CHAPTER - III

METHODOLOGY
The study is entitled "Effect of Individualized Training Programme on Communication Skills, and Certain Associated Variables in the Mentally Retarded". The following hypotheses and objectives were framed and the methodology appropriate to the hypotheses and objectives was drawn up. This chapter describes the methodology adopted for the study.

Hypotheses

The major Hypotheses for the study were:

1. The level of communication skills in the mentally retarded will be related to the degree of retardation.
2. The level of motor and socio-emotional skills of the mentally retarded will be related to the degree of retardation.
3. Planned Individualized Training Programme will have an effect on level of communication skills and certain associated variables in the Mentally Retarded.
4. The degree of effectiveness of planned Individualized Training Programme on the communication skills and certain associated variables of mentally retarded will differ according to degree of retardation and time of intervention.
Operational Translation

The hypotheses were tested operationally as follows:

1. The level of attainment of communication skills and certain associated variables (motor and socio-emotional skills) of educable mentally retarded will be significantly higher than the level of attainment of communication skills and motor and socio-emotional skills of trainable mentally retarded.

2. The level of attainment of communication skills and motor and socio-emotional skills of groups exposed to the Individualized Training Programme will be higher than the level of attainment of communication skills and motor and socio-emotional skills of groups exposed to the traditional curriculum within educable mentally retarded and within trainable mentally retarded.

3. The effect of the Individualized Training Programme will be higher on early intervention group than late intervention group.

Objectives

The main objectives of the study were:

1. To measure the level of communication skills in the mentally retarded classified as educable mentally retarded and trainable mentally retarded and to compare
the levels of communication skills of Educable Mentally Retarded and Trainable Mentally Retarded.

2. To measure the levels of motor and socio-emotional skills in the mentally retarded classified as Educable Mentally Retarded and Trainable Mentally Retarded and to compare the levels of motor and socio-emotional skills of Educable Mentally Retarded and Trainable Mentally Retarded.

3. To measure the effect of the planned Individualized Training Programme on level of communication skills, and on motor and socio-emotional skills in the mentally retarded classified as Educable Mentally Retarded and Trainable Mentally Retarded and to compare the effect of the planned Individualized Training Programme on communication skills and motor and socio-emotional skills of Educable Mentally Retarded and Trainable Mentally Retarded.

4. To measure the levels of communication skills in the mentally retarded classified as Early and Late Intervention Group and to compare the level of communication skills between the early and late intervention group.

5. To measure the levels of motor and socio-emotional skills in the mentally retarded classified as Early and Late Intervention groups and to compare the levels of
motor and socio-emotional skills between Early and Late Intervention Groups.

6. To measure the effect of the planned Individualized Training Programme on level of communication skills and on motor and socio-emotional skills in the mentally retarded classified as Early Intervention and Late Intervention groups and compare the effect of the planned Individualized Training Programme on communication skills and on motor and socio-emotional skills of Early Intervention group and Late Intervention Group.

7. The study should also provide the opportunity to test the capability of the variables taken up for study viz. communication skills and motor and socio-emotional skills to serve as criteria for classification of Educable Mentally Retarded and Trainable Mentally Retarded.

Specific Objectives

The specific objectives of the study were

1. To prepare the Individualized Training Programme for development of communication skills and motor and socio-emotional skills.

2. To implement the planned Individualized Training Programme as experimental treatment on a sample of
mentally retarded, classified further, on the basis of degree of retardation and time of intervention.

3. To measure the effect of the planned Individualized Training Programme on communication skills and motor and socio-emotional skills in the mentally retarded, classified further on the basis of degree of retardation, classified further, on the basis of degree of retardation and time of intervention.

4. To compare the effects of the planned Individualized Training Programme on communication skills and motor, and socio-emotional skills between the relevant sub-samples among the mentally retarded.

Information Required for the study

In order to fulfill the objectives of the study, the following categories of information are required.

1. Medical, Psychological and School reports to classify the sample on the basis of level of retardation and time of intervention.

