METHOD

The intent in this chapter is to report on the sample, tools, procedure of data collection and techniques employed in analysing the data.

Sample

The Selection of the Sample : As shown in Figure 1, the total preschool age sample consisted of 80 children. This included 60 ICDS children and 20 children with no preschool experience (NPSE). The ICDS group was further sub-divided into 30 children drawn from the highest ranking Anganwadi (HRA) and the other 30 drawn from the lowest ranking Anganwadi (LRA). As mentioned earlier in the preamble, the 15 Anganwadis selected for the project were ranked on an observation proforma (Appendix A), and two Anganwadis falling on two extreme polarities (HRA and LRA) were selected. Children with no preschool experience (NPSE) comprised of 10 children selected from the area of HRA and 10 children from the area of LRA. In other words, NPSE children were selected from the same community area as the two Anganwadis. The two groups (ICDS and NPSE children) were matched on age and were from the same lower socio-economic group.

The sample described above was followed in the first grade of two primary schools (one in the vicinity of HRA and the other in the vicinity of LRA, henceforth referred to as school 1 and 2, respectively). In addition, 20 more children with no preschool experience were selected from each of these primary schools. Thus, the total primary school sample consisted of 120 children,

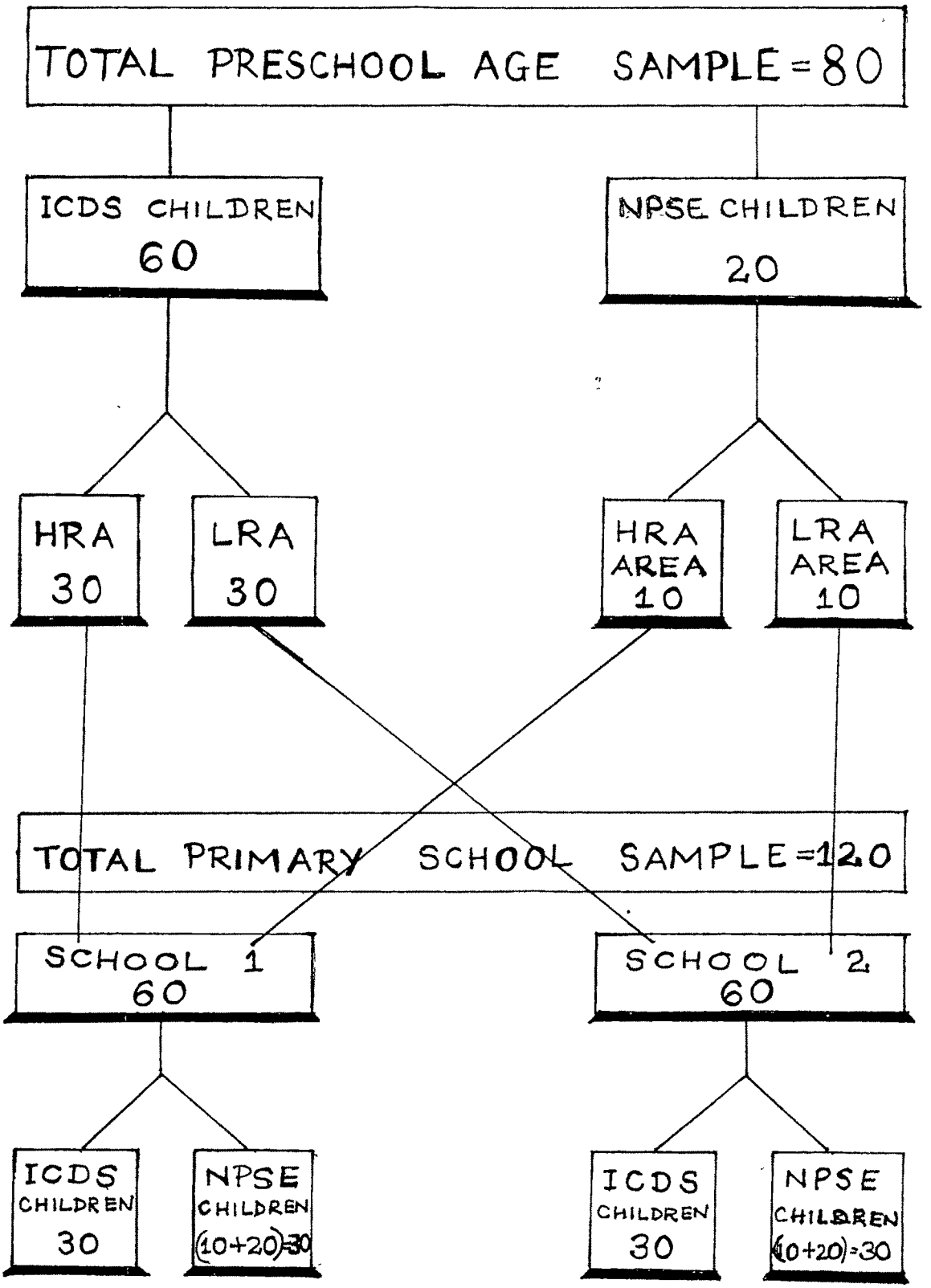

