

RESULTS

The present chapter deals with the analysis of the data along with the interpretations of the findings. In accordance with the objectives of the study the data were analyzed and interpreted with three main aims:

1. Development of an economical and easy to administer screening device for a class teacher.
2. Development, implementation and evaluation of a class-room instruction program for children with learning difficulties.
3. Identification of children with learning disabilities.

Corresponding to these three aims, the results described in this chapter fall into three main sections namely,

Section I : Development of a Teacher's Rating Scale.

Section II : Children's gains from pre-test to post-test and efficacy of the program.

Section III : Identification of children with learning disabilities.

Section I : Development of a Teacher's Rating Scale (TRS)

To meet the need of primary school teachers to identify a child who faces difficulties in classroom learning, the Teacher's Rating Scale was devised. The procedure of the development of the Teacher's Rating Scale as well as the scale itself are presented in this section.

The Teacher's Rating Scale (TRS) is devised to meet the need for an economical yet effective screening device for

identifying children with learning difficulties. It is developed on the assumption that if areas of deficits are carefully defined and delineated, they can be observed and rated by regular classroom teachers who are in close contact with children.

Besides, the scale aims to identify a child who is a "potential learning disabled". This child is as much "at risk" as a child who has difficulties in learning due to other factors.

These children, as discussed in the review of literature, have normal IQ and yet can't learn effectively due to lack of coordinated sensory integration. The common characteristics of such children are hyper activity, restlessness, withdrawal, aggression, impulsivity, isolation, etc.

The common factor in case of children facing learning difficulties and learning disability is their failure in classroom learning. Whereas a child may face difficulties due to reasons ranging from poverty, emotional stress, lack of environmental stimulation and so on, he may not be a learning disabled child. On the other hand, a child may face difficulties in learning due to his "learning disability". In short the sources of difficulties are different though the manifestations are similar.

The scale (TRS) intends to provide early identification of potential learning difficulties and to help the teacher determine which sensory channels, modalities or areas of functioning appear to account for depressed performance in

the major areas essential for skill acquisition.

I. Behavioral Characteristics Rated

Rationale and descriptions: Presented here is the rationale for inclusion of the various kinds of items in TRS, followed by the presentation of the specific items themselves. The five areas of behavior selected for ratings in the TRS are: (a) Auditory comprehension, (b) Spoken language, (c) Motor co-ordination, (d) Personal social behavior, (e) General orientation and classroom performance.

These five aspects are chosen mainly for two reasons. First, these are the areas which form an integral aspect of reading and writing which are the predominant classroom learning activities. A child has to read and write for its own sake as well as in the form of the medium of all subject matter learning. Second, these aspects represent the problem areas of a child with learning disability as revealed through literature (Johnson and Myklebust, 1967). These areas meet the requirements of a scale that could be applied in early school life so that any learning disability or difficulty might be detected before the child experiences long periods of academic failure.

To sum up, the five areas of behavior are pertinent to identify children with good mental ability hearing and vision, adequate emotional adjustment and motor ability but who do not achieve normally in school. The items of TRS purport to sample these areas of functioning.

a. Auditory Comprehension

Four aspects of auditory comprehension are rated in the

scale: comprehending word meanings, following instructions, comprehending class discussion, and retaining information. Audition and vision are man's two distance senses. Audition unlike vision, which is undirectional, makes it possible to scan in all directions simultaneously. Complex auditory processes are consequential to readiness for learning. If these processes do not develop normally, children may be able to hear but unable to listen.

(i) Comprehending word meanings: Comprehension of the meaning of words is basic to understanding what is said. Under these items vocabulary is considered more as an element of understanding.

(ii) Following instructions: This requires not only comprehending words, which is more an auditory behavior, but it entails understanding of sentences. The child must listen, integrate and act upon instructions.

(iii) Comprehending class discussion: This involves a higher level usage of language. It requires that the child understands what is being said around him though it may not be directed to him specifically. He absorbs only those aspects which he thinks as necessary.

(iv) Retaining information: Disorders of auditory memory are common for children with learning disabilities. Recall is a distinct function of auditory learning. There are many children who cannot remember names and sequences. Some have recognition of words but not recall.

b. Spoken Language

Fluency in language is an accepted parameter of learning ability. Binet and Simon (1916) relied heavily on it as a diagnostic symptom. Gesell and Amatruda (1947) and Templin (1957) have demonstrated the developmental significance of spoken language for learning. In TRS, focus of the items is on the child's language rather than articulation. Hence the items relate more to expressive language.

(i) Vocabulary: Vocabulary is an integral aspect of classroom learning and a medium of subject matter learning thereby.

(ii) Word recall: An ability to recall appropriate words is an indication of normal use of expressive language. A child faces problems when he may recognize the words but not recall them.

(iii) Relating experiences: This is an important feature of developmental learning (Binet and Simon 1916, Doll 1953). Even while relating an already familiar episode a child requires to organize his language in a logical and coherent manner.

(iv) Verbal fluency: It is an essential aspect of expressive language. A child who lacks this is generally at a loss in expressing himself even though his knowledge of the subject matter may be adequate.

c. Motor Co-ordination

Classroom learning essentially means reading and writing. Writing requires adequate finer motor co-ordination. A child has to have a fair grasp, to be able to write. Apart from

this a child requires gross motor coordination to live a full school life. It includes general coordination, finer motor/manipulative skills and physical activity.

(i) General co-ordination: It refers to the child's ability for hopping, skipping, running, climbing and walking.

(ii) Finer motor/Manipulative skills: It includes co-ordination of eye and hand muscles to be able to carry out activities such as painting, drawing and writing.

(iii) Physical activity: For every task in a classroom there is certain amount of physical activity to be employed. A child who is inactive might find that he is lagging behind. On the other hand, an overly active child may be constantly on the move hence unable to concentrate and learn.

d. Personal-Social Behavior

Disturbances in personal-social aspects have been referred to as inattention, irritability, hyperactivity, and distractibility. Though not all with deficits in learning present such problems, in some cases these problems are indicators of disability.