2. Information on personal details of child: Age, sex and socio-economic status.

3. Pre-and Post-test performance measures on oral, reading, writing skills of experimental and control groups.

4. Pre-and Post-test performance measures on motor skills
of experimental and control groups.

5. Pre-and Post-test performance measures on socio-emotional skills of experimental and control groups.

This Chapter on Methodology covers four stages:

Stage-I: Identification, selection and classification of sample and sub-sample

The study requires samples of Educable Mentally Retarded and Trainable Mentally Retarded (referred to hereafter as EMR and TMR) and sub-samples of EMR and TMR classified on the basis of time of intervention of Individualized Training Programme, as Early and Late intervention groups.

1. Educable Mentally Retarded (EMR) Children - Definition

"Educable Mentally Retarded (EMR) children (I.Q 50 to 70 or 75) are, for the most part, normal in appearance but said to function at an intellectual level generally limited to learning only the most basic school skills in reading, spelling, writing and numerical calculation. EMR children are usually not ready for such academic skills as reading and maths in the first grade but can be expected eventually to attain anywhere from a second to seventh grade level in academic achievement. Most begin school in the regular classroom, but low achievement or adaptive behaviour
makes it necessary for many to receive special assistance or attend special classes", (Hewett and Forness 1984, P. 122)

2. Trainable Mentally Retarded (TMR) children

Trainable mentally retarded (TMR) are defined by Hewett and Forness (1984) thus: "Children (I.Q. 30 to 50) function at a level where formal academic learning is quite limited. Most can be expected to have physical or sensory impairments and many tend to look different in terms of facial features or physical characteristics. Unlike EMR children, the developmental problems of TMR children emerge quite early in infancy or pre-school years, usually placed in special classes or special schools. TMR children need training in self-care activities and language development. In many cases, they acquire only rudimentary academic skills". (P. 122).

3. Early Intervention

There has been concern recently with evaluating flexibility, or the potential for flexibility as early as possible in an individual life (Hewett and Forness, 1984). One of the pioneering studies of early intervention programme was done in Madras (1970). The assumptions underlying the educational program were: An effective educational program must be developmentally based and its
implementation must be structured and individualized. Gains made (intellectual, social and emotional) during the early years can have a cumulatively beneficial effect in subsequent years. The introduction of a training programme early in life will have better effect on learning than late intervention.

4. Late Intervention

For this study late intervention refers to providing special education and training at a later stage in life. The children above the age of seven who were taken for this study were included in the late intervention group as they were exposed to school learning very late.

5. Identification of sample- EMR and TMR, Control, and Experimental groups

Three hundred students enrolled in special schools in Trivandrum District in Kerala State whose medical, psychological and school reports were complete were randomly selected. The sample for the study had to be composed of Educable Mentally Retarded and Trainable Mentally Retarded. For purpose of identification the following records were studied:

1. Medical records
2. Psychological records
3. School reports

4. Case history of the child and the family
   (Pre-natal, natal and post natal history, developmental
   history, immunization records, childhood history, and
   school history - Appendix I : Personal Data Sheet).

   Based on the information, obtained from records,
each child was identified as Educable or Trainable mentally
retarded. The Educable, and Trainable were to be further
sub-divided as experimental and control groups. Both the
groups were matched on age, sex and socio-emotional status.
On the basis of the information obtained from personal
records it was possible to obtain control and experimental
groups of thirty each, within educable mentally retarded and
trainable mentally retarded who were equated on age, sex and
socio-emotional status.

6. Sample for the study

Population - 300 mentally retarded children from special
schools in Trivandrum District.

Sample I - EMR  -  N 60 B=30,G=30 SES H-10,M-10,L-10
Age 7-14  Experimental-  N 30 B=15,G=15 SES H-10,M-10,L-10
              Control  -  N 30 B=15,G-15 SES H-10,M-10,L-10
Sample II - TMR  -  N 60 B=30,G=30 SES H-10,M-10,L-10
Age 7-14  Experimental-  N 30 B=15,G=15 SES H-10,M-10,L-10
              Control  -  N 30 B=15,G-15 SES H-10,M-10,L-10
Sample III - Early Inter - N 60 B=30, G=30 SES H-10, M-10, L-10

Age 5-7

Experimental - N 30 B=15, G=15 SES H-10, M-10, L-10
Control - N 30 B=15, G=15 SES H-10, M-10, L-10