FIGURE 1 : Distribution of Pre-school and Primary School Sample

KEY – NPSE : No Pre-school Experience
HRA : Highest Ranking Anganwadi
LRA : Lowest Ranking Anganwadi

which included 30 ICDS children and 30 NPSE children from each of the first grades of the two primary schools.

Furthermore, data on children for the age ranges 3 1/2 - 4 1/2 years and above 4 1/2 years from both the Anganwadis was available from the indepth phase of the project. Out of these children, 3 1/2 - 4 1/2 year olds were reassessed, after one year when they were in the age range above 4 1/2 years; as a part of the present study. Whereas, children above 4 1/2 years from the indepth phase were enrolled in the first grade of primary school when the present study was initiated and therefore these children were followed up in the respective primary schools. The distribution of the sample alongwith the size of the sample for respective waves is represented in Figure 2.

Description of the Sample : The sample description is presented below :

- The age of the preschool sample ranged between 3-6 years, further subdivided into 3.6 - 4.6 years and 4.7 - 5.6 years, with the mean age being 4.2 and 5.0 years respectively.
- The age for the first grade children ranged between 6 and 7 years. But three children in the NPSE group were one or two years above this age range.
- ICDS children included children who had been attending the Anganwadi programme regularly. (Minimum 70-80% attendance for a full day's programme).