(i) Co-operation: It is an essence of classroom learning, for group participation requires the ability to follow directions without disturbing others. A child who fails to understand what goes on may indicate so in various ways. He may speak randomly, not wait for his turn, or withdraw.

(ii) Attention: Learning requires paying attention. Lack of it may cause difficulties in learning. Often inattention is a trait of children who fail to learn. Such a child may be

easily distracted.

(iii) Organization: A fundamental characteristic of a good learner is his ability to organize immediate circumstances into a meaningful world. A child who has difficulties in planning - arranging papers, books or other materials in a way that is appropriate for learning - might encounter difficulties in effective learning.

(iv) New situations: New situations necessarily include change. To adapt to it successfully, a child needs self control and tolerance.

(v) Completion of a task: Classroom learning is a series of various tasks which require completion. A child facing difficulties will surely indicate it through his lack of task completion. Often such children fail to complete reading, arithmetic or writing work in the class.

e. Classroom Performance and General Orientation

Being oriented means that one has an acute awareness of direction and place. A lack of such orientation is an indicator of some difficulties in learning.

(i) Laterality: It is an indicator of a sense of direction. Orientation in direction generally begins with distinguishing between right and left. This requires special instruction which all have to comprehend and act upon.

(ii) Spatial orientation: This involves the ability to move around in "space" without getting lost.

II Evaluation of Item Content

The TRS was subjected to evaluation by five judges who

were experienced researchers in the field of psychology, education and child development as well as the class/school teachers. The evaluation was in terms of: (1) clarity of statements, (2) appropriate classification of items under various areas and sub-areas, (3) scoring system.

The suggestions were mainly pertinent to clarity of statements. These are described below:

1. Auditory Comprehension

Following instructions:

Original statement : (a) "always confused".

Modified statement : (a) "unable to follow instructions, always confused".

Comprehending class discussion:

Original statement : "Understands well".

Modified statement : "Understands well; gets involved in the discussion".

2. Spoken language:

Word recall:

Original statement : (a) "poor recall".

Modified statement : (a) "unable to recall exact word, groups of words".

3. Personal-Social Behavior

Completion of a task:

Original statement : (a) "average".

Modified statement : (a) "average" - sometimes finishes, sometimes does not".

4. Additional items: The main suggestion was to include a brief description/definition of each category of behavior under "Additional Items". These were duly included.

III. Validity and Reliability:

For establishing the content validity of TRS, opinions of 10 judges were sought for:

1. Adequate representation of classroom learning abilities in the scale.
2. Whether the items measure each area and sub-area under which they are placed.

The judges included school principals, experts in psychology, experts in education and experienced teachers.

For test-retest reliability, correlation coefficient was calculated by getting the ratings of the teacher on the same children twice with an interval of 15 days between the two evaluations. This was thought a relevant interval as it was too short for a child to show any remarkable progress in various areas and long enough for a teacher to judge a child again without recalling her previous ratings.

For the purpose of establishing reliability of the TRS, 200 (I to IV) children were rated by 20 teachers. The correlations were calculated for (1) the total scores as well as for (2) the area wise scores. The teachers chose 10 children randomly from their classes and rated each one.

The correlation for the total TRS scores was .89. Correlations for the area wise scores are presented below:

- | | | |
|--|---|-----|
| 1. Auditory comprehension | : | .90 |
| 2. Spoken language | : | .89 |
| 3. General orientation and classroom performance | : | .79 |
| 4. Motor co-ordination | : | .86 |
| 5. Personal social behavior | : | .89 |

Correlation with Graded Word Test (Written): Scores of 125 children of grades II, III, and IV on TRS were correlated with their scores on GWT (written). The coefficient of correlation was .86.

IV. The Teacher's Rating Scale

To the teacher:

Here is a scale aiming to find out whether children have difficulties in learning to read and write. There are five major behavior areas with few items under each.

You are requested to go through it carefully and rate each child based on your observations of a child. It is very important for you to keep in mind that you have to tick mark any one of the 3 statements which is most representative of a child. Mark it only if a child shows that behavior consistently.

I. Auditory Comprehension

1. Comprehending Word-Meaning
 - a. Fails to understand simple words. (3)
 - b. Fair grasp of vocabulary for age and grade level. (2)
 - c. Good level of vocabulary comprehension; understands abstractions. (1)
2. Following Instructions:
 - a. Unable to follow instructions; always confused. (3)
 - b. Follows instructions according to his grade level. (2)
 - c. Much better than his peers. (1)
3. Comprehending Class Discussion:
 - a. Unable to follow class discussion. (3)
 - b. Follows according to age and grade level. (2)
 - c. Understands well; gets involved in the discussion. (1)

4. Retaining Information:

- a. Frequent lack of recall. (3)
- b. Average retention. (2)
- c. Good recall. (1)

II. Spoken Language

1. Vocabulary:

- a. Poor vocabulary. (3)
- b. Average vocabulary. (2)
- c. Above average vocabulary. (1)

2. Relating Experiences:

- a. Unable to relate ideas in a logical sequence. (3)
- b. Usually relates ideas well for age and grade. (2)
- c. Above average. (1)

3. Verbal fluency:

- a. Below average. (3)
- b. Average. (2)
- c. Above average. (1)

4. Word recall:

- a. Unable to recall exact word, groups of words. (3)
- b. Recall adequate for age and grade. (2)
- c. Above average, rarely hesitates for finding an appropriate word. (1)

III. Motor Co-ordination

1. General co-ordination (running, walking):

- a. Below average, awkward. (3)
- b. Average for age. (2)
- c. Above average; does well in motor activities. (1)