Sample IV - Late Inter - Samples I and II

Age 7-14

7. Early and Late Intervention

Age has been taken as criterion for identification of samples as early intervention and later intervention groups. Children below the age of seven years were classified for early intervention, and matched. Control and experimental groups of thirty each were selected from them. The criteria for matching were age, sex and socio-economic status. The trainable mentally retarded experimental and control groups, and Educable Mentally Retarded control and experimental groups identified, were taken as late intervention groups, as their ages were above seven years.
Stage-II: Preparation of Individualized Training Programme

Theoretical construct

President John. F. Kennedy's mandate established a "Committee on Mental Retardation" consisting of experts related to special education and this committee in 1975 passed the Education for all the Handicapped Act (Public Law 94-142) This Act was a landmark in the education of the handicapped, for education became a right of the handicapped. Public Law 94-192 also emphasised that the handicapped children should be given Individualized Educational Programme, taking into consideration each child's particular strengths and weaknesses in meeting his or her school needs (Hewett and Forness, 1984). Individualised Educational Programme was a document for each child which contained the various planning and implementation programmes directed to the handicapped child. Goals and objectives were set for each child for a fixed time which helped the professionals to predict the progress after evaluation. The Individual Educational Programme thus assured that each child was a unique individual who needed careful scientific study to find out his unique needs. The programme when implemented in the USA had great impact in the field of special education all over the world.

Individualised Educational Programme contained the following elements:
1. Level of performance: Individualized Educational Programme must clearly specify the educational level of performance, which includes complete physical examination records, developmental history, psychological evaluation, adaptive behaviour rating reports, assessment of motor skills and vocational evaluation. Thus a total picture of the whole child is given for Individualised Education and Training.

2. Definition of goals: Goals are "Sequences of Instructions which the teacher plans to carry out with the child during the academic year" (Peshwaria. R, Venkatesan. S, 1992 p. 56-57). Break-up of goals into small units of behaviour is short term objectives. Each child's goals and short-term objectives for school programme has to be clearly defined. Reading skill is a goal whereas picture matching is a short-term objective.

3. Educational and Related Services: Individualized Educational Programme must specify the related services needed for the child. For example if the child has speech problem, it needs to be referred to speech therapist.

4. Initiation and duration of services: The Individualized Educational Programme must specify as to when the child will receive the services and the duration of the
services. This would mean the length of training or education.

5. Evaluation criteria: Individualized Educational programme should contain evaluation procedures to measure the progress and problems if any, for remediation. After implementing the programme, evaluation helps for further planning or intervention if needed.

Individualized Training Programme

The Individualised Educational Programme as conceived in United States was intended to protect all the legal rights of the handicapped, covering all aspects of education, right from 3 to 21 years. The present study is confined only to the development of communication skills, and motor and socio-emotional skill suited to the age group of 4 to 14 years of age. For this very reason it has been titled as "Individualized Training Programme".

Components of the Individualized Training Programme

The Individualized Training Programme includes all the important components of the curriculum of any course of study, ie., objectives, content, instructional strategies and evaluation, with the important difference that they are not differentiated as distinct strategies or processes, but
are incorporated as simultaneous integrated activities.

Appropriate curriculum has been developed based on the principle of Individualized Educational Programme ie., determination of levels, fixing goals and short-term objectives, specifying duration, appropriate assessment, and evaluation.

Stage – IIa: Curriculum for the Individualised Training Programme

A curriculum is defined as "the content and sequence of the knowledge and skill to be taught in an area of instruction" (Baine, 1988. P. 5). The skill to be taught should be based on the need of the mentally retarded and the area taught should help the child to live independently in the community. The curriculum must give emphasis on the vocational placement based on ecological validity. According to David Shearer (1985), a curriculum for the mentally handicapped must offer a developmentally sequenced curriculum designed to be used as an evaluation and programming instrument. Each child's particular strengths and weaknesses are identified so that a personalised programme can be developed. This program must be based on the child's present knowledge and abilities. The curriculum serves as a criterion referenced instrument to measure short and long term progress. Implementation of the curriculum is
based on a prescriptive teaching approach, where specific objectives are developed, taught, evaluated and then adjusted for teaching, based on feedback from evaluation results. This approach affords constant monitoring of programme implementation and provided specific detailed work plan to guide families in the teaching of their children. Brown (1986) advocated that the curriculum must give importance to writing, speaking as well as communication by other means, and the practice of that communication in social settings.