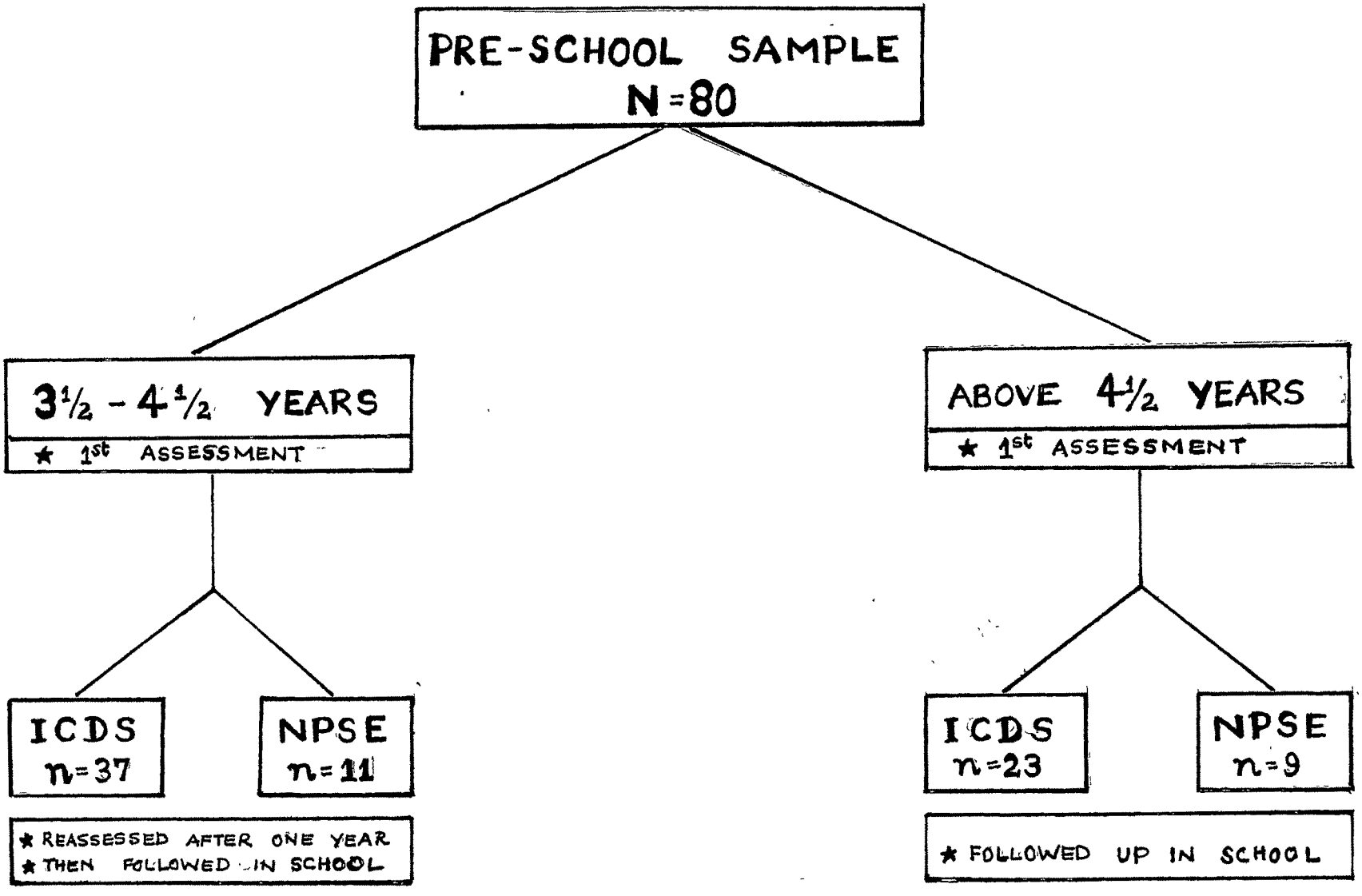

FIGURE-2 : Distribution of Preschool Age Sample

- NPSE children were from the same community as the ICDS children, and as far as possible with similar household structure and background characteristics.

TABLE 2

Background Information of the Sample

Sr No.	Background Variables	ICDS Children (n=60)	NPSE Children (n=60)
1.	Mother's education		
	(a) Illiterate	36 (60.00)	47 (78.33)
	(b) Primary and above	24 (40.00)	13 (21.66)
2.	Father's occupation		
	(a) Regular job	27 (45.76)	23 (41.81)
	(b) Small scale business	22 (37.28)	13 (23.63)
	(c) Daily wage earners	10 (16.94)	19 (34.54)
3.	Single parent families (Father absent)	1	5
4.	Per capita income (Rs.)	38 - 175	30-160

Note : For per capita income, the entries represent range of income in rupees; all the other column entries represent frequencies and their corresponding percentages appear in parentheses.

As can be seen in Table 2, the background profiles of the two groups highlight following points:

- Although both the groups belong to lower socio-economic population, the two groups were not homogeneous.
- Majority of the mothers in both the groups were illiterate.
- Greater percentage of mothers in ICDS group (40% compared to only 21.66% in the NPSE group) were educated upto primary level and above.

- Greater percentage of children in the NPSE group (34.54%) had fathers who were on daily wages compared to those in the ICDS group (16.94%).
- Five children in the NPSE group came from single parent families (in two cases the father had died and in the other three the fathers had deserted their families) whereas, in the ICDS group only one child belonged to a single parent family (the father being dead).
- There was no marked difference in the per capita income of the families between the two groups. In addition, it is important to mention here that the design of the study being quasi-experimental, the assignment of children to ICDS group and group with no preschool experience was not random. The groups were preformed, therefore, it was not feasible to ensure complete equivalence of the two groups. Moreover, the fact that parents of participant children volunteered to send their children to the Anganwadi, whereas parents of NPSE children decided not to do so, makes the two populations different to some extent. These differences will be borne in mind while interpreting the results of the present study.