2. Finer motor/manipulative skills:
 - a. Awkward, below average. (3)
 - b. Manipulates well (average). (2)
 - c. Excels. (1)
3. Physical Activity:
 - a. Highly active; always on the move and restless. (3)
 - b. Average for age. (2)
 - c. Shows task appropriate activity level. (1)
- IV. Personal-Social Behavior
 1. Co-operation:
 - a. Wants his own way most of the time (in all group activities e.g. does not wait for his turn, interrupts continuously). (3)
 - b. Co-operates according to age (at times interrupts but on the whole waits for his turn). (2)
 - c. Co-operates very well (always waits for his turn) (1)
 2. Organization:
 - a. Very slovenly; disorganized. (3)
 - b. Maintains average organization of work. (2)
 - c. Completes work in a well organized manner. (1)
 3. Attention:
 - a. Very distractible. (3)
 - b. Adequate for age-grade. (2)
 - c. Above average; very attentive. (1)
 4. New situations:
 - a. Overacts; lacks self control. (3)
 - b. Adapts adequately for age. (2)
 - c. Above average, self confident. (1)

5. Completion of a task:
 - a. Seldom finishes a task. (3)
 - b. Average; sometimes finishes; some times does not. (2)
 - c. Above average; always completes a task. (1)

V. Class Performance and General Orientation

1. Very erratic:
 - a. At times performs very well but at times very poorly. (3)
 - b. Average: consistent pattern of performance. (2)
 - c. Above average: usually performs well. (1)
2. Laterality:
 - a. Unable to distinguish right from left. (3)
 - b. Sometimes exhibits confusion. (2)
 - c. Very good sense of direction. (1)
3. Spatial orientation:
 - a. Confused; can't move around even in familiar places. (3)
 - b. Can smoothly move in familiar places. (2)
 - c. Above average—rarely confused—can follow directions even in unfamiliar places. (1)

Additional Items

There are few categories of behaviors given below. In your opinion if a child exhibits any of these behaviors, persistently, please tick mark:

Hyperactive: A child who is in constant motion, finds it difficult to sit at his desk, prefers to glide aimlessly, keeps on moving even when seated.

Clumsy and untidy: Very messy in work, can't do any task

readily, very clumsy in conducting himself, keeps on dropping things.

Impulsive: Unable to filter certain visual and auditory stimuli, reacts suddenly to a wide variety of events. His action does not seem well planned.

Withdrawn: Aloof from his immediate environment/does not respond to or interact with people.

Aggressive: Reacts with anger and physical violence on small pretext-usually comes out too strongly - uses violence to handle various situations.

Disctractible: Gets easily distracted even by a small event, can't attend to a task.

Poor concentration: Unable to attend to a task - moves from one task to another without completing any task.

Scoring Procedure

Under each of the 19 items, there are three statements a, b, and c. A score of one, two, and three is given for statement a, b, and c respectively. The highest possible score for a single item is three and for all the 19 items, 57. Similarly, the lowest possible score is one for each item and 19 for all the items together.

Based on a child's total score, assign him to any one of the following categories.

Category I: Children facing no difficulties: score range 32 and above.

Category II: Children facing difficulties in learning

A : Children with high difficulties score
range 19 to 25.

B : Children with low difficulties score
range 26 to 31.

Additional Items

If a child gets ratings under at least four of the eight additional items, then he may be identified for further screening for learning disabilities. This should be done, irrespective of the child's category.

Use of Scores

The scores derived cannot be used for diagnosis but only for screening which would suggest the need for further evaluation. The analysis can be made on (1) Total performance, (2) Area wise performance.

This may be useful for identification of children who have general difficulties in learning or a specific learning disability. A child who falls in category I may be assessed further for various abilities. Similarly a child who exhibits atleast four characteristics typical of a child with learning disability may also be assessed further irrespective of the category to which he belongs. This is so because a child with learning disability does not necessarily do poorly in all areas of learning.

Further, regardless of the total score, a child may indicate difficulties in one or more of the five major areas. If a teacher feels that these are too important to be ignored they too may be selected for further evaluation. This would

help identify those children whose overall performance is good but encounter difficulties in certain selected areas.

The three categories provided indicate only a gross estimation of a child's ability and needs to be followed by psychological testing.

Section II : Children's Gains from Pre-test to Post-test and Efficacy of the Program

Part I: Children's gains in major test measures: This part deals with children's performance in pre- and post-tests derived through four test measures namely, Pre-requisite Reading Test, Graded Word Test (Written), Graded Word Test (Oral) and Reading Analysis Test. Besides quantitative statistical analysis, qualitative analysis of children's performance have also been presented.

Part B: Efficacy of the program: This part deals with the evaluation of the program which was implemented on the experimental group.

Part A : Children's gains in major test measures.

Table 3. Analysis of Covariance on Pre-requisite Reading Test.

Sources	df	SSx	S'sy	SSxy	Syx	MSYx	F
Standard (A)	1	227.7	891.0	446.3	275.9	275.9	1.556
Level (B)	1	654.5	368.2	491.0	10.6	10.6	.059
Treatment(C)	1	1163.6	-2981.8	1328.7	1328.7	1328.7	74.71*
A x B	1	2004.6	1313.6	1621.8	10.9	10.7	.06
A x C	1	4.5	13.5	-23.6	158.49	158.49	.894
B x C	1	72.8	-1.1	-0.1	56.3	56.3	.318
A x B x C	1	222.6	454.7	-319.2	64.8	64.8	.365
Within groups	79	28490.9	36054.5	25063.6	14005.9	177.3	
Total	86	32841.2	46736.4	24298.0	15911.59	2082.79	

*Significant at .001 level.

Table 3 reveals that the F ratio for treatment was 74.71, significant at .001 level. For none of the other variables i.e. level of difficulty and standard or the interactions are the F ratios significant.

Qualitative analysis: Pre-requisite reading test was essentially devised to evaluate children's knowledge about the Gujarati alphabet and "barakhadi". The performance of children on this test presented a dismal picture. Most of the children were unable to recognize and read the letters and barakhadi, some gave erratic responses in that they read off the complete alphabet in its sequential order although the letters were written in random order. Only a few children were able to recognize and read the letters in the order that was written.