Components of the curriculum

The principles of Individualized Training Programme would require the following components for the curriculum:

1. Identified areas. For this study it would be limited to oral, reading, writing, motor and socio-emotional skills.

2. Sequencing of content: Each section of the curriculum, i.e., oral, reading, writing, motor and socio-emotional skills, would have to be broken down into step by step items which can be cumulatively arranged to illustrate the developmental sequence.

3. The short-term objectives would mean the realization of
each item and the long term goal would mean total attainment of whole objectives.

4. The evaluation therefore, will be criterion referred, formative and summative, i.e., terminal and annual evaluations. This evaluation would require close and continuous observation by trained personnel.

Curriculum prepared as check-lists

It has been indicated that the curriculum of the Individualized Training Programme can be translated into check-lists prepared under the principles of the programme, and the check-lists would form the instruments for both implementation and evaluation (Shearer, 1985).

Preparation of check-lists

The present study is concerned with five areas of development i.e., oral, reading, writing, motor and socio-emotional skills. The content for each area has to be determined and translated into items appropriate for check-lists.

Preparatory work

Review of literature for the construction of check-lists

A detailed review of literature was conducted for the selection of appropriate elements under each domain
viz., communication-oral, communication-reading, communication-writing, motor and socio-emotional skills. These include literature on child development, developmental psychology, child psychology, development of communication skills, motor skills and socio-emotional skills. In addition to the above mentioned literature, check-lists prepared elsewhere were also reviewed. Major check-lists reviewed for the construction of the present check-lists were as follows:

8. Behaviour Characteristic Progression BCP 23-25 prepared
Check-list No.1: Oral skills (Appendix-II)

The check-list to measure oral skills contains thirty items arranged sequentially according to normal oral language development in the age group of 6 months to 6 year old children. All the items are observable and measurable. Items are sequentially arranged on the assumption that regardless of environment the human individual passes through a series of developmental stage common to the species (Forles, 1938; Mead, 1946). The check-list starts from the ability to discriminate sound, and ends with ability to communicate orally.

Check-list No.II: Reading skills (Appendix-III)

Thirty items are included in this check-list. The items are arranged sequentially on the basis of the level of
difficulty. The first step taken by child when a book is given is to play with it. This was taken as the first step in the check-list which leads to reading of stories and newspaper.

**Check-list No.III: Writing skills (Appendix-IV)**

This check-list is to measure the writing ability in the mentally retarded children. Thirty items are arranged step by step from simple to complex skills in writing. The check-list contains the act of holding a pencil as well as other acts leading to writing for communication independently. It attempts to cover the complex process of writing.

**Check-list No.IV: Motor skills (Appendix-V)**

This check-list is intended to measure the motor skills in the mentally retarded children. Thirty motor activity based items are arranged step by step from simple to complex. These items are observable and measurable. The check-list contains acts from finger thumb opposition to complicated play with a ball. Both fine and gross motor skills are covered in this check-list.

**Check-list No.V: Socio-emotional skills (Appendix-VI)**

Thirty activity based observable and measurable
items are sequentially arranged. All the items are measurable and observable. The items consist of self feeding, sharing, competitions, group activities and social activities. The check-list covers the basic social and emotional skills needed for communication.

**Administration and scoring**

All the five check-lists are simple and can be administered during formal class time and informal time in the playground or eating place. The administration of the check-lists are done by class teachers and care-takers. They were briefed about the administration and scoring by the researcher. The teachers and care-takers were asked to record the behaviour on the spot. Separate space was provided for the entry of data. The response category were three: "achieved", "partially achieved" and "not achieved". The response was indicated by the use of three different coloured tick marks, viz., green for 'achieved', blue for 'partially achieved' and red for 'not achieved'. Scoring key was developed for the purpose of scoring. The scoring key ranged from 0 to 2. Zero stood for 'not achieved', 1 stood for 'partially achieved' and 2 stood for 'achieved'. The maximum score a child could obtain in one check-list was 60 and the least was zero. The numerical scores for each subject's performance in every item in the scale was
quantitatively measured.

Observation

The implementation of the Individualized Training Programme required observation by trained personnel. In addition to the pre-service training possessed by teaching personnel involved in this study, specific training in observation for the purposes of the study, was imparted. The teachers were, made familiar with the check-lists and their completion. The observation was structured, and therefore limited by the check-lists.