Description of the Two Communities

Kamatipura community area : The highest rated Anganwadi was situated in an urban slum of Baroda city called Kamatipura, which is adjacent to the M.S. University campus. The area was mainly

inhabited by Muslims and Hindus. The languages spoken were Hindi and Gujarati. The slum was quite vast and extended into many pockets covering a population of three thousand people from the lower socio-economic strata. People were distinctly poor and lived in single rocm "Kacha" houses (some of which have been recently reconstructed into "Pacca" houses). Most of the community area was clean and roads were smooth. The community had a few small shops where commodities of daily use were available. However, outside the slum limits there was a full fledged market. The occupation of the men from this community varied from daily wage workers to regular employees. They worked as vegetable vendors, shop keepers, peons, mill workers, rickshaw drivers etc. Some of the women from the community had small shops at their residence while some worked as maid servants. Majority of women were not-employed. The population of the slum was fairly stable. The inhabitants were receiving inputs from "Friends Society" (a voluntary organization) and Faculties of Social Work and Home Science through their field work and action research programmes. The Municipal Corporation school, in which children from this community enrolled was at an accessible distance.

Yamuna mills community area : The Anganwadi that had been rated as low was situated in an area called Yamuna mills, which was an industrial slum. Adjacent to the slum was the railway centre which connected railway offices and the railway staff colony. The total slum population was about 1500, which was widely scattered.People lived in small one room houses which were

mainly "kaccha". The area was unclean and the roads were also "kaccha". Over and above this the Anganwadi was situated opposite a ditch which gets filled up in the rainy season, curtailing children's accessibility to the Anganwadi during that period. Most of the men from the community were employed in the mill as labourers. They were rendered jobless due to frequent closure of the mill which affected the family income. Majority of women were not employed. A very small number worked as maid servants or in the fields for cutting grass. The Municipal Corporation school of the area was farther away from the Anganwadi centre.

Description of the Tools

The tools used for the preschool age sample were Investigator's Observation Proforma and the Developmental Assessment Check-list for Preschool Children. Reading Readiness Test, Teacher's Rating of Children's Specific Behaviours and School Observations were used for the primary school sample. In addition, the Home Inventory was used for the total sample. Each of these tools are described below alongwith their procedure for scoring.

(i) Investigator's Observation Proforma (Appendix A): This is an observation schedule which was developed by NIPCCD, New Delhi for the project, "Monitoring and Evaluation of Social Components of ICDS". The observation proforma was used during the indepth phase of the study for ranking 15 Anganwadis. The tool was divided into following major sub-categories.

- o Preschool attendance
- o Physical set up of preschool/AW
- o Other Anganwadi services
- o Anganwadi worker's skills/abilities.

Each sub-category further comprised of items which were accompanied by a rating of 0, 1, 2 and 3. Hence, the proforma could be scored to obtain category wise score and the total score.

(ii) Developmental Assessment Checklist for Preschool Children (Appendix C): This tool was used to assess the developmental skills of preschool age children. The checklist which is used for assessing the abilities of preschool age children (2 1/2 to5 1/2 years) was initially prepared on the basis of four master's dissertations completed in the department of HDFS, M.S. University, Baroda. Internal consistency for the checklist was found to be high, with correlations of item scores with sub-category scores ranging from 0.72 to 0.89. In order to use the checklist for ICDS and NPSE children, modifications were incorporated in the checklist by combining items developed in the department and those developed at Lady Irwin College, New Delhi. This was done in order to use the checklist for the project, with the consensus of all the institutions involved in the study. The checklist was divided into five major areas of development which were as follows:

- o Gross motor skills
- o Conceptual and school readiness skills
- o Language skills
- o Personal social skills
- o Finer motor skills

Each of these areas further consisted of several items and each item was divided into three progressive levels except for the last level (d) which says, "cannot perform any of the above." Therefore, the four levels were scored 1, 2, 3, and 0 respectively. The assessment checklist consisted of 25 items. The total score on the checklist ranged from 0 - 75, with the range of scores under each category being as follows:

- o Gross motor skills : 0 - 12
- o Conceptual and readiness skills : 0 - 27
- o Language skills : 0 - 12
- o Personal social skills : 0 - 9
- o Finer motor skills : 0 - 15

Children's performance for each item under each category was recorded by tick marking (_/) any one of the levels that was most representative of the child. Thus, the sub-category score and the total score could be obtained for the child.

