CHAPTER FOUR

CONSTRUCTION OF THE TOOLS OF RESEARCH AND METHODOLOGY

I INTRODUCTION : For any research, factual material or data unknown or untapped is essential in every study. They can be obtained from many sources-direct and indirect. It is necessary to adopt or evolve a systematic procedure to collect essential data. Relevant data, adequate in quantity and quality should be collected. They should be sufficient, reliable, and valid.

For collecting new, unknown data required for the study of any problem, one may use various devices. For each and every type of research, one needs certain tools to gather new facts or to explore new fields. The selection of suitable tools is of vital importance for successful research. Different tools are suitable for collecting various kinds of information for various purposes. The research worker may use one or more tools in combination for this purpose. A researcher should familiarize himself with the nature, merits, and limitations of these tools and should learn how to construct and use them effectively (Sukhia, 1980).

To carry out any type of research investigation, data are gathered with which the hypothesis may be tested. A great variety of research tools has been developed to aid in the acquisition of data. These tools are of many kinds and employ distinctive ways of describing and quantifying the data. Each tool is particularly appropriate for certain sources of data, yielding information of the kind and in the form that would be most effectively used.

This chapter gives the details of the investigation and it is divided into nine sections. They deal with 1. general account of the construction of tests, 2. construction of reading tests, 3. construction of writing tests, 4. construction of arithmetic tests, 5. establishment of validity and reliability of the literacy tests, 6. development of schedule for learners on awareness and functionality, 7. development of the problem checklist, 8. sample procedure and data collection, and 9. variables studied.

SECTION ONE : INITIATING THE CONSTRUCTION OF TESTS

A. PLANNING, DEVELOPING AND CONSTRUCTING THE TESTS: The syllabi prescribed by the Union Ministry of Education, the Primer and the Reader prescribed for the Rural Functional Literacy Project as also the books and booklets supplied to the animators for guidance, the level of literacy and numeracy expected to be achieved as in appendix-A were critically studied; thorough discussions were held with experts in test construction about the various item formats - their advantages and disadvantages were weighed. Knowledge of the subject matter dealt within the RFLP classes was acquired by reading the relevant material and by observing the RFLP classes for one year 1983-1984. First hand knowledge of the vocabulary level of the adults was gathered by meeting with many adult learners a number of times individually.

After studying the syllabus prescribed for the RFLP classes, the main content areas were identified and the major course of instructional and behavioral objectives were specified. Adequate provision was made for evaluating all the important outcomes of instruction. Thus, tentative blue prints were prepared and sent to the RFLP project officers and animators for their opinions about the items and weightages that should be given to each content area. The final blue prints were prepared after taking their opinions into consideration. For the blue prints vide appendix B.1, B.2, and B.3. While preparing the literacy tests, the age of the adult learners; who were to be tested, and the time to be given to them for taking the test were also taken into consideration.

1. PREPARING THE TRYOUT TEST : The blue prints gave an estimate of the number of items which were to be used, the type of items, and the amount of emphasis to be given to each. Using the test blue prints as guidance, the investigator wrote the items to cover the designated content skill areas. Many more items were written initially than those included in the final form of the test because of an assumption that some items may need to be eliminated in the process of test analysis. The items were prepared well in advance to permit time for reviews and editing.

In writing the items, an effort was made to present situations and language relevant to the experiences of the poorly educated adults. The first drafts of items were ready which were reviewed, critisized, and revised after a thorough discussion with the experts for content validity. Most of the revisions involved in eliminating ambiguities, clarification of wordings, and strengthening weak alternatives. The distractors of multiple choice type items were distributed equally, such that, they should also be in a position to discriminate well between the individuals.

Each test consisted of a few of each, easy and difficult items. All items of a particular type were grouped together in the test. Care was taken to include questions of appropriate levels of difficulty. A scoring key was simultaneously prepared along with the test items. Care was taken to see that the items were clear, concise, free from ambiguity; and free from language and usage errors. Test items were arranged in the order of difficulty i.e., from the easiest to the most difficult items. Provision was also made to make blank space available in tests for participants to write their responses. Clear, complete, and concise directions to the respondents were given wherever necessary. The test blue prints, which show coverages of the content in each test, are given in appendix B.1, B.2, and B.3.

Tests were prepared according to the plan. However, to improve the wordings of the items, and the directives to the subjects; scoring keys and procedures; conducting an informal tryout of the tests and their item analysis prior to a pilot test were deemed as appropriate steps to be adopted.

2. ADMINISTRATION OF THE TRYOUT TEST : A sample of 15 adult participants from three RFLP centers of Timiri block was randomly selected for administering the tryout tests and studying possible ambiguities and difficulties in the wording of the tests. The respondents were about to complete their one year RFLP course. The tests were administered by the investigator.

The respondents were explained how to take the tests and were requested to attempt every item in the tests. They were allowed liberal time to complete the tests. They were permitted to seek clarifications of the meanings of the words which they could not comprehend. Every reasonable precaution was taken to ensure normal conditions during administration of the tests. The time taken by the candidates to complete each test was noted. This was necessary to have a rough estimate of the time required for the final test.

After the completion of the tests, the testees were requested to offer their opinions or criticism freely regarding the items in the tests. Some irrelevancies and ambiguities were brought to the attention of the investigator. Hence, some items were discarded while slight changes in the wordings of others were made for clarity. As much as possible, precautions were adopted for detailed and clear instructions on how one should take the tests. They were subsequently imparted to the respondents while administering the tests.

A scoring key was prepared for each test. One point of credit was allotted for each correct responses whether it was 1. multiple choice, or 2. recall responses, or 3. open-end statements. This investigator did not deem necessary as suggested by Ross in the case of open-end responses, to weigh the items according to their estimated difficulty, importance, or length of the answer (Ross, 1954). A method for alloting points was also set for reading the passage, dictation, and transcribing sentences.

3. PILOT STUDY : Following the tryout test, their analyses as feedback, their modification, a pilot study was planned and subsequently conducted in a few selected RFLP centers with the help of animators of the respective centers.

These centers were in the three blocks of the North Arcot district in which the RFLP was in operation at that time. Thirty three participants from each of the two blocks - Cheyyar, and Vembakkam, and thirty four participants from Tiruri block were selected randomly, See table 4.1. The animators' help was sought in the arrangements of testing, and interviews on specified dates and times.

The data through the tests and the scales were collected in two sessions on the same day, i.e., the literacy tests were administered in the first session; and data on the scales were gathered in the second session. They were held in two sessions to make it convenient for the respondents. A report was established with the respondents.

TABLE 4.1: SAMPLE FOR THE PILOT STUDY

Serial No.	Name of the Block	Total No. of participants	Sample selected for pilot study
1	Cheyyar	2729	33
2	Vembakkam	2818	33
3	Timiri	3687	34
	Total	:	100

4. ITEM ANALYSES : The adequacy of a test depends upon the care with which the items of the test have been chosen. For the purpose of this study, three phases of item analysis was considered - 1. item difficulty, 2. item discrimination, and 3. item selection.

a. ITEM DIFFICULTY INDEX : the difficulty value of the items was calculated with the formula $D = \frac{R}{T}$ (Mehrens, 1972)

Where D = Item Difficulty
R = No. of Respondents who answer the item correctly
T = Total No. of subjects (100) who attempted to answer the items.

The items were arranged in the ascending order of their difficulty-the easiest in the beginning and the most difficult at the end.

b. ITEM DISCRIMINATION : The criterion used was that of 'internal consistency' (Likert, 1932) which method was being considered as easier than the traditional method of item analysis; and yet, as advocated by many scholars, the 'internal consistency' method yields similar results as does

the traditional method (Likert, 1932; Murphy & Likert, 1937; and Edwards, 1957). The procedure adopted was 1. the ranking of the students of the sample by their total scores; 2. choosing the top 27% of each the highest and lowest scores; and 3. calculating the internal consistency of each item by the following formula: Internal consistency of an item = mean score of the high group on the item minus the mean score of the low group on the item.