Stage-IIb: Teaching Strategies

For the past two decades, effective teaching strategies have been developed and many of these strategies were derived from "applied behaviour analysis", a term which is known differently such as "behaviour therapy", "behaviour modification", "instructional conditioning", "operant conditioning" etc. All these terms describe a set of principles governing behaviour change which could be applied in the development and changes in behaviours. Short term objectives for learning were programmed with appropriate activities for intervention, and the rewards for each child was studied and awarded without delay. Behavioural approach was found very effective in teaching and training the
mentally retarded children and is the basis for the Individualized Training Programme. Learning was made enjoyable and less difficult for the children.

The major behaviour modification techniques used as teaching strategies for the present training programme are the following:

Reinforcement

Application and administration of reinforcers play the major role in any behaviour modification programme. Thus identification of appropriate reinforcement for each individual becomes necessary. In the present study, for each subject most powerful reinforcers were identified by using the principles of reinforcer's identification. For the scientific administration of the identified reinforcers, the principles of contingency, immediacy, consistency and clarity were strictly followed. For teaching new skills under all domains of communication - oral, reading, writing and also its associated variables, motor and socio-emotional skills, primary, secondary, and social reinforcers were used. Negative reinforcements were also applied when behaviours incompatible with the target behaviours occurred.

Shaping

Shaping is a technique which is used in building
up new behaviour. In shaping, the components of a particular skill is reinforced step by step. For example in oral communication skill, to teach the word 'Amma' (Malayalam word for mother) if and when the child opens his mouth or produces any vocal sound which is related to the word 'Amma' the same will be reinforced. Simultaneously the child is helped to say the letter 'Ah' and any progress leading to the attainment of this will be reinforced. When the child learns to say 'Ah' reinforcing the previous response is stopped. Finally the child will be able to say 'Amma' and this will be reinforced.

Modelling

Observational learning accounts for a great deal of human learning. Hence the principle of modelling helps special educator to train the mentally retarded. In modelling, the trainer or the model has to perform the target skill and the trainee is expected to imitate the model. For example to teach the skill "climbing stair case" the model does the activity and the student is asked to perform what the model does.

Prompting and cuing

In this technique, the teacher physically guides the child to initiate the expected skill. Gradually the
teacher withdraws the physical prompting and gives verbal or
gestural cues to the child to perform the skill. For example
to teach the motor skill of "using scissors", initially the
teacher physically assists the child to hold the scissors.
Along with this, the teacher gives verbal promptings like
"insert the fingers", "open the scissors", "close the
scissors", and so on. In the final stage without any
prompting or cueing, the child will be able to perform the
activity.

Chaining

Here the target skill is conveniently splitted
into smaller ones and taught to the child step by step. The
major kinds of chaining techniques are forward chaining and
backward chaining. In forward chaining the first component
or bit of the task will be taught first and then the second
and so forth. On learning each step, the same will be
connected to the next one and so on. In backward chaining
the last step is taught first and then the second last, and
so on.

Fading

In any behaviour modification programme the role
of reinforcement is critical and crucial. The ultimate aim
of any educational training programme for the mentally
handicapped is making them self-dependent. To attain this objective, the child has to perform the learned skill in his or her day to day life. Thus withdrawal of reinforcers at the time of training itself is necessary. Fading technique is intended to stop the administration of re-inforcers and make the child perform the skill independently in daily living situation. Fading techniques make sure that the child does not lose the learned skill, with the withdrawal of reinforcement.

Application of concrete objects for teaching

As the philosophy of teaching functional communication is for enhancement of daily living activities, emphasis was given to instructional strategies which can be used in the natural setting of the child. This could increase the generalization skill in the child.

Programming Target behaviour in other settings

To achieve the target of behaviour, the expected behaviour was briefed to caretakers, and parents, and peers who were trained to train the children in their environment. Reinforcers were also fixed for appropriate and expected behaviour. Peer prompting and peer modelling were found very powerful in this study. Enlisting the assistance of peers is a valuable strategy not only for the learner but also for
the peer according to Gow (1985).