(iii) Reading Readiness Test (Appendix D): This test developed by Umarajwala, (1977) was used to determine the reading readiness of the sample at the beginning of the first grade. The test comprised of the following major areas:

- o Comprehension of word meanings
- o Visual discrimination
- o Comprehension of sentence meanings
- o Copying
- o Auditory discrimination

The test has been standardized for first grade Gujarati medium children. Therefore, there is a standard procedure for administering and scoring the test as per the instructions given in the test manual. Each correct item under each category was scored 1 and incorrect item 0. The total range of scores for this test was 0 - 69, with the range of scores under each category as follows:

- o Comprehension of word meanings : 0 - 16
- o Visual discrimination : 0 - 20
- o Comprehension of sentence meanings : 0 - 12
- o Copying : 0 - 14
- o Auditory discrimination : 0 - 7

(iv) Teacher's Rating of Children's Specific Behaviours (Appendix E): This scale was used by first grade teachers to rate the school sample on their specific behaviours. The scale was developed by the investigator for the present study. The items in this scale included:

- o Children's regularity in attendance
- o Duration of adjustment to school
- o Child's independence/dependence
- o Problems faced by the child

- o Ability to concentrate
- o Ability to follow instructions
- o Degree of interest and alertness in the classroom activities
- o Regularity in home work; writing and counting ability

Each item in the scale was accompanied by a three point rating scale of Almost Always/ Sometimes/ Rarely and was scored 3, 2 and 1 respectively. For negative items the pattern of scoring was reversed. There were 15 items in the scale and the total score ranged from 14-44. Test-retest and inter-rater reliability was established for the scale by the investigator on a sub-sample of children. The values thus obtained were 0.72 and 0.84 respectively.

(v) Home Inventory (Appendix F) : This observation inventory has been standardized in the Department of HDFS, M.S. University, Baroda by Mohite (1988). The inventory was used to assess the level of stimulation children received in their homes. The sub-scales of the inventory included:

- o Language stimulation
- o Physical environment
- o Encouragement of social maturity
- o Variety of stimulation
- o Maternal attitude and disciplining

Each item in the home inventory is accompanied by Yes/No and scored 1 or 0 respectively. The total score was obtained by simple summation. Based on the total score obtained, the levels of home stimulation have been delineated in the inventory manual as follows :

0 - 10	: Poor, lacking
11-19	: Moderate
20-24	: High

(vi) School Observation (Appendix G) : Qualitative information on the two schools was collected in order to document the school environment and teaching learning strategies in the classroom. The reference on ethnographic study conducted in the schools of Latin America (Avalos, 1986) , proved an important guide in planning and interpreting the school observations. Following aspects were the focus of the observations :

- o Physical environment and the daily routine of the schools
- o Teaching-learning strategies in the classroom
- o Attitudes of teachers towards education and children in general

Procedure of Data Collection

Under this section a detailed description is provided on how data was obtained on each of the measures used in the study. Prior to actual data collection rapport with the ICDS staff, community people, school authorities and children was built through visits to the study sites. During the course of these

visits the purpose of the study was explained and the consent of the authorities concerned was obtained. However, a substantial rapport building and field testing of the measures had already taken place through the data collected for the NIPCCD project. Procedure of data collection with reference to each of the measure is described below.

The Investigator's observation proforma was used to observe the Anganwadi programme and functioning on two regular days. Days when there was an immunization camp or health check up by the doctor, could not be considered regular days, as such activities disrupted the routine of the Anganwadi. The observations were conducted without prior notice by two observers. The proforma was completed at the end of two days to ensure consistency in the observations. On the basis of the information collected through this proforma the 15 Anganwadis were ranked and the two Anganwadis at extreme polarities were selected for the project. The Anganwadis thus selected inclusive of the children selected for the project comprised the follow up sample for the present study.