Further, a noteworthy aspect of their performance was that when shown a letter, say "ક", instead of giving a correct response they spoke "કનુ". Similarly for many letters when shown a specific letter, children spoke out the word related to that letter. It seemed that they could not conceive of a letter as a separate unit different from a word. By the same coin they could not speak more than one word for each letter. For them "ન" was only associated with "નુ" and with no other words. And yet, most of the children could flawlessly read their alphabets and barakhadi. These observations indicate not only "lack of correct concepts" but also the presence of erroneous ways of dealing with the concepts which would require unlearning for mastery of the prerequisite reading skills. The performance also reflects the mechanical

teaching practices the school employed.

The performance of the experimental group showed considerable improvement not only in eliciting more correct responses but in eliciting more relevant responses as well. Almost all the incorrect responses were relevant. For example when asked where is "ا" children pointed out to "2" or "٢". It is felt that though such a response is incorrect, it is atleast relevant, since children knew what was asked of them. Mixing up of "ا" with "٢" or "2" is a natural part of a learning process. In fact it indicates that a child is trying consciously to differentiate and recognize similar sounding letters. It also implies that now children understood the difference among various letters as separate units with specific sound and meaning. Since the performance of most children exhibited the similar quality, the trend toward meaningful learning of alphabets and barakhadi had clearly emerged. This is the first requisite for reading.

II. Graded Word Test (Oral)

Table 4. Analysis of Covariance for Graded Word Test (Oral).

Sources	df	SSx	SSy	SSxy	SYx	MSY.x	F
Standard (A)	1	2.9	12.4	-6.0	33.7	33.7	1.48
Level (B)	1	62.2	0.9	7.5	41.5	41.5	1.82
Treatment(C)	1	5.5	5520.6	-174.3	5847.0	5847.0	256.8*
A x B	1	96.2	171.9	128.6	10.8	10.8	.47
A x C	1	0	2.5	0	0.7	0.7	.03
B x C	1	7.7	48.0	-19.1	16.4	16.4	.72
A x B x C	1	132.5	45.2	77.3	16.8	16.8	.74
Within groups	79	2413.5	4055.4	2334.7	1798.9	22.77	
Total	86	2720.5	9856.9	4896.8	7765.8	5989.67	

*Significant at .001 level.

Table 4 indicates the F ratio (256.8) to be significant at .001 level for the treatment. None other F ratios are significant leading to the conclusion that there were neither the interactional effects nor any significant-effect of standard or level.

Table 5. Nature/Types of Errors in Graded Word Test (Oral) during the Pre- and Post-test in Experimental and Control Group (n = 88).

	Experimental Group				Control Group			
	II		III		II		III	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Hesitation	6	3	4	1	7	7	9	4
Omission	9	6	15	10	10	11	10	9
Mis-pronunciation	11	8	7	5	12	9	6	6
Repetition	9	6	4	2	9	8	4	5
Insertion	4	1	2	1	3	2	2	2
Words pronounced for the child	8	5	4	3	9	9	5	6
Total Number of Children	47	29	36	22	50	46	36	32

The frequency of errors under each category from pre- to post-test indicates that for each category the errors have decreased in both the standards of the experimental group while there has been no significant difference in the performance of the control group. All the same the trend in terms of the most commonly committed errors remains the same for pre- as well as post-test in both the groups.

Types of errors presented in Table 5 reveal that for both the groups during pre- as well post-test, "omission" when reading aloud was the most commonly committed error for

standard III whereas for standard II, it was "Mis-pronunciation". Words most commonly omitted include "એચી", "તીડ", "ભાણ" and "જૂદા". Words commonly mispronounced include "સૂર્ય", "ફૂગી" and "સિંભાઈ". These words are complex requiring use of "જોડફાર" (joined letters), "અનુસ્વાર" and "રેફ". Similarly, words which required to be pronounced were were also complex such as "હાંડ", "કર્ચું" and "અભિનવ". As far as repetition, insertion and hesitation are concerned, these were not specific to any particular words.

Further observation of the nature of responses revealed that most children in the experimental group could read simple words with and without "કાલ" (કા) and "ખાલ" (કે) as well as complex words which included use of "રસ" (રિ) and "દીર્ઘ" (ડી). Their errors were mainly in "જોડફાર" and "રેફ" which are the most complex words.

The general nature of the responses again (as in the pre-requisite reading test) reflected children's conceptual clarity as against their most confused and irrelevant responses during the pre-test. For example, when asked to read a given word, say "હા", a typical pre-test response of both the groups was "કાલ", "રસ" and so on. It may be noted here that the incorrect words spoken out by the children are not even remotely similar to the stimulus word. These words do not include a single letter of the stimulus word whereas a typical error of the experimental group during the post-test was to say "હાડ" instead of "હા" or to say "રસડ" instead of "રસ". This indicated that children understood the meaningful and

appropriate use of "barakhadi" even if they had not measured its content completely. The control group showed no marked changes.

III. Graded Word Test (Written)

Table 6. Analysis of Covariance for Graded Word Test (Written).

Sources	df	SSx	SSy	SSxy	SY.x	MSY.x	F
Standard (A)	1	1.4	38.3	-7.3	59.0	59.0	1.27
Level (B)	1	23.0	30.8	26.6	0.4	0.4	.009
Treatment(C)	1	0.6	5664.1	-56.2	5805.7	5805.7	124.5*
A x B	1	86.0	8.8	27.7	73.2	73.2	1.57
A x C	1	0	16.4	1.4	12.9	12.9	.28
B x C	1	78.8	87.9	83.0	3.2	3.2	.07
A x B x C	1	120.6	401.7	220.0	357.0	357.0	.77
Within groups	79	1872.0	6686.0	23707.0	3683.7	46.63	
Total	86	2181.9	12934.0	24002.2	9995.1	6358.03	

*Significant at .001 level.

Table 6 reveals that F ratio (124.5) for the treatment is significant at .001 level. The F ratios for the other two variables namely level of difficulties and standard as well as their interactions are not significant.