The internal consistency value of each item was calculated which ranged from 2.16 to 0.25. These values were considerably high. A high internal consistency value indicates that a larger proportion of high group subjects got the item right than the low group subjects. A very low value indicates that the item does not have a good discriminating power; which may be due to the item being too easy, too hard, or ambiguous.

c. ITEM SELECTION : The final selection of the items was made on the basis of (1) experts' criticism (2) item discrimination, and (3) item difficulty.

d. EXPERT'S CRITICISM : As mentioned earlier, having written the test with test items, the investigator circulated the test among the experts for their criticism on the content validity of each item. Criticism led to omission of some items and revision of other items. As much as possible, precision and conciseness for each item were attempted.

e. ITEM DISCRIMINATION : The process of elimination was a technique used in eliminating the weak and defective items. The question arose as to what should be the minimum internal consistency discrimination value of an item for its final selection for the test. According to Garrett, "... as a

general rule, items with validity indices of 0.20 or more are regarded as satisfactory" (Garrett, 1958). But according to Davis (in the case of a predictor test), if item analysis data are available with the total score on all the items, some preference should be given to items that have the lowest internal consistency discrimination indices (Lindquist, 1959). Keeping these suggestions in mind, the investigator decided to retain the items having internal consistency discrimination values of 0.30 or more. The items with internal consistency indices of less than 0.30 were rejected.

f. DIFFICULTY VALUE : Garrett (1958) says 'the larger the variance of the item, the greater the number of separations among individuals the test item is able to make. Other things being equal, items of moderate difficulty i.e., 40-50-60 per cent passing are to be preferred to those which are much easier or much harder. Garrett also suggests that 'the normal curve can be taken as a guide in the selection of difficulty indices. Thus, 50 per cent of the items might have difficulty indices between 0.25 and 0.75, 25 per cent indices larger than 0.75, and 25 per cent smaller than 0.25 (Garrett, 1958).

The distribution of items based on difficulty value was arbitrary and not final. Most of the items in the present tests fell between 21 and 80 which is a widely accepted range. As such, not a single item was dropped as an easy or difficult item. To generate motivation among the participants, a couple of very easy items were included in each test although their discriminating indices were lower than 0.20.

5. ARRANGEMENT OF ITEMS IN THE FINAL TEST : The items were arranged by following the general principles of test construction. Two points were taken into consideration while rearranging the items in the final forms of the tests. 1. Difficulty value of each item. 2. Items of the same type were grouped together.

SECTION TWO : CONSTRUCTION OF READING TEST

A. PLANNING, DEVELOPING, AND CONSTRUCTING THE READING TEST: The reading test was designed to measure ability of a learner to read with comprehension. The test consisted of four types of items 1. recognition of alphabetic letters, 2. recognition of words, 3. reading of a passage, and 4. reading comprehension.

DESCRIPTION OF ITEMS :

ITEM 1 - READING OF LETTERS : The first item of the test was reading of letters - vowels, consonants and conjuncts. Reading sub-skills such as cognition of alphabetic letters was considered as an essential part of the reading test because alphabet learning is a prerequisite to all learning. Though alphabet recognition is relatively easy, it was necessary to include this item as it was found to have some discriminating power among the sample at the time of enrolment in the RFLP course. This type of item is also found to have been included under the heading of 'Reading separate Letters' in the Literacy Scale developed by the Regional Workshop on Work-oriented Functional Literacy held in Bangkok (UNESCO, 1960).

The two vowels and the five consonants in the items were arranged in the order in which they occur in the alphabet. The three conjuncts were arranged in the order of their increasing difficulty.

SCORING : While the subject read the letters, the investigator recorded them in a scoring sheet prepared for this purpose. A copy of the scoring sheet used in this test is given in appendix E.1. Each correctly pronounced letter was given a credit. The letter which was mispronounced or unpronounced

letter was taken as a discredit i.e., no score was given for that letter.

ITEM 2 - READING OF WORDS : The second item of the test was reading of the words. Word reading is easier than sentence or paragraph reading. Twenty five words were arranged in five columns. Each column consisted of five words, which were arranged from easy to the difficult word progression. The first and second columns consisted of two-letter words; the third colum had three-letter words; the fourth column consisted of four-letter words; and the fifth colum had five-letter words. The idea of this item was drawn from other previously developed tests, which are as follows:

1. The 'Reading Test' developed by the Literacy House, Lucknow, (1970) for measuring the reading ability of functional literates.
2. The Literacy scale developed by the Regional Workshop on Work-oriented Functional Literacy held in Bangkok (UNESCO, 1960).
3. The 'Formal Pre-course Tests' designed by Smith (1970) to measure precourse attainments of potential students.

Recognition of words is basic to the development of skill in reading. Word recognition is the basic pre-requisite for comprehension, fluency and appreciation of reading material. The following criteria were adopted for the selection of the words:

1. The words be within the vocabulary of the primer.
2. The words be of common use in the day-to-day life of the rural people.
3. They should be of wide range to include various parts of speeches of grammar, with different combinations of vowels, consonants and a variety of conjuncts.

4. They should consist a range of syllables representing different sounds.

The adults are familiar with the vocabulary and they can understand the words therein when the words are read to them without any difficulty. Therefore, items on vocabulary usually found in similer test elsewhere were excluded. Instead, greater number of words were included under 'words recognition'.

SCORING : The investigator or his assistants recorded the points while the adults read the words. The following criteria was used while scoring. A credit was given if a word was read correctly. No credit was given either for a complete or partial misprounciation of the word, or omission of a letter, or any other error.

ITEM 3 - READING SPEED : Reading achievement tests are generally directed towards the measurement of reading speed and comprehension. Both reading speed and comprehension are important reading skills and almost all reading achievement tests are designed to measure both these skills, either directly or indirectly.

Brueckner and Bord have suggested that 'one should not think that the rate of reading is a function of speed alone. In fact, 'rate' is a much broader concept than the mere number of words read per minute'. A realistic view of rate of reading, as suggested by them in their words - 'A true measure of rate of reading is how rapidly a child can read material of a given difficulty with good understanding, taking into account the purpose for which he is reading' (Brueckner & Bord, 1955).

Some of the test formats which consist this characteristic are:

1. The Informal Reading Inventory prepared for the use of teachers of Adult Basic Education (New Hampshire).
2. The test developed by Mhaiki et al., (1971) to test reading speed and comprehension of adult participants in the 1971 Literacy Campaign; and
3. The reading test developed by the Literacy House (1970) Lucknow.

There are two approaches to measuring the reading speed. They are:

1. The subjects may be asked to read a passage for a predetermined, fixed time and the number of words, which they read, be noted. This method, though suitable for group testing, leads to difficulties in testing comprehension because different subjects would read upto different lengths of the passage.
2. Alternatively, the subjects may be asked to read the entire passage and the time taken by each may be noted individually. This procedure can be applied effectively for individual testing of reading speed as well as comprehension. The second procedure was preferred and thus used in this study.

B. SELECTION OF READING MATERIAL : A survey of studies on reading indicates that the reading speed varies with the nature of the reading material. Having this in view, the investigator decided to use material on agriculture which would be familiar, as such, interesting to the participants. Thus, after a careful scrutiny of the various materials available, a suitable passage was selected. The general criteria followed in the selection of the passage was :

1. The material should be relevant, such as, modern agricultural practices to arouse the adult readers' interest;
2. It should be fairly new to be interesting to the adult subjects;
3. It should be neither too difficult nor too easy for the adult participants;
4. The vocabulary and style of the language should be to the level of the adults who participate in the Functional Literacy Programme; and
5. The passage should not be previously known, yet, it should consist familiar words.

Since the purpose of the RFLP has been to raise the learner's level of functional literacy, it necessitates that the learners develop their ability in reading a passage. While such ability was expected of the adult learners, this portion of the test was to measure it and whether or not they have attained it, if at all.

Care was taken to ensure that the contents of reading passage had relevance to the participants' livelihood and/or environments. Since all the participants were from the rural area, they were assumed to be either farm laborers, or wives of farmers, and who wanted to know more about farming, a topic on agriculture was deemed to be most appropriate. So, the passage was made of three small paragraphs. The first and the second paragraphs consisted of six sentences each and the third paragraph of five sentences. There were totally seventeen sentences. The number of words in the sentences ranged from three to seventeen and the whole passage consisted of 135 words.

SCORING : A sentence was taken as the basic unit for scoring. Credit was given if at least two-thirds of the total number of words in a sentence were read correctly.