The systematic experience method

This method envisaged by Kirk (1940) was found very successful in communication development for the present study. The method was used in the development of vocabulary eliciting the already experienced activities. In teaching, reading and writing, this method was used. After completion of a picnic the children were asked "where did we go?", "How did we travel?" and "What all we did during the picnic?". Such questions helped the children to memorise and reproduce their experiences in simple phrases and sentences. Verbal prompting and cueing was done for reproducing the appropriate words, phrases and sentences. From the listed sight vocabulary in the exhibited chart, children were asked to point out or say the appropriate words needed for their conversation. Thus recognition of words were enhanced for application. Some children who could not complete the sentences were helped by sentence completion methods. This was applied in oral, reading and writing situations. For the development of reading skill, incidental methods such as reading sign boards, labels, notice boards etc were used. Assignments like finding appropriate names for certain objects or animals were given. After collecting the correct names, the same was fixed on copies against the objects or
animals etc. Manuscript writing was used for the same purpose. After achieving basic vocabularies and word recognition skills the child was introduced to simple text book reading. "Look and say" method was also used to recognise their own name and address, school name and address, names of class room objects, food items, etc. Sentences were cut into short words and the children were asked to re-construct the sentence by joining the cut out pieces. A model of the original sentence was given for guidance and later they were asked to reconstruct the sentence without the model. Accuracy in reading was emphasised. The reading programme that is highly individualized was started at the child's level. The child's strong points and interests were taken for achieving the task. The whole-word approach or sight approach to the learning of words is rapid at first; but as students begin to encounter many new words, they usually find that they must use same method of word analysis or word attack (Ekwall and Shanker, 1983). Word attack was taught as a remedial reading. Recognition of words through context clues were also taught. Speech correction was given when needed. In the teaching of writing, Fernald's 'Kinesthetic Method' was found very useful. The child is introduced to tracing words with finger contacts and each part of the word is said, when written. The child through practice learns to reproduce when
the printed matter is given to him. The child by constant practice recognises new words. Writing on sand, and writing on clay were also found effective.

Stage IIc: Evaluation

The attainment of each item in the check-lists was targeted as the short term objective and the attainment of all the items was the long term goal.

Evaluation was Individualized. The limiting conditions were the specification and the duration of the programme.

Duration of Programme

Based on early experiences with the mentally retarded and the opinion of the judges to whom the check-lists were given for evaluation, the duration of the programme was fixed as six months.

Stage IIId: Activities

The requirement of the Individualized Training Programme in terms of content specification and teaching strategies make it necessary to prescribe the curricular activities which can be used to attain the target of learning. Accordingly the curricular activities items were drawn up to cover all areas of the prescribed curriculum.
Further the activities were differentiated as follows:

a) Intended for attainment of lower level objectives
b) Intended for attainment of higher level objectives

Piaget had explained elaborately the importance of sensory motor development which takes place between the age of 18th and 24th months. The child's active exploration of the environment takes place during this period. He interacts, and manipulates with environment, leading to motor-cognitive-language development. Sensori motor leads to symbolic thinking stage (2-4 years), where language develops at a faster rate. Studies done on the Mentally retarded children by Sequin and Kephart show that poor motor in the mentally retarded if activated could enhance visual motor perceptual skills. Further, the experience of the researcher, shows that Motor enhancement could develop to help the retarded in his language skills. So a carefully planned motor development activities were planned and organised as follows:

1. **Tactile Development**

   Allow the child to explore the environment. Child should be given activities like playing with doll, manipulating toys of different size and forms, objects with
different surfaces etc. Eg: Rough, soft, hard, hot, cold, chilly etc.

Give experience to the child: Touching, feeling of cold, very cold, luke warm and hot water.
Playing with pets - fondling, patting, petting, observation of fish tank, rabbits, cats etc.
Clay activities: Kneading, folding, pulling etc.
Sand Play - Making shapes with coconut shell etc.
Water Play - Wriggling fingers in the water, beating feet in the water.
Finger paintings and other activities to develop finger tip muscles.

2. Kinesthetic

The child is exposed to kinesthetic experiences - exposure through his own body movement. This will help the child to become aware of the space, balancing of the body, left and right, up and down, and in and out orientation. These activities were practiced through games, sports and rhythm movements.

3. Gross motor

The activities included skipping, jumping, running, hopping, crawling, climbing and walking forward and
backward, throwing, and catching. Swimming was introduced.

4. Fine motor activities covered

Threading of beads, activities with blocks, picking small objects from the floor, pulling and pushing activities, claywork, painting, pasting etc were introduced. Gross motor and fine motor development was given importance along with yoga and play exercises. Programmes were chalked out to develop socio-emotional skill as well. They included make believe play, doll house play, sharing eatables and toys, play with clay and water, painting, singing, taking responsibilities from the teacher, standing in "Q", taking turns, saying "Nameste", "Thank You", etc.

