of 108 sessions (9 x 12 = 108) in the entire intervention programme.

**Intervention Programme**

The ability to recognize words is of considerable importance in the early stages of learning to read. Thus this ability was the major focus of assessment of early reading difficulties.

There is evidence that intervention programmes designed to increase awareness of sounds improves the reading performance of normal children (Bradley and Bryant, 1983; 1985)

**Groups 1 and 2 : Lack of Alphabet Knowledge.**

**Programme 1 Learning Alphabet Sound:**

The aim of this programme was to learn the sound of the alphabets correctly. Both the vowels and the consonants were to be learnt and their sounds correctly pronounced.

The alphabets were taught using the flash card technique (7 x 5 cms card). The cards with a single alphabet written boldly in the centre (Appendix H) were
randomly exposed and the sound of the letter was clearly pronounced by the
experimenter and repeated by the subject. Altogether there were 15 (vowels) + 36
(consonants)=51 alphabets. (Appendix I). Each alphabet was exposed to the child
until he had learnt it well and could correctly pronounce it when exposed to him.

Programme II Grapheme Learning:

Grapheme represents the pattern or form of the alphabet i.e., the way,
method and other details of how to write an alphabet.

The aim of the session was grapheme learning.

The alphabet was clearly written by the experimenter on the black board and
its form, orientation etc., were explained. It was then traced by the child over the
experimenter’s lines on the blackboard. He then copied it in his note-book and then
wrote it from memory. This was repeated two or three times to ensure that the
subject learnt the alphabet.

Programme III, IV and V

The aim of these sessions were to consolidate the learning of programme I
and II.

During these sessions the alphabets were randomly written on the
blackboard by the experimenter and the pupils were asked to name it.

At times the subject was made to identify the alphabets when the cards with
each alphabet were presented randomly and asked. “How does the letter sound?”
Every right answer was rewarded. The incentive was a clap of hands and a loud
‘good’ by the experimenter in front of the group.
Programme VI to IX

The aim of these sessions were to learn sight words. Sight words are words that the reader is familiar with and is part of his vocabulary, hence can be recognized instantly.

New sight words were taught using the syllables which had now been learnt. These words were then used in meaningful context with the experimenter phrasing small sentences.

Programme X to XII

Using the syllables learnt the subjects were helped to make new words which were prescribed for the primary text books. These words were then written by the subject on the black board individually. Each subject was given a different word. The written words were then read out so that the subject became familiar with them and they became sight words. The subjects were also taught to make sentences using the new sight words. To begin with the sentences were short and simple. Help was also given to the subjects where and whenever necessary and errors were rectified so as to enhance learning.

GROUP 3 And 4 : BLENDING.

The groups 3 and 4 consisted of subjects who had blending difficulties.

Programme I to IV

The first four sessions aimed at learning to discriminate the sounds of the alphabets. The subjects were shown alphabets one by one in a random order and they were asked to pronounce it.
Each alphabets sound was learnt thoroughly so that they could discriminate the sound in various words that were read to them. This was done by telling the students that they had to lift their hands up whenever a particular sound (for e.g.; Bha) is present in the given set of words, giving due credit to the subjects when they responded correctly. Whenever an alphabet was wrongly read, the subject was not only taught the right sound for the exposed alphabet, he/she was also shown the alphabet which was wrongly read. This helped him to discriminate between the two alphabets that they had read. Thus the subjects became aware of the sounds of various alphabets and were able to discriminate the sound for each alphabets.

Programme V to VIII

In these sessions the subjects who had blending difficulties were helped in putting two or more alphabets/sounds together to make a word. The primary step was (1) the subject was asked to break the words presented into single alphabets (2) second, they were asked to read “What sound each alphabet makes” and (3) finally, they were asked to put the sounds together to make a word. This is easy as Malayalam has a phonetic transcription.

example: 'म (ka) + र (nu) + अ (ka) = मार्ग (kañnuka) (to see)

and has a high grapheme-phoneme correlation.

Programme IX to XII

In these sessions, the subjects were helped to read new words—words from books which they were unable to read during the start of the sessions. The words
ranged from 3 to 5 syllables. The subjects were asked to read the words using the technique learned in the previous sessions.

The new words that were learnt were used in making new sentences so that they were able to understand its contextual meaning.

**Group V, VI, VII, VIII and IX**

The next 5 groups i.e., group 5,6,7,8 and 9 had children whose reading ability was below the expected norm.

They were grouped on the basis of their scores and their performance on the informal reading assessment list. The subjects varied in their ability. The groups 5,6 and 7 has subjects who were able to read only grade III words. The group 8 subjects were able to read grade IV words and group 9 were able read grade V words though according to their age they should have been reading at a higher grade.