An observation at the reading by participants indicate that the typical errors committed by them were 1. mispronunciation of words - wholly or partially; 2. omission of one or more letters from the word; 3. omission of a word; 4. not knowing a word. No credit was allotted for any such errors.

ITEM 1 - COMPREHENSION : Reading comprehension is the power to understand and remember what is read. Comprehension results from a person's perception, stored knowledge of the meanings of words, sentences and/or their clusters interacting with the ideas being read in the current passage. Suitable multiple choice questions with four responses in each, one of which was correct were provided as stimuli to the participants, so that, they would be able to recall the matter and pick the appropriate answer. The questions were structured for comprehension of 1. grasping the central idea, 2. making logical inferences, and 3. grasping the details.

SCORING : Each correct response was allotted one score; and the maximum score of the test was 63. The investigator was to tickmark the correct responses on the scoring sheet as a respondent answered the questions. The sum of tick marks yielded the total score for each participant.

1. METHOD OF ADMINISTRATION : The test was individually administered on the subjects. Clear instructions were given for answering the questions.

ITEMS 1 AND 2 : Each subject was handed a test, so that, she may read the letters and words aloud.

ITEM 3 : The test remained with the subject for estimation of her reading speed of the passage, for which, each participant was timed with a stop watch and the time was noted on the test.

ITEM 4 : The test was taken back from the participant, and the questions for comprehension of the passage were asked from her. Her choice of one of the four given multiple choice answers was noted under each question.

The procedure described for item analysis under section 1 was followed. For the pilot test, see Appendix C.1. For the scores (grouped data) of the pilot test, see Table 4.2. For the final form of the test, see Appendix D.1.

TABLE 4.2: GROUPED DATA FOR THE CALCULATION OF MEAN AND STANDARD DEVIATION OF THE READING TEST (PILOT STUDY)

Serial No.	Class interval	Mid point	f	cum.f	d	fd	fd^2
1.	11-14	12.5	7	7	-6	-42	252
2.	15-18	16.5	8	15	-5	-40	200
3.	19-22	20.5	7	22	-4	-28	112
4.	23-26	24.5	3	25	-3	-9	27
5.	27-30	28.5	9	34	-2	-18	36
6.	31-34	32.5	5	39	-1	-5	5
7.	35-38	36.5	8	47	0	0	0
8.	39-42	40.5	8	55	1	8	8
9.	43-46	44.5	7	62	2	4	28
10.	47-50	48.5	15	77	3	45	135
11.	51-54	52.5	6	83	4	24	96
12.	55-58	56.5	10	93	5	50	250
13.	59-62	60.5	4	97	6	24	144
14.	63.66	64.5	3	100	7	21	147
			N =100			Σfd=186-142=44	$\frac{\Sigma fd^2}{1440}$ =

$$\text{Mean} = AM + \frac{\Sigma fd}{N} \times C$$

$$= 36.5 + \frac{44}{100} \times 4 = 36.5 + 1.76 = 37.26$$

$$SD = \frac{4}{100} \sqrt{100 \times 1440 - 442} \quad : \quad SD = 15.08$$

SECTION THREE : CONSTRUCTION OF WRITING TEST

A. PLANNING, DEVELOPING, AND CONSTRUCTING THE WRITING TEST: Writing ability is one of the basic aspects of literacy and is functionally regarded as one of the tools for communications. The test was designed to measure each participant's writing ability. It consisted seven items, which were the writing of 1. Alphabetic letters; 2. Words; 3. One's own address; 4. One-word answers to questions such as a. name of a disease, b. price of a post-card, c. name of a political party, d. name of a festival, and e. name of the Prime Minister of India; 5. name of five crops; 6. Transcription; and 7. Dictation.

1. DESCRIPTION OF ITEMS

a. ITEM 1 - WRITING OF ALPHABETIC LETTERS: Knowledge of alphabet is a prerequisite towards acquisition of writing skills. Therefore, the first item of the test consisted writing of alphabetic letters - vowels, consonants, and conjuncts. Although, writing letters is relatively easier than writing words, this item was included for various reasons - 1. to see if a participant could write even the most fundamentals of the writing; 2. if yes, how well could she write so; and 3. to lead a participant from simple to higher level and hopefully, to build her confidence in taking the test. Idea for this item was drawn from the 'Literacy Scale' which was developed in the Regional Workshop held in Bangkok (UNESCO, 1960), and which contained similar item.

This item consisted five letters - 1. two consonants, 2. one vowel, 3. one syllable, and 4. a conjunct. They were dictated by the investigator to the participants. The investigator bore in mind that an adult not only should be able to

discriminate the visual shapes of the letters, but also know the motions by which the shapes had to be best achieved.

SCORING : A point was allotted to each letter. Each letter written correctly by the participant was tick-marked by the investigator and the total points were tabulated at the end. No score was allotted to the wrongly written letter.

b. ITEM 2 - WRITING OF WORDS : The Second Item in progression after the writing of simple letters was the writing of simple words; which, while they are easier to write than the sentences, they are more difficult than writing letters. Rightly so, an observation while testing indicated that some participants could write the words but could not write full sentences.

Writing of words requires a precision in differentiating the variety of consonants, vowels, their combinations; and some grammatical knowledge about the parts of speech. One could write only when one had such exposure. Testing a participant in writing words was considered as important in deriving a clue of her achievement. So, the second item of the test was writing of words. For a choice of appropriate words, a primer used in the functional literacy centers was refered to. The words which supposedly were most frequently used by the adults in their day-to-day life in their rural surroundings were thought of as being appropriate for inclusion in the test. Words with a variety of vowels, consonants, conjuncts, and their combinations were included in the list.

Five such words from the easiest to the more difficult progression were dictated. They were 1. the first word with two letters, 2. the second word with three letters, 3. the third with four letters, 4. the fourth with five letters, and 5. the fifth with six letters.

SCORING : Credit of one point was allotted to each word written correctly. No credit was given to wrongly written words, such as, by omission of letter(s), or substitution of other letters, or any other errors.

c. ITEM 3 - WRITING OF SENTENCES : The Third Item in progression was to test the ability of participants in writing sentences as their answers to the questions asked therein. Such questions were, as to, what was - 1. her name, 2. the name of her village, 3. the name of her taluka, 4. the name of her district, and 5. the name of her state. Such ideas were obtained from 1. pre-course tests for attainment of potential students, by Smith (1970); 2. pre-literacy test by Literacy House of Lucknow (1970), and 3. 'After Primer Literacy Test Paper' also by the Literacy House of Lucknow (1970), and all of which consisted questions to allure statements from the testees, which may be used as measures of one's ability to write his/her name, name of village, address, etc.

The fact remains that one should know and be able to communicate orally as well as in writing the information most relevant to one's own identity, such as personal name; names of taluka, district, state; address; etc. Thus, the objective was that an adult had to demonstrate her ability whether or not she could do so and to what extent.

SCORING : Credit was allotted to correctly written answers only. Any error whether in spelling or any other was treated as incorrect and was not allotted a credit.

d. ITEM 4 - OPEN-END QUESTION : This was to stimulate the thinking of the participants and to allure them to express themselves independantly whereby their abilities to write on general knowledge could be measured. Questions to such effects were about - 1. name of a disease, 2. price of a post

card, 3. name of a political party, 4. name of a festival, and 5. name of the nation's Prime Minister. Such ideas were obtained from the 'Functional Literacy Test paper (Functional Knowledge)' of Lucknow Literacy House (1970).

SCORING : One score was allotted for a completely correct response only. An error of spelling or any other was treated as incorrect and a credit was disallowed.

e. ITEM 5 - WRITING CROPS' NAMES : It was another similar idea which was also obtained from the Literacy House of Lucknow 'After Primer Literacy Test Paper (Writing with comprehension, 1970), which was about writing names of a few crops cultivated in the village of participants. Since most participants were either farmers, or farm laborers, or living near farms; in anticipation of their knowing them, such question was deemed as appropriate.

SCORING : Only correctly written crops were given credit. No credit was allotted for either a spelling or any other mistake.

f. ITEM 6 - TRANSCRIBING A PASSAGE : It consisted another idea of testing an adult's mechanical skill of copying, which otherwise is also known as transcription. This was obtained from the writing test developed by the Directorate of Adult Education and the 'Functional Literacy Test paper (Reading and writing)' prepared by the Literacy House, Lucknow (1970). Three sentences of twenty five words about fertilizers were given for copying down on a blank paper.