Qualitative Analysis

Apart from the significant gains in scores, the nature of responses changed considerably after the program for the experimental group. Both the groups exhibited poor letter formation, random scribbling, no responses or irrelevant responses during the pre-test. Quite a few could not write from left to right. Majority did not write the words dictated, infact quite a few

refused to write at all or merely scribbled. While the same trend continued for the control group during the post-test, children in the experimental group indicated a remarkable improvement not only in terms of "more correct words written" but also in terms of general quality of writing. On the whole, majority of them showed the correct pattern of writing from left to right, could write more words, had clearer letter and word formation with almost no irrelevant responses or scribbling. While quite a few had stopped writing during the pre-test, none did so during the post-test. Even a child who scored zero~~k~~ made a conscious attempt to write. As far as the nature of errors is concerned, omissions, repetitions, substitutions, reversals or transpositions were too sporadic to form any identifiable pattern.

IV. Reading Analysis Test

Table 7.. Analysis of Covariance on Reading Analysis Test.

Sources	df.	SSx	SSy	SSxy	SY.x	MSY.x	F
Standard (A)	1	0	275.0	0	272.9	272.9	.28
Level (B)	1	45.0	2415.0	-104.8	2625.2	2625.2	2.69
Treatment(C)	1	227.3	2852.1	-1803.4	32051.4	32051.4	32.67*
A x B	1	4.6	762.1	-58.9	862.5	882.5	.90
A x C	1	0	309.4	-187.6	686.7	686.7	.70
B x C	1	5409.0	1029.6	-820.9	2995.2	2995.2	3.07
A x B x C	1	123.3	762.4	-235.4	1306.4	1306.4	1.34
Within groups	79	11481.2	87158.4	11335.5	75996.8	975.0	
Total	86	17290.4	121330	8104.5	11681.1	41795.3	

*Significant at .001 level.

In keeping with the trend of previously described tests, F ratio(32.07) for the reading analysis test is significant at .001 level for the treatment alone. No significant effects of interactions as well as levels of difficulty and standard are evidenced.

Besides this major finding of the Reading Analysis Test, the component wise results are presented in the following pages. The components are Listening Comprehension, Oral Reading, Word recognition and analysis, Hearing sounds in words and Silent reading.

The control group children failed to register any score in four out of five components of the Reading Analysis Test in the post-test. They could score only in one component namely, Listening comprehension. The children of the experimental group could score in all the five components of the Reading Analysis Test. The results presented component wise are therefore limited to the performance of the experimental group during the post-test. Only for listening comprehension, the comparative performance of both the experimental as well as the control group during the pre- and the post-tests are presented.

Table 8. Number of Children at Different Levels of Listening Comprehensions.

Levels*	Standard II				Standard III			
	Experimen-		Control		Experimen-		Control	
	tal group		group		tal group		group	
	(n = 22)		(n = 22)		(n = 22)		(n = 22)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Zero	5	0	6	5	8	0	6	5
Below level I	4	4	2	5	2	-	2	5
Level I	9	3	6	5	8	2	6	5
Level II	4	1	8	4	4	4	8	4
Level III	0	13	0	3	0	12	0	3
Level IV	0	1	0	0	0	4	0	0
Total number of children	22	22	22	22	22	22	22	22

*Expected level for standard II : Level 3

Expected level for standard III : Level 4

1. Listening Comprehension

In listening comprehension children were required to listen to a short passage that was read out by the investigator. They were then asked to answer questions based on these paragraphs. As indicated in Table 8,

(a) All the children were operating below their expected grade level during pre-test. A number of children of II and III standards were below the level of standard I.

(b) The post-test performance reveals a heartening picture. Twelve children from the experimental group and three from the control group of standard III comprehended a simple paragraphs of their expected level.

(c) Viewing Table 8: disregarding the standards, as against six children who performed even below level I in pre-test, there were only four performing so low during post-test for the experimental group, while the number has actually increased from four to ten for the control group.

(d) There were 13 and 12 children scoring zero in experimental and control group respectively during pre-test. While the number has changed marginally for the control group, there is none scoring zero in the experimental group during the post-test.

(e) The same trend persists for standard II although unlike standard III, four children in the experimental and eight in the control group were already operating at the simple level expected of them before the program began. After the program, 13 children of the treatment group and three children from control group shifted to the more complex level expected of them. It is noteworthy that one child of the experimental group actually operated at a level higher than expected of the class.

To summarize, in both standards II and III in the experimental group, children shifted to higher level of performance; number of children scoring zero reduced to none; more children performed at a level expected of them.

2. Oral Reading.

Table 9. Oral Reading: Number of Children at Various Levels in Standards II and III in the post-test for the Experimental Group (n = 44).

Standard	L I*		L II**		L III***	
	Simple	Complex	Simple	Complex	Simple	Complex
II	7	7	2	1		
III	4	8	3	2	1	1

*Level appropriate for standard I

**Level appropriate for standard II

***Level appropriate for standard III

1. From none being able to read prior to the program, five read at appropriate levels, 26 read at the level of standard I and eight could not score at all during the post-test.
2. For both the standards more children read at the level of standard IQs compared to none during the pre-test.
3. Thirty six out of 44 started reading aloud the simple paragraphs.

Qualitative Analysis: Nature of the errors committed while reading reveal that "omission" was the most commonly committed error in standard III, whereas the children of standard II exhibited the highest frequency of errors of mispronunciation.

Words most commonly omitted were "ભચ્ચાં", "જલ્લી", "બંજી" and "પ્રાણીની". Words commonly mispronounced were "કિલ્જું", "ભયાનક" and "શોધવા". It may be noted that most of these words are complex words requiring the use of "જોડાક્ષર" (joined letters).

As far as repetitions, insertions, hesitations are concerned these were not specific to any particular words. It can be said that by and large most children were able to read simple sentences but found it difficult to read complex sentences.

3. Word Recognition and Analysis.

Table 10. Number of Children in the Experimental Group Showing Mastery of Various Categories of Words (n = 44).

