METHOD

This chapter presents the procedure followed to achieve the objectives of the study. The major objectives of the study were to develop a quick and effective screening device for the classroom teachers to identify children facing learning difficulties; to develop, implement and evaluate a classroom instruction program for children facing learning difficulties after identifying them and to identify from among these children those who face learning disabilities. The major components are as follows:

I. Research design.

II. Selection and description of sample.

III. Description of tools and tests.

IV. (1) Pre-testing.

(2) Program description.

(3) Post-testing.

V. (1) Analysis.

(2) Identification of children with learning disabilities.

I. Research Design

The design employed for the present study was a 2 x 2 x 2 factorial design. Three main variables namely the standard (grade), the level of learning difficulties, and the treatment were varied at two levels. There were two standards; II and III; with two groups of children i.e. experimental and control, and children classified under two levels of learning difficulty i.e. high and low.

Table 1. Sample Description : Background Characteristics.

Family Type		Number of Family Members			Religion		Father's Age (Years)					Mother's Age (Years)				
Nuclear	Joint	4 and below	5 to 8	8 and above	Hindu	Islam	30 and below	36 to 40	41 to 45	46 to 50	51 to 55	25 to 30	31 to 35	36 to 40	40 to 45	45 to 50
81%	19%	2.2%	95.7%	2.0%	96%	4%	13%	68.7%	14%	3%	2%	14%	69%	10%	5.9%	1.1%

Father's Occupation							Mother's Occupation		Father's Education			
Policeman	Service	Shops	Labourers	Vendors	No job	Retired	Working	Non-working	Uneducated	Upto VII	VII to X	S.S.C.
7%	7%	2%	32%	39%	5%	8%	8.3%	91.6%	18.1%	42.8%	20%	20.3%

Mother's Education				Family Income					
Uneducated	Upto VII	VII to X	S.S.C.	Rs.100 to 200	Rs.200 to 300	Rs.300-400	Rs.400-500	Rs.500-600	Rs. 1000 above
47%	45%	3.57%	2%	23%	39%	11%	17%	8%	2%

Language Spoken				
Gujarati	Marathi	Hindu	Urdu	Bilinguial
65.45%	7.14%	15.96%	1.19%	3.57%

II. Selection and Description of Sample

The sample of the present study was drawn from standards II and III of the Sayajigunj Mishra Shala No. 5 of Municipal Corporation school. To begin with, there was a total of 127 children from both standards II and III. Table 1 describes the general background of these children.

From among these 127 children, 115 who were found to have difficulties in learning were selected as the sample of the present study. The procedure followed for the selection is described below.

(1) Procedure of selection of sample A: Sample A was selected on the basis of three* test measures namely: (1) Draw-a-Man Test of IQ (Phatak, 1966); (2) Graded Word Test (Written); (3) Teacher's Rating Scale (TRS).

Step I: All the children i.e. 127 were administered the Draw-a-Man-Test of IQ to acertain the normalcy of their IQs. Those children who had IQs below 70 i.e. border line, were excluded from the sample. This left 119 children with an IQ range of 70 to 138.

Step II: A Teacher's Rating Scale (TRS) was given to the class teachers of 119 children to be filled in for each child individually. Responses on TRS were categorized according to the prescribed procedure (described on page 84). Accordingly 116 children who fell into a category indicative of "Learning difficulties" were identified.

---

*Described in detail in the Section on 'Tools and Tests'.

Step III: Along with TRS, the 119 children were also administered a Graded Word Test (GWT-Written). The responses indicated the following:

Maximum possible score : 40

Range of scores : 1 to 29

Table 2. Frequency Distribution of Scores on GWT (Written).

Score Range	No. of children	Percent
26 to 29	4	3.36
20 to 25	6	5.04
15 to 19	2	1.68
10 to 14	4	3.36
5 to 9	15	12.60
1 to 4	44	36.97
Zero	21	17.64
Random scribbling	21	17.64
Did not write	2	1.68
	119	

Based on these responses, all children who scored less than 26 were identified as having difficulties in writing words, ranging from mild to severe. 115 such children were identified.