SCORING : A limit of one error of any type in a sentence was permitted for an allotment of a point. A sentence with more than one error was denied.

g. ITEM 7 - DICTATION OF A PASSAGE : This was also intended to assess the speed of writing of the subjects. This passage consisted of forty eight words in two small paragraphs. The theme of the passage was on the advantages of cultivating HYV of paddy crop. Only such sentences were chosen which did not have any punctuation marks other than commas and fullstops.

SCORING : The sentence was the basic unit for scoring. A sentence bore words ranging from 3 to 13. Credit was given if, at least, two-thirds of the total number of words in a sentence were written correctly. Omission of a word and not knowing a word were considered as errors for scoring purposes.

2. METHOD OF ADMINISTRATION : The test was administered individually. The method of answering questions was clearly explained to an adult prior administering the test.

ITEMS 1 and 2: The investigator dictated the letters and words respectively and a subject wrote the answers in the blank paper which was provided to her. Each letter or word was pronounced twice as distinctly as possible before the subject was asked to write her response.

ITEMS 3, 4 and 5: The investigator read out the question and the respondent had to write the answers in the blank paper which was provided earlier.

ITEM 6 : The subject had to copy the passage in the provided blank paper.

ITEM 7: The subject was required to write sentences dictated by the investigator. Care was taken to regulate reasonably the speeds of dictation to permit the participants to write. The time taken by the subject to write the passage was noted by using a stop watch.

The procedure described for item analysis under section-1 was followed. A copy of the test used for the pilot study is given in Appendix C.2. The scores (grouped data) of the pilot test are given in Table 4.3 . The final form of the test is given in Appendix D.2.

TABLE 4.3: GROUPED DATA FOR THE CALCULATION OF MEAN AND STANDARD DEVIATION OF THE WRITING TEST (PILOT STUDY)

Sl. No.	Class interval	Mid point	f	Cum.f	d	fd	fd^2
1	6-7	6.5	5	5	-7	-35	245
2	8-9	8.5	7	12	-6	-42	252
3	10-11	10.5	9	21	-5	-45	225
4	12-13	12.5	9	30	-4	-36	144
5	14-15	14.5	11	41	-3	-33	99
6	16-17	16.5	9	50	-2	-18	36
7	18-19	18.5	7	57	-1	-7	7
8	20-21	20.5	9	66	0	0	0
9	22-23	22.5	9	75	1	9	9
10	24-25	24.5	8	83	2	16	32
11	26-27	26.5	6	89	3	18	54
12	28-29	28.5	3	92	4	12	48
13	30-31	30.5	2	94	5	10	50
14	32-33	32.5	4	98	6	24	144
15	34-35	34.5	2	100	7	14	98
			N=100			Σfd = 103-216 = 113	Σfd^2 = 1443

$$\text{Mean} = AM + \frac{\Sigma fd}{N} \times C$$

$$= 20.5 + \left(\frac{-113}{100} \times 2\right) ; = 20.50 - 2.26; = 18.24$$

$$SD = \frac{2}{100} \sqrt{100 \times 1443 - (-113)^2} \; ; \; SD = 7.25$$

SECTION FOUR : CONSTRUCTION OF ARITHMETIC TEST

A. PLANNING, DEVELOPING, AND CONSTRUCTING THE WRITING TEST : Versloys (1971), Bazany (1971), and Mhaiki et al.,(1971) have developed good arithmetic tests which were the guiding forces for this investigator while constructing this test. This test was therefore constructed to measure the ability of the participants in simple mathematical operations. Twenty seven multiple choice items therein were structured to possess characteristics as follows:

1. The variety of problems were almost equal in number in all the four aspects of addition, subtraction, multiplication, and division.
2. Elements of cognizance, recognition, recall, and computations were included.
3. Relevance of daily life experiences frequently encountered by adults were incorporated in the questions.
4. Application of life situations were intergrated in the problems.
5. The respondents were provided four responses to choose one out of them.
6. While preparing the responses, giving clues through the answers was avoided.

B. DESCRIPTION OF ITEMS : A detailed account of the description of items used in arithmetic test is given in table 4.4.

TABLE 4.4: DESCRIPTION OF ITEMS USED IN ARITHMETIC TEST

Q. No.	Content Area	Item description	Remarks
1	2	3	4
1	Square	Identification of the figure of a square	
2	Time	Knowledge of the units of time-year and days	
3	Time	Knowledge of the units of time-hours	
4	Money	Knowledge of Indian coins - Rupees and paise	
5	Time	Knowledge of the units of time - minutes per hour	
6	Weights	Knowledge of the units of weights - kilograms and grams	
7	Fractions	Knowledge of fractions	
8	Fractions	Knowledge of fractions	
9	Fractions	Knowledge of fractions	
10	Addition	Addition of two digit numbers	Addition is the process of finding a single number to represent the item of two or more numbers together. Addition is the most basic arithmetic process. Mastery of addition is a pre-requisite for the mastery of any and every other arithmetic skill.
11	Addition	" "	
12	Addition	" "	
13	Addition	" "	

contd...

Table (contd.)

1	2	3	4
14	Subtraction	Subtraction with two digit number from another two digit number (with borrowing)	Subtraction is the process of finding out what remains when one number is taken away from another number
15	Subtraction	Subtraction of a two digit number from three digit number with borrowing	
16	Subtraction	Subtraction of a three digit number from another three digit number without borrowing	
17	Subtraction	Subtraction of a two digit number from a three digit number with borrowing	
18	Multiplication	Multiplication of a one digit number by another one digit number	
19	Multiplication	" "	
20	Multiplication	Multiplication of a two digit number by a one digit number	
21	Multiplication	Multiplication of a rupee and its fraction by a two digit number	
22	Division	A two digit number as the dividend and a one digit number as the divisor	Division is the process of finding how many times one number is contained in another. In other words, division is making into equal parts

contd..

Table (contd.)

1	2	3	4
23	Division	A three digit number as the dividend and a one digit number as the divisor	
24	Division	A two digit number as the dividend and a one digit number as the divisor	
25	Division	A two digit number as the dividend and a one digit number as the divisor	In all these cases division is exact. That is, there is no remainder
26	Area	Length and breadth are given. Area is to be calculated	Area is to be calculated by multiplying length with breadth
27	Profit & Loss	The purchase price and sale price are given. Loss is to be calculated	Application of subtraction is required

SCORING : A credit was given only to each correct answer.

C. METHOD OF ADMINISTRATION : At the commencement of the test, an attempt was made in making the directives clear for answering the questions. The investigator read out each question, gave a respondent a reasonably sufficient time to work out the problem, read out four alternative answers for each question to the respondent to choose one correct response out of them. The investigator jotted the respondent's given answer on the right side of each question.

The procedure described for item analysis under section-1 was followed. A copy of the test used for the pilot study is given in Appendix C.3. The scores (grouped data) of the pilot test are given in table 4.5. The final form of the test is given in Appendix D.3.

TABLE 4.5 : GROUPED DATA FOR THE CALCULATION OF MEAN AND STANDARD DEVIATION OF THE ARITHMETIC TEST (PILOT STUDY)

Sl. No.	Class intervals (Scores)	Mid point	f	Cum.f	d	fd	fd^2
1	1-2	1.5	2	2	-6	-12	72
2	3-4	3.5	2	4	-5	-10	50
3	5-6	5.5	7	11	-4	-28	112
4	7-8	7.5	6	17	-3	-18	54
5	9-10	9.5	7	24	-2	-14	28
6	11-12	11.5	9	33	-1	- 9	9
7	13-14	13.5	13	46	0	0	0
8	15-16	15.5	7	53	1	7	7
9	17-18	17.5	10	63	2	20	40
10	19-20	19.5	10	73	3	30	90
11	21-22	21.5	12	85	4	48	192
12	23-24	23.5	8	93	5	40	200
13	25-26	25.5	5	98	6	30	180
14	27-28	27.5	2	100	7	14	98
			N=100			Σfd=189-91 = 98	Σfd^2 = 1132

$$\text{Mean} = AM + \frac{\Sigma fd}{N} \times C$$

$$= 13.5 + \frac{98}{100} \times 2 = 15.46$$

$$SD = \frac{2}{100} \sqrt{100 \times 1132 - (98)^2} = 6.44$$

SECTION FIVE : ESTABLISHMENT OF VALIDITY AND RELIABILITY OF THE TESTS

A. VALIDITY OF THE TEST refers to its accuracy in measuring what it is supposed to measure. These being achievement tests may be said to possess content validity, which indicates the adequacy of the contents which tests the domain of the sample and yields accurate inferences.