The developmental assessment checklist was administered individually to all preschool age children, however, few items on gross motor skills, personal social skills and some items on finer motor skills were administered in small groups of 4-5 children. The ICDS children were assessed at the Anganwadi whereas NPSE children were assessed at their respective homes. For items that could be administered in small groups, NPSE children were assessed at a particular child's house in the immediate neighbourhood. On the spot records were made for the

level of child's performance for each item and qualitative description was also maintained in terms of process through which children attempted the tasks. Total time required for administering this checklist was 45 - 60 minutes.

The reading readiness test was administered individually to the children at the beginning of first grade. The test was given to the children after they had been in school for a period of three months. Children were tested at their respective schools in a vacant room so as to make the situation favourable for testing. The time required to test each child was 20-25 minutes. On the spot records were made for child's performance on each item. Specific behaviours exhibited by the child during the course of testing were also recorded.

Teacher's rating of children's specific behaviours was obtained from the respective class teachers. They were instructed to rate the children on specific behaviours. The scale was translated into Gujarati so that the teachers could use it. The purpose of the rating scale was explained and initially teachers completed the scale for some children in the presence of the investigator whereby doubts related to rating were clarified. As teachers perceive filling of any proforma an added burden to their existing record keeping, they were instructed to concentrate only on five children in a week and fill in information for them. While collecting the schedules each child's rating was discussed with the teacher to ensure reliability of the information.

Teacher's rating were taken after the children had been in the school for a period of six months. As mentioned earlier prior to actual data collection on this measure, test-retest and inter-rater reliability was established for this scale for a sub-sample of first grade children. The time gap between test and retest was 15 days. Inter-rater reliability was established for children in a class where there were two class teachers both of whom were familiar with the children.

The information on the home was collected using the home inventory. Observations were carried out for an hour after the initial visit for establishing rapport. The child was observed with the main caretaker. It was ascertained through initial home visits that the period of maximum interaction was after the child had returned from school around 12 in the afternoon or in the evening. Therefore, observations were conducted during these time periods. Certain items on language stimulation were not readily observable in some children's homes, so a second visit was made for the same. Some items were posed as questions because they were not directly observable. These are marked with an asterisk (*) in the inventory (refer Appendix E).

During home observation the investigator would give some activity to the sample child, e.g. writing, colouring, beading or puzzles. This gave an opportunity to the investigator to observe mother-child interaction, a reason to sit in children's home for a long duration and helped in keeping the child indoors, thereby facilitating observations. Observations were conducted

by two observers with on the spot recording. Home observations were conducted after testing children on various measures. Home observations could not be obtained for eight children from NPSE group as these children had dropped out from school and migrated to their villages. Thus, home observations were collected for 60 ICDS children and 52 NPSE children.

Data on the schools was collected through extended observations of the school routine and various events involved in the school functioning. The observation on each school was conducted for a full day school programme for a duration of one week. Observations were conducted by three observers for each class for one hour time blocks with a gap of 10 minutes between each time block. Running observations were made for various school events. Teachers' attitudes towards education and children were judged on the basis of informal interviews with them. The assistance of B.Sc. final year students from the Department of HDFS, M.S. University, Baroda was sought in collecting information on schools.

The influence of observers was evident on the teachers on the first day of observations. This influence was particularly noted because a group of observers had gone together to conduct the observations. But as the observations progressed observer influence gradually decreased. Thus, only observations over an extended period of time can minimize observer's influence. Therefore, observations were recorded after a gap of first few days when the situation appeared more natural.

Experiences of data collection : The field experiences although noteworthy and varied may not be unique to the present process of data collection but their relevance cannot be ruled out. Some of these are mentioned herein :

- o A particularly difficult but instructive problem was encountered during the initial phase of the project while attempting to locate each and every slum of Baroda and the Anganwadi centre within it. Long distance had to be covered after reaching the slum area. Although older children would be helpful, but more often they would take the investigator to a Balwadi and not an Anganwadi.