Thus out of 127 children in standards II and III all those who fell in the IQ range of 71 and above and yet indicated difficulties in both the measures i.e. TRS and GWT were selected as sample A, the main sample for this

study. The total sample obtained consisted of 115 children distributed in four divisions i.e. II A and B; III A and B. Of these, 27 children either left the school or went on a long vacation during the course of the study, leaving the final n of sample A as 88, equally distributed among the four divisions.

(2) Procedure of selection of sample B: Sample B consisted of children having "learning disabilities". It was selected on the basis of a battery of tests* suggested by Kapoor (1980) for identifying children with learning disabilities. Sample B actually emerged from Sample A. Hence, details of procedure of selection of Sample B are presented following analysis of data from Sample A.

III. Description of Tools and Tests.

Tools and tests are presented in three parts as given below:

Part 1: Tools/tests used for the selection of sample A.

Part 2: Tools/tests used as pre-test and post-test measures.

Part 3: Tools/tests used for identifying the children with "learning disabilities".

Part 1 : Tools/tests used for the selection of sample A.

a. Draw-a-Man Test of IQ for Indian Children (DAM)

Description: The Draw-a-Man Test has been adapted by Phatak (1966) for the Indian population from Goodenough's

---

*Presented in Part III of Tools and Tests.

Draw-a-Man Test (1926). The age norms for ages 6 to 10 years on the scale are calculated on a sample of drawings collected from five environmental levels. The norms are calculated in the form of average standard scores as deviations, IQs and the percentile ranks. The test has been widely used and recommended for evaluating children suspected of having learning disability.

Procedure and scoring: DAM group test was administered to all the children of the four classes in their respective classrooms. A blank sheet of paper and a pencil were provided to each child. Instructions and scoring were done as prescribed in the Test Manual.

b. Graded Word Test (GWT Written):(see Appendix A): A graded word test on similar lines as Schonell's Graded Word List was prepared by the investigator. The test consists of 40 words each for standards I, II, and III. The words for each are prepared according to the levels of complexity of the "Barakhadi". The word list begins with simple two letter words and proceeds to include a set of words more complex than the previous. All the 40 words were taken from the Readers prescribed for the given standards.

Procedure and scoring: GWT was administered to 119 children of standards II and III, in their respective classes in groups. Each word was called out twice. A score of one was given for each correctly written word. Maximum score was 40. The responses were also analyzed qualitatively for errors such as reversals, omissions, insertions, substitutions,

transpositions and repetitions.

Reliability and validity: To establish reliability of GWT the alternate form method was employed. Two hundred children, 50 each from standards I to IV were administered the two forms of GWT at the same time. Their responses were scored separately for the two forms. The coefficient of correlation between the scores on two forms was .87.

To establish the content validity of the GWT, 28 teachers equally represented from classes I to IV were consulted to find out:

1. Whether the words in GWT adequately represented the Readers in use in a particular standard.
2. Whether the list maintained a hierarchical order, moving from simple to complex.

Based on the suggestions of the teachers, the list was modified and improved by the investigator.

c. Teacher's Rating Scale (TRS).

Description: The TRS was prepared by the investigator with the main purpose of: (i) Identifying children who face difficulties in reading and writing, (ii) Identifying children who have average performance in classroom learning.

There are mainly five areas to be rated: (i) auditory comprehension, (ii) spoken language, (iii) motor-coordination, (iv) personal social behavior, (v) general orientation and classroom performance. Total number of items in TRS are 19.

Procedure and scoring: The teachers of standard II and III - A and B were requested to fill in the TRS for each child of their respective classes.

Under each item, there are three statements. These statements are so framed that "Statement (a)" indicates below average performance, Statement (b) indicates average performance and Statement (c) indicates above average performance. Scores of one, two and three are given for statements (a), (b), and (c) respectively. Since there are totally 19 items the minimum score that a child receives is 19 while the maximum is 57. Based on the scores, a child is placed into any one of the two main categories namely, category I - children facing no difficulties in learning, category II - children facing difficulties in learning. A - children facing high difficulties in learning, B - children facing low difficulties in learning.

Part II : Tools/Tests used as Pre-test and Post-test Measure.

d. Pre-requisite Reading Test (PRT).