Simple words without the use of barakhadi	Words with 'kana' and 'matra'	Words with 'dirghai' & 'raswei'	Complex words with 'jodakshar' 'ref' & 'anuswar'	Words with 'raswau' & 'dirghau'
24	14	5	3	4

Table 10 reveals that the number of children who have mastered simple categories of words is high while the number decreases with increasing use of various units of barakhadi and of complex words. This trend is normally expected. Though children have come a long way from their inability to recognize even the basic letters of the alphabet prior to the program, their poor ability for sight recognition of words is evident in their performance on Word Recognition and Analysis. Out of a total of 50 words i.e. ten in each of the five categories presented in Table 10, only 19 words were recognized by children when the word was exposed just for one glance. However, when children were allowed to study the words, their responses were definitely much better leading to recognition of 31 words in all. This indicates that children required

some time to study a word to recognize it correctly. Their recognition was less spontaneous to the extent. However, their overall performance indicates that they have come a long way from the total lack of word recognition skills. In fact, their improved performance in oral and silent reading can be attributed to a large extent to their improved skill in word recognition.

4. Hearing Sounds in Words.

Table 11. Nature of Incorrect Responses of the Experimental Group (n = 44).

	<u>Types of Incorrect Responses</u>			
	<u>Beginning letter</u>	<u>Enging letter</u>	<u>Beginning and enging letter</u>	
Standard II	19	60	80	= 159
Standard III	25	41	101	= 167

Table 11 presents the types of incorrect responses. The pattern is similar for both the standards indicating that the incorrect responses were the highest in a more difficult auditory discrimination task where children had to identify the sounds of the letters, at the beginning as well as at the end of the word. Similarly, children seemed to elicit more incorrect responses when required to identify the sound of a letter in the end rather than at the beginning of a given word. The responses also indicated that children exhibited difficulty in discriminating similar sounding letters such as *z* and *6*, *d* and *u*.

5. Silent Reading.

Table 12. Silent Reading - Number of Children at Various Levels of Standard II and III of the Experimental Group (n = 44).

	Level I		Level II		Level III	
	Simple	Complex	Simple	Complex	Simple	Complex
Standard II	7	7	2	1	-	-
Standard III	4	8	3	2	1	1

Levels I, II, and III correspond to standards I, II, and III. Accordingly, none was able to read prior to the program while 19 children from standard III and 17 children from standard II started reading as revealed through the post-test performance. Of these, five from standard III and three from standard II read at the appropriate level and rest of them at level I. Out of a total of 44 children from both the standards, only ten showed no shift at all. Thirty four out of 44 could read simple paragraphs of Ist and IIInd standard levels and could answer the questions based on what they read. Thus children of the experimental group indicated gains in each of the five components of RAT leading to significant gains in the overall performance.

V. Efficacy of the Program.

The overall effect of the program can be evaluated in terms of the gains shown by the children as well as the feasibility for implementation by the classroom teacher.

1. As far as gains in children's performance are concerned, the results aforementioned show definite positive trend.

The program has helped children learn to read and write.

2. The feasibility of the program for classroom implementation was mainly measured through: (a) expenditure incurred, (b) equipments and materials required, content coverage and time spent, and (d) interview of the teachers.

(a) The total expenditure was Rs.235. The break-up is given below:

Rs.111.00 durotype papers.
Rs. 88.00 stencils.
Rs. 36.00 pencils-erazers, foot rulers.

This sum could be still reduced further by replacing the use of worksheets by slates and class note-books.

(b) The use of equipments and materials was limited to those available in the classrooms. These included - black-board, chalk, pencils, erazers, worksheets and Readers.

(c) The program was implemented for a period of three months. As described earlier, the major part of the program had to concentrate on the syllabus of standard I. Once children mastered that, the program concentrated on the prescribed Readers for respective grades. The content covered in all could be stated thus:

<u>Standard I</u>	<u>Standard II</u>	<u>Standard III</u>
Recognition of all words of the Reader	Recognition of most words of the Reader	Recognition of simple words
Oral reading of all the words of the Reader	Oral reading of all the words of the Reader	Oral reading of simple words of the Reader
Oral reading of all lessons of the Reader	Oral reading of less-one, one to five of the Reader	Could not read any lesson aloud
Silent reading of all lessons of the Reader	Silent reading of less-one one to five	Could not read any lesson silently
Listening comprehension of all lessons of the Reader	Listening comprehension of all lessons of the Reader	Listening comprehension of lessons one to six of the Reader

(d) The responses of the teachers on the interview schedule were examined in terms of (i) the effectiveness and feasibility of the present program and (ii) the difficulties anticipated as well as the suggestions offered.

(i) Effectiveness and feasibility of the present program:
All the four class-teachers found the program to be very effective as per their observations. They opined that since it did not require the use of any specialized materials, it could be easily implemented. They also responded positively to the "content coverage" of the program. This to them, fulfilled the school requirements. According to them the group strategy was the best for the corporation school setting.

(ii) Difficulties anticipated and suggestions offered:
Teachers stated that if such an approach had to be adapted, then the school should become less demanding in requiring rigid reproduction of a child's written work as a proof of his/her progress. Their major suggestion was that such a program should not be limited to reading and writing but must include arithmetic as well. They further expressed that the strength of 35 to 45 would be appropriate for a program of this nature. It was easy to plan and execute as it dealt with all those aspects which they usually deal with anyway. In terms of planning and preparations, the program did not demand extra time according to them.

To summarize, the overall effect and feasibility of the program may be stated as in Table 13.

Table 13. Overall Effect and Feasibility of the Program.

Main Aspects	Results
1. Gains in children's performance.	Significant
2. Expenditure	Rs.235.
3. Content coverage	Alphabets, barakhadi, all the words of the prescribed Readers, all the lessons of standard I, lessons one to five of standard II.
4. Time	Three months (2 hours per day).
5. Class room implementation.	Viable according to teachers.

VI. An Over-view of the Results

(1) An overview of the quantitative aspects of major results may be summarized thus:

- (a) There is no interaction effect among any of the three variables namely level of difficulty, standard and treatment,
- (b) There is a significant effect of treatment alone.