1. READING TEST : In order to study the validity of the test, a comparative study between the syllabus contents (Thorndike, 1961) and the test items was made. All major content aspects given in the syllabus were represented in the test items. They were as follows:

TABLE 4.6: CONTENT ASPECT FOR READING TEST

Sl. No.	Content aspect	Represented in Item No.
1	Reading of letters	I
2	Reading of words with conjunct consonants of most frequent occurance	II
3	Reading aloud with fluency	III
4	Comprehending the immediate meaning of what is read especially the simple matter prepared for new literates on the subject of agriculture	IV

All concepts and the course objectives were introduced in the question-items. To increase the reliability of a test and to secure a better validity, more number of sub-items were included in each item, and better coverage of the syllabus was thus ensured.

2. WRITING TEST : The items therein were closely scrutinised to check their validity with reference to the syllabus content and the course objectives. An attempt was made to cover all the course topics in the question items, which were numerous to provide a large degree of validity. Short answer type of questions were introduced for the wider coverage of syllabus and a uniformity of assessment. The questions represented almost all the concepts and content aspects of writing.

TABLE 4.7 : CONTENT ASPECT FOR WRITING TEST

Sl. No.	Content aspect	Represented in Item No.
1	Writing of words commonly used in farming occupation and words having conjunct consonants	II
2	Transcription of a simple passage	VI
3	Writing of names and addresses	III
4	Names of crops	V
5	Giving short written answers to simple questions	IV
6	Names of things commonly used in home	IV
7	Writing to dictation of simple sentences	VII

3. ARITHMETIC TEST : To study the validity of test, a comparative study of content aspects of the prescribed syllabus and items in the test was made. An attempt was made to discover the validity of the test items in view of the course objectives and the syllabus.

TABLE 4.8: CONTENT ASPECT FOR ARITHMETIC TEST

Content aspects		Represented in Item No.
Understanding of Units:		
Simple addition	..	10, 11
Simple subtraction	..	14, 15, 16
Simple fraction	..	8, 9
Simple multiplication	..	18,19,20,21
Simple division	..	22,23,24,25
Addition involving money	..	12, 4
Addition involving weights	..	13
Subtraction involving money	..	7, 17
Knowledge of weights	..	6
Knowledge of areas	..	26, 1
Knowledge of time	..	2, 3, 5
Knowledge of gain/loss	..	27

To secure a better validity, a high number of (27) questions were included in the test. Objective type, i.e., multiple choice questions were introduced for better coverage of the syllabus and assessment uniformity. The questions were reviewed for retention of all the concepts of the syllabus and the objectives of the course.

B. RELIABILITY : It is the degree of consistency with which it measures whatever it is measuring. There are several methods of ascertaining reliability, namely - 1. Test-Retest method, 2. Equivalent - forms (also known as Alternate or Parallel forms) methods, 3. Rationale Equivalence (Kuder-Richardson) method, and 4. Split-half method.

1. MEASURES OF INTERNAL CONSISTENCY : 1. Split-half method was used for estimating reliability of these pilot tests, which were used as final tests.

2. SPLIT-HALF METHOD : It is possible to get a measure of reliability from a single administration of one form of a test by using split-half procedures. This requires only one form of a test; there is no time lag involved, and the same physical and mental influences will be operating on the subjects as they take the two sections (Ary, Jacobs, Razavieh, 1972). The items in pilot test were administered to the subjects, and later the items were divided into two comparable halves - the odd numbered and the even numbered items. Scores were obtained for each individual on the comparable halves and a coefficient of correlation was calculated between these two scores with the Pearson's Formula for Product Moment Correlation.

TABLE 4.9: READING TEST (PILOT STUDY) SCATTERGRAM OF SCORES USED IN SPLIT-HALF METHOD

ODD ITEMS SCORES (Y-VARIABLE)	EVEN ITEMS - SCORES (X-VARIABLE)														
	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	fy
31-32													2	4	6
29-30											1	4			5
27-28									2	1	2	1	3		9
25-26									2	6	1	2	1		12
23-24								2	1	1	5				9
21-22								3	1	1		1			6
19-20						3	1	1	4				1		10
17-18						3	2	1	1						7
15-16				3	4		1	2							10
13-14			1	1		1									3
11-12			3			1									4
9-10		1	1	3	2										7
7-8	1	5	2												8
5-6		3	1												4
f_x	1	9	8	7	6	8	4	9	11	9	9	8	7	4	100

$\Sigma fy' = -6$ $\quad \Sigma fx' = -13$ $\quad \Sigma fx'y' = 1294$

$\Sigma fy'^2 = 1432$ $\quad \Sigma fx'^2 = 1354$ $\quad N = 100$

$$r_{hh} = \frac{p}{\sigma_x \times \sigma_y} = \frac{129322}{139141} = 0.93$$

$$r_{tt} = \frac{2r_{hh}}{1 + r_{hh}} = 0.964$$

TABLE 4.10: WRITING TEST (PILOT STUDY) SCATTERGRAM OF SCORES USED IN SPLIT-HALF METHOD

ODD ITEMS SCORES (Y-VARIABLE)	EVEN-ITEMS SCORES (X-VARIABLE)									
	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	f_y
19-20							1			1
17-18					1	1	1			3
15-16					2	2		2		6
13-14				3	4	1	1			9
11-12			2	6	1	4	1	1		15
9-10			3	3	6	1				13
7-8	2	4	7	7	4					24
5-6	4	4	7							15
3-4	6	7	1							14
fx	12	15	20	19	18	9	4	3	0	100

$\Sigma fy' = -128$ $\Sigma fx' = -116$ $\Sigma fx'y' = 437$

$\Sigma fy'^2 = 544$ $\Sigma fx'^2 = 478$ $N = 100$

$$r_{hh} = \frac{28852}{36133.4} = 0.798 \qquad r_{tt} = 0.888$$

TABLE 4.11: ARITHMETIC TEST (PILOT STUDY) SCATTERGRAM OF SCORES USED IN SPLIT-HALF METHOD

ODD-ITEMS - SCORES (Y-VARIABLE)	EVEN ITEMS - SCORES (X-VARIABLE)															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	fy
14														1	2	3
13													1	3	1	5
12										1	1	3	3	3		11
11										1	2	4	3	1		11
10									1	2	2	3	1			9
9							1		2	5	1	1	1			11
8						1	1	4	3	2		1				12
7						1	3	2	2	1						9
6						1	2	1	1	1						6
5					2	3	2	1								8
4			2	2	4											8
3			1	2												3
2		1	1													2
1		1	1													2
0																
fx	0	2	5	4	6	6	9	8	9	13	6	12	9	8	3	100

$\Sigma fy' = 31$ $\Sigma fx' = 12$ $\Sigma fx'y' = 1057$

$\Sigma fy'^2 = 1033$ $\Sigma fx'^2 = 1395$ $N = 100$

$$r_{hh} = \frac{101887}{112818.45} = 0.90 \qquad r_{tt} = 0.947$$

TABLE 4.12: READING TEST (FINAL STUDY) SCATTERGRAM OF SCORES USED IN SPLIT-HALF METHOD

ODD-ITEMS SCORES (Y-VARIABLE)	EVEN ITEMS-SCORES (X-VARIABLE)															
	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24	25-26	27-28	29-30	31-32	fx
31-32												2	3	6	11
29-30											1	3	3	2	9
27-28								2	2	2	3	3	2	3	17
25-26							1	1	2	4	4	2	2		16
23-24						2	3	2	4	3	3	2			19
21-22						3	4	4	6	4	2	1			24
19-20						6	7	6	5	3	2	2			31
17-18				1	3	8	8	7	3	2	2				34
15-16				4	7	8	6	6	2	3					36
13-14		1	2	5	7	6	4	1							26
11-12		2	4	5	3	2									16
9-10	1	3	4	3	3										14
7-8	3	3	3	1	1										11
5-6	1	4	1												6
fx	5	13	14	19	24	35	33	29	24	21	17	15	10	11	270