Description: PRT was prepared with the main purpose of testing a child's knowledge of basic Gujarati alphabets and of Barakhadi. PRT consists of 26 letters and 12 Barakhadi units (i.e. 38) randomly written on a chart.

Procedure and scoring: The test was administered to each child individually in a separate room in the school premises. A child was required to read aloud each letter of alphabets and Barakhadi from the chart. A score of one was given per each letter and per each unit of Barakhadi that was

correctly read out. The maximum score obtained was 38.

e. Reading Analysis Test (RAT). (see Appendix B).

Description: Reading analysis test was prepared by the investigator on a similar line as Durell's Analysis of Reading Difficulties (1955). There are five major components of the test: (i) Oral reading, (ii) Silent reading, (iii) Listening comprehension, (iv) Word recognition and analysis, (v) Hearing sounds in words.

Procedure and scoring: The test was administered individually to all the children in a separate room available in the school premises. For each component the scoring was done as per the instructions. The scores of each component were aggragated to arrive at a final composite score on RAT.

Validity: Content validity of the test was established on the basis of the opinions of 25 primary school teachers as judges. These teachers were from four different Gujarati medium schools teaching standards I to IV. Their judgement was sought to find out if: (a) the content under each component represented the Readers prescribed for standards II and III, (b) the order of paragraphs and words from simple to complex was maintained.

f. Graded Word Test (Oral) (GWT).

Description: GWT (oral) was the same as GWT (written). The only difference was that the children were required to read the words aloud in the GWT oral.

Procedure and scoring: Each child was called individually and was asked to read aloud the words, one by one. A

score of one was given for each word correctly read. The maximum obtainable score was 40.

g. Interview Schedule (see Appendix D).

An interview schedule was prepared with a view to find out teachers' opinion on feasibility of the program in terms of: (a) implementation in a regular classroom, (b) planning and time involved, (c) financial investment. The schedule mainly consisted of open ended questions related to the above mentioned aspects.

Procedure: All the four teachers of standards II A and B, and III A and B were individually interviewed by the investigator. Their responses on each question, their comments and reactions were noted down.

Part 3 : Tools/Tests used to Identify Children with Learning Disabilities.

h. Gujarati Adaptation of Weschler's Intelligence Scale for Children (WISC).

Description: The WISC test by Bhatt (1973) is a Gujarati adaptation of the original test devised by Wechler (1949). It covers the age range of 5+ to 15+. It comprises of 12 sub-tests; six verbal and six non-verbal. The test provides verbal IQ, performance IQ and Full scale IQ.

Verbal Tests: Verbal tests use oral language for administration and response of the subject. Information: of factual data, memory verbal comprehension. Comprehension: social judgement, verbal comprehension understanding. Arithmetic: Arithmetical reasoning, concentration, mental

computation, numerical fluency. Similarities: Analogical and inductive reasoning and verbal concept formation. Vocabulary: Knowledge of word meaning, ability to describe selected spoken words. Digit span: Attention, short term, auditory memory

Performance Tests: The performance tests are presented in a visual manner and the subject responds by performing some task. Picture completion: Discriminant visual perception of essential from non-essential details, memory. Picture arrangement: Social perception, planning and anticipation, sequencing ability to synthesise. Block design: Perception analysis synthesis, reproduction of abstract designs (logical reasoning applied to space relationships). Object assembly: Visual perceptual organization, memory. Coding: Psychomotor speed in eye-hand co-ordination, pencil manipulation. Mazes: Ability to plan in a new situation (problem solving), ability to delay action, visual-motor co-ordination, pencil hold.

Procedure and scoring: The procedure described in the test manual was followed while administering the test. Only four of the twelve sub-tests were used to identify children with learning disabilities. These were: Verbal - comprehension and arithmetic; Non-verbal - picture arrangement and mazes.

i. Children's Embedded Figure Test (CEFT)

Description: Witkin, Oltman, Raskin and Karp (1971) developed CEFT, an individually administered test. It judges the extent of competence at perceptual disembedding.