Specific dimensions of the results reveal the following:

(1) Children of both the groups and standards performed at a very low level during the pre-test on all the four test measures.

(ii) While the performance of the control group remained more or less the same, the children who were exposed to the program improved significantly. The improvement was mainly revealed through the fact that most of the children showed gains in each test measure namely Pre-requisite Reading Test, Graded Word Test (Oral), Graded Word Test (Written) and Reading Analysis Test.

- c. Children exposed to the program could score on all the five components of Reading Analysis Test namely, Listening comprehension, Oral reading, Word Recognition and Analysis, Hearing sounds in words and Silent reading. The gains made by children after the program were reflected in their performance in each component at the post-test.
- i. In Listening comprehension children shifted to a higher level of performance.
 - ii. In Oral reading, as against none during the pre-test, 36 to 44 were able to read simple paragraphs.
 - iii. In Word recognition and analysis, children could recognize 23 words as against none prior to the program.
 - iv. None were able to score in Hearing sounds in words prior to the program while they were able to identify the sounds of the letters in the beginning and end of a given word after the program.
 - v. Thirty four of 44 children were able to read silently the simple paragraphs and succeeded in answering the related questions.
2. Qualitative analysis of the performance of children in the main test measures is summarized below. While the pre-test performance is based on the results of the control as well as the experimental group both, the post-test performance is limited to the experimental group alone.

Experimental GroupPre-test

1. Majority of the children had no clear concept of letters and 'barakhadi'.
2. Most could copy words from the board but failed to read these.
3. Rote memorization of letters and barakhadi.
4. Could not even read simple two letters words like
5. No deliberate attempt to decipher and read.
6. Nonsensical messy congested scribbling, not always moving from left to right.
7. Poor lettering and word formation.
8. Could not read at all.
9. In all occasions did not show "desire to read".

Post-test

- Majority could recognize most letters and 'barakhadi'.
- Most could copy and read.
- Meaningful recognition and recall.
- Could read simple words like as well as complex words such as etc.
- A conscious attempt to read.
- A systematic pattern moving from left to right.
- Good letter formation.
- Most could read words and simple paragraphs.
- Were very enthusiastic and impatient for their turn to read.
- Errors of mispronunciation and omissions were common while reading.

In sum, the program on the whole has proved effective in helping children learn to read and write simple words and lessons of their Readers. The acquisition of the basic reading and writing has hopefully opened up a whole new world to these children. It is hoped that they will use these skills as a launching and would continue further learning.

VII. Some General Observations and Comments.

1. About the children: An observation of children's general behavior evidenced a large gap between what children conventionally do and what they are capable of doing. Enabling the children to develop a more systematic response system led them to learn meaningfully and rapidly. A typical pre-program response of the group was characterized by embarrassment in not knowing the correct answer. Either a child refused to come or when he/she did come, the child responded by avoiding the investigators' eye, looking down or by snapping, "I don't want to do it", or by running away in some cases. They knew "they did not know" and it was written all over. Over the course of the program an observable change was seen in the children. During the program as well as in the post-test, the children were eager participants. They competed for their turn, responded without hesitation irrespective of whether they knew the correct answer or not. The tendency of giving any irrelevant response was diminished, giving way to a clear admission of "not knowing" the answer. This clarity in responses added to their confidence.

Few anecdotes and children's as well as teacher's observations which are very individualistic may help supplement the general observations.

Children's comments: The comments made by children during the course of the study were negative as well as positive in nature. These are summarized below.

Positive: "I want to come in your group".

"Give me my worksheet, I have left it incomplete yesterday".

"Will you come tomorrow also?"

"I can get a good job only if I know how to read".

"Now, I can read like Yasin does".

Why do you come to school? "To learn".

"I will distribute the pencils today".

Negative: "I don't want to join your group".

Don't you want to write? "No".

Then ... Why do you come to ... School? "Must come.

"Mother beats otherwise".

"I would get punished".

"I don't want pencils, they are all blunt".

We can detect here many components that determine the process of change. The wide range of individual responses remind us not to generalise and reduce a topic to simple statistical significance alone.

Among these children, there are those who want to retreat from the experience, those who appear to be indifferent, and those who rise to the challenge. We assumed that their disadvantages burden them or worse, lead to disruption and disorganization. But there are those who want and are ready for new learning, whose disadvantage is only a platform to take off.

Some individuals experience change passively, some actively, some as victims, some as leaders and planners, some as followers. What is striking is their inner capacity to adapt, learn and master and where these fail, to respond with inhibition or

restraint.

2. About the Teachers: Observations of the teachers' general behavior during the course of this study evidenced a clear negative attitude toward the children. Unlike in case of children, there was no observable change evident in the teachers' behavior. Inceassant efforts at involving them in the actual implementation of the program met with failure. However, they provided very fruitful suggestions in program planning. Some of the comments and statements made by them read thus.

Teachers' comments:

On initial contact ... "I do not have time to show you the academic records, come later on".

"Have you brought the supervisor's permission in writting?"

"I don't know why you want to waste your time".

On pre-testing

"What can we do; parents just don't care".

"It is impossible to teach in such a big class but I try my best".

"They do not even bring their books, what do we do?"

"The Ist grade teacher hasn't taught them a thing".

"We have to follow the method suggested by the supervisor, we don't like it".

"We can't fail them so they just go to the next class".

"If we do not show good results of our respective classes, they might demote us".

"My supervisor is strict. She only finds faults with me".

In the Class

"Sit down, you dumb. You will never learn".

"Why are you raising your hand, have you ever answered a single question correctly?"

"Run and get water for me".

"Here is the 'hero' of our class who does not know how to write even his name!"

"How many times have I called your mother? Tell her if she does not come I will dismiss you from the school".

"Don't make noise ... just copy the words from the black-board".