$\Sigma fy' = 133$ $\quad \Sigma fx' = 129$ $\quad \Sigma x'y' = 2758$

$\Sigma fy'^2 = 2841$ $\quad \Sigma fx'^2 = 2891$ $\quad N = 270$

$r_{hh} = 0.96$ $\quad r_{tt} = \frac{1.92}{1.96} = 0.978$

TABLE 4.13: WRITING TEST (FINAL STUDY) SCATTERGRAM OF SCORES IN SPLIT-HALF METHOD

ODD-ITEMS SCORES (Y-VARIABLE)	EVEN ITEMS-SCORES (X-VARIABLES)									
	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	fy
19-20										0
17-18					1	2	5	2		10
15-16				3	5	6	7	3	3	27
13-14				4	10	7	7	2	2	32
11-12		1	7	15	17	10	4	1		55
9-10	1	5	13	15	14	4	2			54
7-8	5	7	14	12	3	3	2			46
5-6	5	13	7	6						31
3-4	5	4	6							15
fx	16	30	47	55	50	32	27	8	5	270

$\Sigma fy' = 137$ $\Sigma fx' = -173$ $\Sigma x'y' = 768$

$\Sigma fy'^2 = 895$ $\Sigma fx'^2 = 1001$ $N = 270$

$$r_{hh} = \frac{183659}{231446.4} = 0.75 \qquad r_{tt} = 0.883$$

TABLE 4.14: ARITHMETIC TEST (FINAL STUDY) SCATTERGRAM OF SCORES USED IN SPLIT-HALF METHOD

ODD-ITEMS - SCORES (Y-VARIABLE)	EVEN-ITEMS SCORES (X-VARIABLE)																
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	fy
14									1	1	2	2	2	3		11
13							1	1	2	1	1	1	2	3	3	15
12							1	1	2	2	2	2	1	2	1	14
11								1	3	3	1	3	1	1	2	15
10						2	1	2	4	2	3	2	2	2	1	21
9					1	1	3	4	4	4	3	2	2	1	1	26
8					2	3	5	5	6	4	3	2	2	2	1	35
7				1	2	3	4	6	5	4	3	1	1	1	1	32
6			1	2	2	3	4	3	5	3	1			1		25
5		1	2	2	2	3	3	2	3	1	3					22
4		1	3	2	3	2	2	2	1	2						18
3	1	1	3	2	2	2	2	2								15
2	1	1	1	3	3	3										12
1	1	1	1	1	2											6
0		2	1													3
fx	3	7	12	13	19	22	26	29	36	27	22	15	13	16	10	270

$\Sigma fy' = 147$ $\Sigma fx' = 145$ $\Sigma x'y' = 2238$

$\Sigma fy'^2 = 3175$ $\Sigma fx'^2 = 3165$ $N = 270$

$$r_{hh} = \frac{582945}{834582.3} = 0.70 \qquad r_{tt} = 0.824$$

TABLE 4.15: RELIABILITY COEFFICIENT OF THE LITERACY TESTS OBTAINED BY THE SPLIT-HALF METHOD

Serial No.	Name of the test	r	r_{tt}
	Pilot tests		
1	Reading test	0.930	0.964
2	Writing test	0.798	0.888
3	Arithmetic test	0.900	0.947
	Final tests		
1	Reading test	0.960	0.978
2	Writing test	0.790	0.883
3	Arithmetic test	0.700	0.824

The values of reliability coefficients were high (above 0.80) for all the tests. These data could be infered as the tests were reliable for the population. While the high reliability is no guarantee for the test as being good, the low reliability is a proof of a test being poor. The use of a tool with low reliability will give an incorrect and deceptive estimate of the aspect which is being measured. For this reason, the test users attach importance to a high reliability of a test and opt to use such tests only.

SECTION SIX : SCHEDULE FOR LEARNERS ON AWARENESS AND FUNCTIONALITY :

One of the objectives of the present investigation is to assess the awareness and functionality levels of learners. Which type of tool would be best to elicit the appropriate information was a decision in the making. Taking into consideration the participants' low level of education, the investigator considered the questionnaire may be inappropriate tool for the following reasons that, 1. the learners were not exposed to such sophisticated line of questioning such as in the research. 2. they may be unable to interprete the questions into the proper context. 3. they may have several inhibitions, and 4. they will be unlikely to write their answers articulately and comprehensively. Hence, an interview schedule in Tamil was considered as more appropriate for the following reasons that, 1. the investigator or his assistant would be able to interprete the questions in a proper context and allay their inhibitions, if any, 2. elicit the answers, and paraphrase them better for appropriate classification and tabulation at the time of analysis.

A. DEVELOPMENT OF THE INTERVIEW SCHEDULE : The schedule was made with two parts in it - 1. the awareness, and 2. the functionality.

As has been defined earlier, 'awareness' is meant to be the knowledge of self and the environments one lives in, such as, knowledge about political, health, and social affairs; while 'functionality' is the knowledge about certain facilities in cooperatives/banks, post/telegraph offices, and other general facilities that are available.

After having gone through a gamut of literature on both aspects, a choice of questions was made to obtain information

about the awareness and functionality knowledges of the participants. Experts in the subject were consulted to improve the schedule and to gather all the necessary information from them.

The first draft of items was discussed with the guiding professor and other experts for content validity. Several criticisms on ambiguities and suggestions on clarity were received. It was revised. Care was taken to rephrase the questions and the instructions with clarity and conciseness in the language and situations relevant to the experiences of the low educated learners. A scoring key was also prepared for the interview schedule.

1. PILOT STUDY : A pilot form of Interview Schedule was constructed with 60 items, of which 43 items were classified under awareness and 17 items under functionality, vide appendix-C.4. It was administered to a sample of 100 of the most representative participants. They were told to express freely by pointing any nebulousness whether in questions or language. They complied and accordingly on the basis of their responses, four and two items from awareness and functionality respectively were considered to be redundent, as such, were deleted. A few other items were rewritten suitably. A final form of interview schedule was prepared which consisted two parts - 1. Awareness and 2. Functionality, vide appendix-D.4.

a. THE AWARENESS part consisted 39 questions to cover areas, which broadly could be classified as knowledge of social, political, health, family planning, legal consciousness, agricultural, and animal husbandry affairs: more specifically the knowledge falls into five categories as under:

1. SOCIAL AWARENESS was about bride price, untouchability, child-marriage, bonded-labor, alcohol-drinking, smoking, gambling, and compulsory universal primary education.

2. POLITICAL AWARENESS was about voting, names of the Chief Minister, MLA in her constitutency, and Prime Minister.

3. HEALTH & FAMILY PLANNING was about child care, cleanliness, protected water, vaccination, and family planning.

4. LEGAL CONSCIOUSNESS was about minimum age for marriage for boy and girl; bribery, and oppression.

5. AGRICULTURAL AND ANIMAL HUSBANDRY were about animal diseases, insemination and hybrid seeds.

b. THE FUNCTIONALITY part consisted 15 questions to cover areas which broadly could be classified as knowledge of cooperatives/banks, post and telegraphs, places of health, agriculture and other facilities available; more specifically the knowledge falls into three categories as under.

a. COOPERATIVES/BANK was about savings accounts, loans for housing, loans for handcarts, sewing machines, etc.

b. POST & TELEGRAPH was on sending letters, money orders, telegrams and savings accounts.

c. HEALTH, AGRICULTURE & OTHER FACILITIES AVAILABLE on free medical care, vaccination, family planning programs, fertilizers, hybrid seeds, insecticides; artificial insemination, animal care; lincences for handcart, auto-rickshaws, cycle rickshaws, beedi-paan shops and ration cards.