It covers the age range of five to ten years. The subject is expected to locate and outline a previously seen simple figure within a larger figure. Tentative local norms have been established for the test. For this purpose a sample of 835 children from the I to IV grades representing upper, middle and lower socio-economic status were tested on CEFT.

Procedure and scoring: The child was presented with a simple cut out form and pictures which completely embedded this simple form. The child was given the simple form to study and was then asked to trace out the shape that exactly matches the cut out shape. There are several practice items.

A score of 'one' was given for each correct response and a score of zero for an incorrect response. The child was allowed one trial per picture and testing was stopped after three consecutive errors had been made. If the child had completed the first series, then the next series was administered. An aggregate score of the "Tent" and the "House" series is the final score.

J. Matching Familiar Figure Test (MFFT)

Description: MFFT developed by Kagan (1965) is an individually administered test designed to identify subjects (ages 5 to adults) who are usually reflective or impulsive in their cognitive style or tempo. Each item is a match to match sample problem requiring the child to find in an array of of similar figures that one which is an exact copy of the standard stimulus appearing above the array. Local norms have been established for the test. These norms were

established on a sample of 835 children of grade I to IV representing low, high and middle socio-economic status.

Procedure and scoring: The child was instructed to find out from the array of pictures on a page, the one that was identical to the stimulus picture on the above page. The child's total errors and mean time to first responses on the test items are recorded as his scores.

IV. 1. Pre-testing

Prior to pre-testing, childrens responses on TRS were analyzed to determine the levels of their difficulties. Accordingly, children in both the standards fell under category II namely "Children facing difficulties". Within this, their responses could further be categorised into two levels namely, High level of learning difficulty and Low level of learning difficulty.

Having identified the levels of their difficulties three test measures were administered namely Graded Word Test (GWT : Oral), Reading Analysis Test (RAT) and Pre-Requisite Reading Test (PRT).

2. General Description of the Program

One week after the completion of the pre-testing, a graded program of reading and writing was implemented with the children of standards II and III. The program began on 1st September 1982 and continued for a period of 12 weeks till end of December 1982. The program is presented under the following sub-headings: (a) Program objectives, (b) Program strategy, (c) Program content, (d) Salient features

of the program.

a. Program objectives: The broad objective of the program was to enable the children to overcome their learning difficulties especially in reading and writing while simultaneously helping them cover their prescribed syllabus content. The specific objectives of the program were:

(i) To improve the skills in recognition, identification and naming of simple as well as complex words from their Readers.

(ii) To increase the ability for listening comprehension.

(iii) To enhance the ability to follow verbal and written instructions.

(iv) To help improve the quality of handwriting.

(v) To help children write correctly the words they use in written and oral communication.

(vi) To help them develop oral and silent reading skills.

b. Program strategy

In accordance with the rationale of the present study the major task was to select and work out a strategy which would serve two main purposes. First, it should help the group learn effectively their prescribed syllabus. Second, it should be such that a class-teacher can implement it successfully in a standard classroom.

Stemming naturally from these two purposes was the strategy of group approach. The major strategy was group oriented teaching-learning process. Bernstine (1979) argued that students learn more when working in large group settings

because large settings allow for more adult supervision and students spend more time on task. The strategy was based on the following premises:

a. Pupils invest more in learning in social situation.

b. Group is the setting for individual learning as one learns in the group and from the group.

c. The group presents many stimuli in the shape of distractions and encouragements, codes and expectations.

d. Some areas of learning are inseparable from group.

e. The teacher's competence can be increased to raise the group standard.

f. Group strategy is one of the most economical strategies.

The children with learning difficulties were the main focus. These included almost the whole class except two to five children in both the standards. Children were never segregated at any time. The whole class was always involved in a given task which would be geared to suit a wide range of abilities. Though all children worked on the same task, each would be working at a level complex or simple enough to suit his/her abilities.

c. Program content

The program consisted of a set of activities/exercises so planned that they help children in mastering various aspects of reading and writing. These included:

- recognition and naming of alphabets and barakhadi,
- recognizing identifying and naming simple to complex words,

- listening comprehension,
- following verbal and written instructions,
- improving quality of hand writing,
- writing correctly the words they use in written and oral communication,
- oral reading, and
- silent reading.