**Programme I to III**

The first 3 sessions were used to brush through the grade III words to confirm that the subjects knew the words and were not guessing.

In these sessions, the subjects were made to identify each alphabet in the words and were asked to discriminate their sounds. They were also asked to blend the sounds together to read the words.

**Programme IV to V**

Here, the subjects were given grade IV books and were asked to identify the words they could read as well as those words which were already in the vocabulary of sight words. This was to find out and confirm that the subjects were not able to
read words which were of grade IV as the aim was to teach then to read these words during the sessions.

The grade IV words (new words) were taught using the flash card technique. Each alphabet of the word was written in separate cards. The subjects were made to say the sound of each alphabet when the cards were exposed, one by one. When all the alphabet had been read out, all of them were placed together and the subjects were asked to put all the sounds together and say the words. As the words were learnt, they were also taught their meaning and their use in contextual sentences. This helped them to remember the words learnt and encouraged them to use their words in the right context.

Programme VI to IX

In these sessions the subjects were made to list all the words they knew. Out of it they were asked to list out those words which they had learnt newly. In the first attempt the subjects were helped to remember words by giving contextual clues. The subjects were later given reading materials (i.e., any magazine/newspaper) and they were asked to identify the words that they were able to read in a single page. Effort was also made to know that the subject understood the meaning of the words and also knew the right pronunciation. The subjects were given positive incentives. A chart was prepared on which, all the subjects name were written and every time a subject learnt a new word or if he/she was able to read a new word correctly (pronunciation), a star was given besides his/her name, which was summed up at
the end of the session so as to encourage the subjects to work and make efforts to read words correctly and increase their reading skills.

In these sessions the subjects were helped to read paragraphs in which most of the words could be read. This motivated the students to read more which in turn helped them to increase their vocabulary.

The subjects were not only helped to read concrete words but also abstract words, which would help them make new sentences and also use the words in other contexts.

Table 3.3 Summary of the Intervention Programme

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SESSIONS</th>
<th>PROGRAMME</th>
</tr>
</thead>
<tbody>
<tr>
<td>I and II (Alphabet Knowledge)</td>
<td>1 to 2</td>
<td>Learning alphabet chain.</td>
</tr>
<tr>
<td></td>
<td>3 to 5</td>
<td>Identifying the alphabets and taught the alphabet using word technique.</td>
</tr>
<tr>
<td></td>
<td>6 to 9</td>
<td>Taught new basic sight words and using them in meaningful context.</td>
</tr>
<tr>
<td></td>
<td>10 to 12</td>
<td>Helped to make new words from books and phrase new sentence.</td>
</tr>
<tr>
<td>III and IV (Blending)</td>
<td>1 to 4</td>
<td>Discriminate alphabets and developed awareness of learning the sound.</td>
</tr>
<tr>
<td></td>
<td>5 to 8</td>
<td>Discriminating sounds in words and identifying them and putting them together.</td>
</tr>
<tr>
<td></td>
<td>9 to 12</td>
<td>Teaching new words and helping to form new words, at meaningful context.</td>
</tr>
<tr>
<td>V, VI and VII (Informal Reading)</td>
<td>1 to 3</td>
<td>To read words from grade III.</td>
</tr>
<tr>
<td></td>
<td>4 to 5</td>
<td>Identifying III grade words in IV grade books and learning new words in the same.</td>
</tr>
<tr>
<td></td>
<td>6 to 9</td>
<td>Listing new words learnt and to recall the words without any clues from books.</td>
</tr>
</tbody>
</table>

65
<table>
<thead>
<tr>
<th>Grade</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIII (Informal Reading)</td>
<td>10 to 12</td>
</tr>
<tr>
<td></td>
<td>1 to 4</td>
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<td></td>
<td>5 to 6</td>
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<td>7 to 10</td>
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<td></td>
<td>11 to 12</td>
</tr>
<tr>
<td>IX (Informal Reading)</td>
<td>1 to 3</td>
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<td></td>
<td>4 to 7</td>
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<td></td>
<td>8 to 9</td>
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<td></td>
<td>10 to 12</td>
</tr>
</tbody>
</table>

Along with these individual sessions parents of the subjects were also contacted and were encouraged to help the child at home.

The entire intervention programme was conducted at the school. The principal and vice-principal gave the required assistance during the programme. The experimental group on the whole had 41 subjects but during the course of the programme 3 subjects dropped out of the programme (2 females and 1 male) because of lack of interest and motivation.
Stage VI Post-Intervention Assessment:

The post intervention assessment was done to know the effect of the intervention programme.

In this stage the reading test (developed in stage I) was administered on the entire intervention sample (both experimental and control) to find out whether the intervention had brought about a change in the reading ability of the sample.

Thus entire study was conducted in six stages and the results obtained were then subjected to statistical analysis to satisfy the objectives of the research.