These statements made by the teachers during the course of the study reveal their general orientation. Evident in these observations is a clear tendency to expect low performance from the children and so blame either the parents, the supervisor or the co-worker for childrens' failure to learn. Their negative orientation toward children was not even discrete as some of the statements indicate.

While it is quite possible that there is some justification for such a negative and harsh behavior it is not difficult to imagine the fate of a child in such a situation. Caught between the inadequacies of home and school, the child remains the worst sufferer, providing the teacher a convenient argument for his/her own failure.

Section III : Identification of Children with Learning Disabilities.

Presented under this section are the results related to

selection of children suspected of suffering from learning disabilities, identification of their disabilities through a battery of tests and program prescription pertaining to their areas of deficits

Table 14. Selection of Children Suspected of having Learning Disabilities.

	Minimal or no gains	Errors typi- cal to LD on GWT (W)	Traits typical of LD. on TRS observations through the program	
Child A	1	1	1	1
Child B	1	-	-	-

Table 14 shows that while there are two children who indicated minimal gains through the program, there is only one of the two who falls into all the four criterion measures set for selecting children for further identification.

17. Profile of Child with Learning Disability

	Score	
	Pre	Post
1. <u>Test profile</u>		
a. <u>Results of four test measures</u>		
i. Pre-requisite reading test. No concept of letters and barakhadi.	0	0
ii. Graded word Test (Oral) No meaningful recognition of words.	0	4
iii. Graded Word Test (Written) Mere scribbling no concept of words.	0	0
iv. Reading Analysis Test Attempted only one component i.e. Listening comprehension.	0	10

<u>b. Results on a battery of tests</u>	<u>Scaled score</u>
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i. WISC	
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Picture arrangement.	4
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Object assembly.	7
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Comprehension.	7
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Mazes	9
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ii. CEFT - Field dependent	Field dependent
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iii. MEFT - Very impulsive	Very impulsive
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iv. DAH IQ	99
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2. Investigator's Observations: Impulsive, hyperactive, very poor in reading and writing, disorganized and clumsy.

3. Teacher's Rating Scale:

Category: High difficulty in learning.

Score: 21

Behavior traits: Hyperactive, aggressive, clumsy, distractable.

Background Information and General Observation

Harishi is an eight year old studying in the second standard of a Municipal school in a depressed area of the city of Baroda. He is the second eldest of a family of five children who live with their parents in a two room tenement which affords little privacy to either of them. His father, who serves in the police-force, earning Rs.550/- a month, can ill afford to meet the basic needs of the family. The mother struggles to make ends meet as a house wife. She has little time, energy or inclination to fret over the children's various needs. Harish was often seen helping his mother in household chores or

playing and caring for his younger siblings, wearing his dirty, unbuttoned shirt. He usually suffered from a chronic cold and cough. Despite his deprived condition at home, Harish carried his satchel to school with great alacrity.

To the class teacher Harish seemed a nuisance disturbing other children and playing mischief on his peers. He found him dull and a poor academic achiever who appeared knowledgeable, was eager to answer a question - but always with wrong answers.

The investigator found Harish eager to seek her approval, impulsive in answering fidgety and restless in class. His attention span was poor needing a consecutive variety of activities to curb his out-of-seat behavior. She found that his classmates disapproved of his behavior in class and were often seem laughing and jeering at his answers.

Test and Sub-test Performance

As presented earlier, Harish's performance on four test measures indicate that he has made no gains in any test measures except in RAT. Here too he has scored only in one component namely listening comprehension. His score suggests that he performs below first grade level in it.

He shows four out of eight traits of a child with learning disability on TRS and falls into the category indicating high learning difficulty.

The investigator's observations during the program too are in conformity with those of the teacher. Throughout the program Harish was found to be restless, hyperactive, and clumsy with a

lot of out-of-seat behavior. He was very poor in writing and reading. His IQ on DAM falls into the category of normal. In WISC sub-tests his performance is well below the average. These reflect deficit in tasks requiring spatial relations, sequential ability, comprehending ability and foresightful planning. He is highly impulsive on MFFT as well as according to the observations of the class-teacher and the investigator. CEFT characterizes his cognitive style as field dependent. Harish's deficits as revealed through tests and sub-tests as well as the observations can be summarized, thus:

1. Very poor in various skills of reading and writing.
2. Poor concentration on verbal tasks.
3. Inadequate impulse control.
4. Lack of adequate comprehension ability, sequential ability, spatial relations, and foresightful planning.
5. Problems with figure ground tasks.

Focusing on these deficit areas a program prescription is suggested to help him overcome his problems.

III. Program Prescription

1. Visual perception and sequencing:
 - a. Finding hidden shapes in a picture.
 - b. Bead designs: copying or reproducing designs with beads.
 - c. Copying shapes using dido sheets.
 - d. Completing pictures and picture designs.
 - e. Arranging cut out shapes (e.g. squares) in order of size.

2. Spatial ability:

- a. Puzzles: simple two-three pieces puzzles made from large, clear pictures mounted on a cardboard.
Ask a child to follow certain simple instructions e.g. "put the chalk on the table; put the ball under the chair..." etc.
Give the child a large sheet of blank, white paper and crayons and give the following instructions. "Draw a red square on the left. "Draw a green circle on the right ..." etc.
- b. Prepares an obstacle-race course for the child. Ask him to:
 - (a) Jump over the small chair.
 - (b) Go underneath the table.
 - (c) Run to the left of the blackboard.
 - (d) Run down the steps.
 - (e) Go behind the wall... etc.

3. Listening Comprehension

- a. Listening for details: Read a simple story and ask questions on the same.
- b. Sequence of events: Prepare and tell a simple story using pictures. Narrate the story to the child and ask him to arrange the pictures in the order in which the events occurred.

4. Activities for Fore-sightful Planning

- a. Tracing a path between 2 narrow lines.



- b. Put number dots in a sequence and ask child to join them without crossing over lines.
- c. Write numbers at random on paper and ask child to join the same in a sequence without going over any lines (The numbers can be so placed that a picture is seen once the numbers are joined).

1

4.

3

2.

5.