In each of these areas activities/exercises were arranged hierarchically from simple to complex. The basic skills required for reading and writing are: Visual perception; Auditory perception; Synthesis of auditory and visual skills; and Simple language concepts.

In all the activities/exercises these skills operated singly or in combination. The activities while catering to a particular component, also enhance the basic skill(s) involved. Greater attention to a specific component was given in a particular exercise only to add clarity. Yet it was duly recognized that even though at times it is important to place primary emphasis on one phase/skill or even a small segment of it, it is integrated into the total program.

Under each area, the initial simple activities focused on basic skills and moved up in the heirarchy to include more coverage of the content. The skills required to complete an exercise also moved from simple to complex. For example, in the area of identifying words, the hierarchy began with identifying pictures which required a child to use visual discrimination skill with no coverage of content. In the same

hierarchy when a child moved upto a more complex activity, he was required to "label a picture with the correct words. In this case the child needed to use not only visual discrimination but was also required to read meaningfully the words given. The words were selected from the reader which helped him cover the content aspect.

The program prepared covered the prescribed Reader in use in standards II and III in forms of various aspects of reading and writing. The content was interwoven into the program in the manner described earlier. It should be noted here that for the children in both the standards the coverage of content was not limited only to the Readers but had to be enlarged downward to cover the content of standard I as well. This had to be done in view of the fact that children could not read at all. In fact majority (95%) had not even mastered basic alphabets and 'barakhadi'. The focus therefore largely remained on mastery of basic alphabets and concept of 'barakhadi' as well as on covering the Readers of standard I and as much of standards II and III as possible.

Under reading and writing there is so much information that could be acquired and so many skills that could be developed that selectivity was essential, especially considering the low level of performance of the children. The basic consideration, for determining the content of the program were mainly these:

a. The content was selected in terms of objectives that are stated. It included paragraphs for listening

comprehension, silent and oral reading as well as words to be identified and read.

b. The emphasis was on reading and writing as tools for learning the subject matter, aiming at covering the ongoing parts of syllabus while promoting skills in reading and writing.

c. The content was determined by the ongoing activities of within the class.

d. Salient Features of the Program

(i) The program was based on the needs, strengths and weaknesses of the group.

(ii) Items of the program were based on the class curriculum.

(iii) The program was flexible and adaptable so that it allowed each child to set her/his own pace of learning.

(iv) Active co-operation, consultation, guidance and participation of the class-teacher was sought throuout the program.

(v) The hierarchical nature of the program allowed all children to be engaged in their respective tasks, thus facilitating the teacher to move around the class and cater to individual problems, if any.

(vi) During various exercise, children were encouraged to help each other, at times playing the role of an 'assistant teacher'.

3. Post-Testing

At the end of the 12 weeks, after a gap of one week, children were post-tested on the same test measures that were used for pre-testing.

V. Analysis

1. Analysis of the scores on four test measures: The scores of the children were analysed by analysis of covariance of a 2 x 2 x 2 factorial design for each test measure separately. The main purpose of the analysis was to find out the significance of difference between: (1) treatment groups, (2) levels of difficulty, (3) standards (grades), (4) interactional effects among the above three variables.

The mode of analysis is presented below:

		T_1	T_2
		Experimental	Control
II.	L_1		
	L_2		
III.	L_1	6	
	L_2		

2. Identification of children with learning disabilities: On completion of analysis results were tabulated and interpreted. The results were scrutinized to identify children who might be suffering from 'specific learning disabilities on the following basis:

(1) All those children of experimental group who showed minimum to no gains in atleast two test measures. For the purpose, children whose performance fell in the

last quartile of the score range were identified for each test measure.

(2) All those who showed at least four characteristics of a child with specific learning disability on TRS as rated by the teacher.

(3) All those children who showed errors typical of an LD child on graded word test (written). This included errors of omissions, substitution, transposition and reversals.

(4) All those children who exhibited at least a cluster of four characteristics typical of a learning disabled child according to the investigator's observations, during program implementation.

Any child who fell in all the above mentioned categories was identified for further screening on a battery of tests, described in the section on "Tools".