- o It was difficult to contact some of the mothers who worked as maid servants and would be out of their homes for most of the time. Therefore, time was fixed with these mothers around lunch hour or late in the evening.

- o Children who were irregular also posed problems. Attendance would be especially low around the festivals. This delayed the data collection process.

- o Many items on conceptual skills in the developmental assessment checklist had to be re-administered to some children. This was done to ensure children's level of performance as their response tended to vary.

- o Items on the sub-scale language stimulation in the home inventory were not readily observable in some homes. Attempts were made to create a situation which would

facilitate interaction but verbal exchange was found to be minimal in these homes. Hence, it was difficult to rate these items.

- Children who were reluctant to respond also posed a difficult situation. They had to be coaxed and involved in outdoor free play before asking them to respond to test items to break the barrier of communication. However, there were some children who still did not respond. These children were tested at their respective homes, in more familiar surroundings.

- Explaining in detail the purpose of the study facilitated willing participation from the respondents and clarified their doubts and misconceptions.

- Rapport building beyond data collection was found important. Continuous involvement with the respondents decreased the element of social desirability and elicited their cooperation. Further, cooperation of mothers was sought by indicating interest in their children and if need be guiding the children.

Analysis of Data

Data analysis technique is described with reference to each of the specific research questions. To answer the question concerning the difference between ICDS children and NPSE children on the major areas of development, the score obtained by two

groups of children on the developmental assessment checklist under each area and the total overall scores was calculated. 't' test for unequal 'n' was used to determine whether the two groups differed significantly with regard to their performance on the major areas of development.

Similar analysis could not be undertaken to test whether ICDS children and NPSE children differed within each of the age ranges selected, due to small sample size of NPSE children. Hence, only means and standard deviations were calculated.

Question refering to the difference between the two groups of ICDS children (one from HRA and other from LRA) with regard to their performance on various areas of development was also answered by using 't' test. The aim was to determine if there was a significant difference between the two groups.

To investigate whether the two groups (ICDS children and NPSE children) differed on the measures of reading readiness and teacher's ratings of their behaviours; a 2 x 2 analysis of variance was computed for each of the measure separately. This was done to find out whether there were significant differences and interaction effects of group and school on the measures of reading readiness and teacher's ratings. Groups (ICDS and NPSE) served as one of the independent variable whereas schools (school 1 and school 2) served another independent variable. Children's scores on reading readiness and teacher's ratings served as the dependent measures.

In order to find out the extent to which the differences in children's performance could be attributed to the differences in their home environment, the scores on the home inventory were used. On the basis of scores obtained by children on their homes, children were categorized into those belonging to high stimulation homes and those coming from poor stimulation homes. Using these categories of home as predictive factor, that is, the independent variable, one way analysis of variance was used to determine whether these categories accounted for variation in the dependent variable, that is; children's scores on reading readiness test. This analysis was computed only for ICDS children because data on NPSE did not lend itself to this kind of categorization.

Further, data on home were looked into to find out if a sub-scale of home inventory (language stimulation) accounted for difference in children's performance on the reading readiness test. For the purpose, children were categorized into those coming from homes with high language stimulation and those coming from homes with low language stimulation. The range of scores for the items under language stimulation was 0 - 7. Therefore, children whose scores ranged from 0 - 2 were classified into low language stimulation and whose scores ranged between 5-7 were classified into high language stimulation homes. The total data on home were classified in this manner, irrespective of groups (ICDS and NPSE children). The 't' test for small samples was used to find out whether there was a significant difference between these two categories of children with regard to their performance on the reading readiness test.

In addition, the qualitative data collected while testing children on developmental assessment checklist, reading readiness test and the information collected on schools was discussed descriptively.

Thus, both quantitative and qualitative analysis sought answers to following major research questions :

- Is there a difference between ICDS children and children with no preschool experience as reflected through the differences in their developmental skills ?
- Does the kind of Anganwadi programme make a difference in children's developmental skills?
- Are ICDS children at an advantage in first grade of primary school as indicated by their readiness and teachers assessment of their behaviours?
- What is the nature of the school processes into which children enroll and to what extent can differences in children's performance be attributed to differences in their home environments?