2. ESTABLISHMENT OF VALIDITY AND RELIABILITY OF THE TOOL:

a. VALIDITY : The validity of a test or any measuring instrument depends upon the fidelity with which it measures what it purports to measure (Guilford, 1956). After conducting a try-out and pilot study, the investigator weeded out the ambiguous and incomprehensible items. All major aspects were attempted to be covered in the schedule. The items after a careful scrutiny were relevant to the course syllabus and text books. Hence, the test was deemed to have content validity. To ratify its face and content validities, a jury opinion was sought by showing the test to several experts who vouched its approbation. As this cannot be compared with any other test, it can be said that this test also possesses a face validity because it measured what the investigator had in mind. It was intended to test knowledge of the 'would be neoliterates' only. It was not intended to test knowledge above their understanding. It was valid in the sense that the content of the test was relevant to the stated purpose.

b. RELIABILITY : In the true sense of the term 'reliability', establishing it with precision was difficult. A test-retest method was followed because of the independent nature of the items. Participants from ten centers were selected for the first test and again after an interval of fifteen days for the second test. The comparison of both tests indicated a very high consistency, which established the schedule's reliability.

B. ADMINISTRATION OF THE INTERVIEW SCHEDULE : An appointment was prearranged with the supervisor and animator. The investigator and his assistants went to the centers on the designated times. A rapport was established with every respondent prior

to interviews. An attempt was made to make each interviewee comfortable and relaxed. The purpose of the interview was explained to each respondent.

Clear instructions to the examinee are important in a well constructed test (Guilford, 1956). Accordingly, the investigator did so, as best as he could foresee. They were told that the interview was conducted to elicit the information for research purpose to improve the RFL Program; that, their answers would not go against them; they need not fear about answering the questions as freely as they felt; all their responses would be strictly confidential and used for research use only. The interview schedule was prepared with sufficient space where the investigator wrote the responses.

SCORING OF THE SCHEDULE : There were two types of questions in the awareness part of the schedule. 1. The first sixteen questions, i.e., Nos. 1-16 were with either a Yes/No or one-word-answer to each one. One point was allotted to each correct answer. The total possible score for this portion of awareness was 16 points only. 2. The next 23 questions from Nos. 17-39 were with two sub-questions in each. The first portion of the question needed a commitment of 'yes' or 'no': subsequently, the respondent had to substantiate every answer of yes or no with a valid reason. For this portion, three levels of scores, i.e., 0, 1, or 2 were designated to each question - zero for a totally incorrect answer, one for a correct answer, and two for a well elaborated answer. The total possible score for this portion of awareness was 46 only. But the grand total of both portion of awareness was 16 + 46 = 62.

And for the functionality part in the schedule, there were 15 questions about the knowledge of available facilities. A question on each type of facility was raised as 'Do you know about an 'X' facility?'. One score was allotted for each known facility only. The maximum possible total for the functionality part only was 15 points. The grand total was 77 for both Awareness and Functionality, i.e., 62 + 15 respectively which yielded to 77.

SECTION SEVEN : DEVELOPMENT OF THE PROBLEMS CHECKLIST

One of the objectives of study was to identify the problems faced by the animators, supervisors, and village leaders in the functioning of RFLP centers. For the identification of such problems, a tool, problem-checklist was developed by the investigator.

A. COLLECTION OF ITEMS : At the outset, five of each, experienced animators and supervisors of the RFLP were requested to list the problems faced by them in day-to-day organizational aspects of the centers. They gave a list of problems in the form of statements. The investigator added a few more items to the list after having referred to the relevant literature of RFLP. Terminology, words, and ideas after a discussion were juggled around to make the items, meaningful. The draft checklist at this stage consisted 40 items.

B. PRELIMINARY CHECKLIST : The preliminary form was presented to a selected group of ten experienced animators, ten supervisors, and five experts in research methodology. These persons were entirely a different group of people from the ones whom the list of problems were sought previously. They were requested to go through it and to suggest additional problems, if any; and also to give their general comments about the suitability of the checklist. They commented that the items in the checklist were exhaustive except 8 items as being redundant, which were deleted. At this stage, there were 32 items in the preliminary form of the checklist, vide appendix C.5.

C. PILOT STUDY : A pilot study was conducted by using the preliminary form of checklist. It was administered to ten animators and ten supervisors, who were randomly selected

from the lists of animators and supervisors in RFLP. They were requested 1. to check the problems which they faced in their centers; 2. to mark equivoque items to them; and 3. to write at the end any additional problems which they had but were not in the preliminary form of checklist administered on them. The respondents opinions of the pilot study were; that, 1. the items were relevant to the problems faced by them. 2. their two additional suggested items be included; and another (5 items) be deleted to avoid duplication of the problems in the list. 3. the statements be refined with their suggestions.

D. FINAL PROBLEMS CHECKLIST : As per suggestions received while having conducted the pilot study, two items were added and (5 items) were deleted. Statements relating to the problems of physical facilities, teaching-learning materials, animators, supervisors, and community were included in the final study. Some items were suggested of being as ambiguous, which were restructured to remove ambiguities. Thus, 28 items were included in the final form of the checklist, which is given in appendix D.5.

E. VALIDITY OF THE CHECKLIST : Mooney (1950) has stated that 'checklists are used for a variety of purposes and are so constructed that the obtained data must be considered with many other factors ..... A single overall Index of the validity of the checklist would be therefore meaningless..... We can evaluate certain aspects of their usefulness in terms of the assumptions on which they were built' (Garrett, 1979).

The checklist was based on three assumptions, which were 1. A majority of instructors and supervisors would be responsive to the items; 2. the checklist covered reasonably well the range of problems faced by the organizers of RFLP, and

3. the instructors and supervisors would accept the task of checking their problems with a constructive attitude.

1. RESPONSIVENESS : The final study was found to be checked with a wide range of items by the respondents. The average number of items checked in the entire list was 20. The percentage of respondents who checked the individual items in the checklist ranged from 43.63 to 97.27%.

2. COVERAGE OF PROBLEMS OR CONTENT : An effort was made to include all the possible problems, which were faced by the organizers, in the checklist. At the instance of the instructors, supervisors, and other experts, who had gone through the preliminary list of problem-items, some overlapping items were discarded while additional items as suggested by them were deemed as worthy of being incorporated in the final form.

A thought that there may still be some problem-items which may have been overlooked arose. Thus, the final form was made with an open-end question and circulated among several other instructors and supervisors. The open-end question was 'do you have any additional problems that you can think of? If yes, please, list them as many as you can think of in the provided space'. Of 60 instructors and supervisors, who went through the list, none had stated additional problems. This was interpreted as their vouching for its approbation. Hence, the problem list was considered to possess content validity.

3. CONSTRUCTIVE ATTITUDE : To establish a constructive attitude of the subjects of this list was thought of. For this, an open-end question was asked of them at the end of the checklist, which read as 'would you like to confer with

someone who could help you in solving these problems which you have pointed out?'. Ninety six percent of the subjects expressed their willingness to do so. The rest of four percent did not even state 'No' to this question. Such response, an almost unanimous one, indicated that all the subjects took the checklist in a constructive spirit.

F. RELIABILITY OF THE CHECKLIST : Establishing reliability of the checklist was difficult just as was establishing its validity, because it was unlike any other test. The number of checks does not necessarily reflect the various intensities of the problems checked by the respondents.

When the data were used in drawing certain conclusions, we had to be sure that they reflected concerns of the groups with a reasonable stability over a period of time. The final form of the checklist was administered twice between two weeks intervals of one another to 60 instructors and supervisors. Rank orders of the 28 problems of both the administered lists were arranged by the size of their mean numbers. Both rank orders were correlated. The correlation coefficient (r) was 0.98. This is considerably a high value.

SECTION EIGHT : SAMPLE PROCEDURE AND DATA COLLECTION

A. SAMPLE PROCEDURE : The RFLP was in operation in three blocks of North Arcot district during November 1, 1983 and August 31, 1984. The names of the blocks, the number of centers, and the participants in them are given below:

TABLE 4.16: NAMES OF BLOCKS, NO. OF CENTERS AND PARTICIPANTS OF THE SAMPLE

Sl. No.	Name of the block	No. of centers	No. of adult participants
1	Cheyyar	90	2,700
2	Vembakkam	90	2,700
3	Timiri	120	3,600

By convention of the department of the non-formal education, RFLP is always operated in a unit of 3 blocks at a time; with 300 centers in the three blocks. Each project is a separate unit and is manned by a project officer, 10 supervisors, and 300 instructors. The project officer is incharge of the project. Each of the 10 supervisors is delegated to supervise 30 centers. Each center is conducted by an instructor, who is officially referred to as an 'animator'. Each center is supposed to have a minimum of 30 learners enrolled in it.

1. SELECTION OF THE SAMPLE OF LEARNERS : As has been stated in the preceding paragraph, the minimum number of the learners are supposed to be 30 in each center and in 300 centers 9000 learners, and there could be possibly more than 9000 learners also in a project. Their scattering in many villages made a difficult task for the investigator to go to

all the villages and to draw a sample. The time and expenditure were prohibitive. In view of such difficulties, a method was devised to draw an adequate representative sample as under:

TABLE 4.17: COMPOSITION OF THE SAMPLE (ADULT LEARNERS) FOR THE FINAL STUDY

Sl. No.	Name of the block	No. of centers functioning	Size of the sample taken for the final study		
			No. of centers selected	No. of adult participants selected from each center	Total
1	Cheyyar	90	5	15	75
2	Vembakkam	90	5	15	75
3	Timiri	120	8	15	120
		300	18 X	15 =	270

a. ADULT LEARNERS : The names of centers of each block were listed alphabetically. Five centers each from Cheyyar and Vembakkam and eight centers from Timiri were randomly selected, which were proportionate with numbers of 90, 90, and 120 centers respectively. Fifteen adults were randomly selected from each center, which made a total sample of 270 adults for the final study. See table 4.17.

b. SCHOOL CHILDREN : 270 primary school children of 3rd standard were needed to conduct the literacy tests. Their performance could be compared with that of the adults. See table 4.18 for the composition of the students sample. The following procedure was adopted for it:

1) Children's sample of 270 as equivalent to that of adults was decided upon from all the blocks,

2) The same proportionate number of children to those of adults were selected from each block and village, and

3) With the use of random numbers table, fifteen children were selected from each village (vide table 4.18 for composition of students sample).

TABLE 4.18: COMPOSITION OF THE STUDENT SAMPLE (SCHOOL CHILDREN)

Name of the block	Size of the student sample		
	No. of schools	No. of students selected from each school	Total No. of students selected from each block
1. Cheyyar	5	15	75
2. Vembakkam	5	15	75
3. Timiri	8	15	120

c. INSTRUCTORS, SUPERVISORS AND VILLAGE LEADERS : Fifty of each, randomly picked instructors and village leaders, and all the ten supervisors of the RFL project served as a sample for administration of the problem check-list.

B. COLLECTION OF DATA : Permission was taken from the District Adult Education Officer (A.E.O.) of North Arcot districts at Vellore, who was in-charge of the RFLP in North Arcot district, to conduct the study and collect data from the participants. The cooperation of the project officer, supervisors, was solicited to identify the villages and in designing the field work. The investigator gathered all the

necessary information to finalise his research design. The research tools, namely, the literacy test and interview schedules were ready well in time for administration. The data were obtained from the participants at the end of the program, i.e., just prior to closure of the RFLP. The testing and the data collection were done by the researcher and his three assistants who were sufficiently trained in the field survey. The assistants were very clearly instructed about administering the tests and interview schedules and also in scoring them.

The research team chalked out a program of dates which were communicated to the animators and supervisors to help the team in arranging the interviews. Effort was made to locate the participants and obtain the interview as per the patterned selection of respondents. Finally 270 adult participants were interviewed and tested for final data in August 1984.

C. ADMINISTRATION OF TESTS AND INTERVIEW SCHEDULES: Reading, writing and arithmetic tests were administered in one session. Each test book about 25-30 minutes. Every participant was given an interval of 5 minutes between the tests. The interview schedules on awareness and functionality were administered in the 2nd session which required about forty of fifty minutes. First and second sessions were arranged for the adults as their leisure time on the same evening or in two days depending on their convenience.

The tests and interview schedules were prepared with sufficient space at the side of each item for the response.

1. PROCEDURE OF TESTING : A good rapport was established with the subject prior to the test and interview. Her

name and other personal data were filled in the first page of the test by the investigator. Test papers were then given to the respondent. The researcher read out the directions of each item of the test before the respondent gave her response to that time. The investigator noted the time taken by the subject to complete the reading of the passage in the reading test. In the writing test, the investigator, besides having read out the directions for each item, dictated the passage (item No. II G) and noted the time taken for completion of the dictation by the subject. In the arithmetic test, the investigator read out the directions and explained with an example how the subject had to give the response for the questions.

2. TIME LIMIT : No time limit was set for taking the tests. The subjects were instructed in the beginning that they could take as much time as they needed for the whole test. They were asked to attempt all questions.

3. PROCEDURE FOLLOWED IN ADMINISTERING THE INTERVIEW SCHEDULE : The interview schedule was administered by the investigator and his assistants. The questions in the schedule were asked and the responses of the subjects were recorded by the investigator or his assistants.

4. PHYSICAL SET UP : To prevent a subject from fatiguing or other discomforts which may affect her performance, care was taken to arrange the best possible space, proper seating arrangement, adequate lighting, comfortable ventilation, and freedom from distractions.

D. ADMINISTRATION OF THE TESTS TO THE SCHOOL CHILDREN: The data from the selected children of the primary school

were gathered on the same day. The trips to the respective villages were so arranged that, the children were tested in the day time. Later, in the evening, the adults were tested and interviewed. This could happen as a team work with the assistants helping the investigator.

SCORING OF ANSWER SHEETS : The tests which were administered on the adults and the children were identical. There was no procedural difference.

E. MAILING THE PROBLEMS CHECK-LIST : The final form of problem checklist was mailed to sixty of each instructors and village leaders and only ten supervisors for gathering the information about the problems they faced. Along with the research tools, the following enclosures were also sent: 1. Covering letter introducing the investigator and the purpose of the study; 2. Identification schedule; 3. Self-addressed and stamped envelope.

A fifteen days duration after mailing the problem checklist was allotted within which the filled return were anticipated. However, repeated courtesy reminders were necessary to motivate the maximum responses. August 1984 was made a deadline. Fifty three checklists from the instructors, (10) from the supervisors, and (50) from the village leaders were returned.

SCORING : The scoring of different tools was done as has been described in the respective sections of the development of tools in this chapter. The scoring keys used for this purpose are given in appendix E.

SECTION NINE : VARIABLES STUDIED

The following independent variables namely 1. age, 2. caste, 3. marital status, 4. family income, 5. occupation.

1. AGE : The age of respondents is considered as an important variable because it affects one's ability to learn and to modify one's behavior. The motivation and aspiration of a participant may change with his age. The able bodied young person may aspire higher than the aged person. Youth is generally associated with innovativeness and dynamism while an old age is associated with conservatism, orthodoxy, and status quo attitudes. The influence of the adult participant's age in achieving - 1. literacy, 2. level of awareness and 3. functionality will probably be a fruitful finding.

Age was operationalized as the number of years completed at the time of administering the final test. The front page of the test paper consisted a section of identification data of respondents. While filling up these identification items, the age of the person was also noted down on it.

2. CASTE : Caste is an important factor which pervades all fields of social action in Indian society. A person's position in the caste hierarchy determines her behavior in the society. People of high caste have their own life style; so do people of lower caste have their own life style; both of which are somewhat different.

The information relating to the caste of the participant schedule caste, scheduled tribe, backward caste and forward caste - was gathered from the identification of data.

3. MARITAL STATUS : There are still numerous women who, according to the old tradition, marry at young age in India. Usually, married ladies have more responsibilities than the unmarried ladies. Therefore, including marital status as one of the variables is a worthwhile study. This variable is being deemed to yield significant results as this research problem is meant exclusively about women in the RFLP centers.

4. FAMILY INCOME : Among the economic variables income is an important one. The income indirectly influences the socio-economic status of an individual. The influence of income is found on, the values, norms of behavior, motivation for improvement, social participation, pattern of leadership, and communication of an individual in a community. It is worthwhile studying whether the income has any bearing on the achievement of literacy, level of awareness and functionality of adult woman participants.

5. OCCUPATION : It is defined as the time one spends in work, or trade, or vocation through which one is compensated monetarily for his/her sustenance. The physical labor which one puts in during the day's work is interrelated with one's mental activity at nights in the AECs. The fatigue of body can affect comprehension of learners during the instructions in the AECs. It is an important variable to investigate its correlation with the learners' level of attainment. Besides, the learners' attendance and absence, it is to find out whether the learners are day laborers, field workers, or just housewives, etc.