5. Introduce the child to "look and reach" visual stimuli

Different colours, shapes and forms; other visual aids and real objects, were introduced.

Visual Memory - naming of objects in and around the class room and also the school.

Visual discrimination: Matching different colours, objects and pictures, sorting different types of objects, pictures, toys etc.

6. Auditory attention and Discrimination

Listening to music and discriminating loud and
soft sounds, discrimination of musical instruments - sounds like bell and drum were introduced. Matching of sounds provided by the model was introduced. For discrimination high pitch and low pitch from the music was sung by the model. Identification of familiar sounds from the environment such as the sounds of factory whistle, school bell, church bell, temple bell, train, ambulance and fire engine's bell etc., were part of the programme. Training to identify speaker's voice from the class room situation, and school assembly situation was included.

7. Auditory Association

Training was given to discriminate animal and bird sounds, (eg: "bow-bow" for dog, "Mew-Mew" for cat, "Kaa-Kaa" for crow) mechanical sounds, ("chuk-chuk" for train, "Po-po-po" for Car) and to identify voice of parents, teachers, friends, and care takers. Story telling, music, watching of television, listening to radio, listening to prayers and songs, school oaths, National Anthem, and teachers' instruction during assembly, were other activities. Chalk board scribbling, doing simple puzzles, playing with colours, sound, and water (swimming, wriggling) were taken as part of activities. The child's environment was made interesting for his need to be developed. For example, sand pit was given during sand play; paint and paper were given
for painting session. Well planned environment was provided for better interaction. Free play, and free expression (role taking) were encouraged. Experiences like visits to the Zoo, and parks and picnics were arranged. The child was made to relax and enjoy free play. Stories concerning animals like monkey, rabbit, dog, cat, elephant, and cow were told with action songs. Interesting sounds to catch the children's attention were provided. They were asked to repeat small stories and rhymes sequentially. Verbal prompting was given initially, and after the re-telling of the story was done independently by the child, fading was done. Maintenance and generalization was given emphasis in the learning. Thus sequential memory was developed to an extent which is necessary for the development of communication skills. The skills which were higher for seven year old were carried over to children who were above seven years old. When expected skill was elicited, reinforcement was given. Training in the development of attention helped the child to increase his receptive vocabulary Programme in "Discrimination", "Memory" and "Vocabulary" leading to meaningful work activities. The child was introduced to verbal activity programmes through play activities.

8. Occular control training

   -Occular fixation and occular persuit
The purpose of this activity was to develop the control and accuracy of eye-movements required for a specific task. Activities for eye movements were given by "follow my finger" and gazing activities. Closing the eyes for a second or two was given for occular fixation and pursuit. Chalk board, post box, form boards, hammer and stool, beads and string, were given for manipulation.

After the attainment of the skill to "look" at the trainer, training in conversational language was introduced.

9. Oral activities for readiness

Exercises for lips, tongue, and proper placement of tongue was taught through modelling, and prompting. Blowing exercises such as whistling, using straws for blowing and sipping, playing mouth organ were introduced for the enhancement of speech. Activities with Dolls and Doll house, make belief plays (House and members) were introduced.

Interesting activities for eye-contacts were given. Some of the activities gave sufficient opportunities through play, to use their eyes and hands for many functional uses. eg: the child was shown how to eat the food from the plate by modelling. Demonstration was resorted to in the use of hands and eyes in eating, in dressing, in picking up objects, in scribbling, in painting, in kneading
clay or dough, in washing hands with soap and water and in playing with pets.

Production, Identification and comprehension of words used for daily living and work situations, use of polite words, naming of self, family members, teachers, food items, dress items, seasons, basic colours, shapes, and sizes were encouraged. Names of places in the house (Toilet, Kitchen etc.), and places of worship (temple, church, mosque) were taught.

The training was planned with an expectation that after the training the child will produce the words with accuracy expected for that particular task. The child was given further training in identification of spoken words without making mistake. This training continued till he comprehended the words and successfully used the words, phrases and small sentences. Prompting, modelling (imitation) expansion, correction, parallel talk and teaching with reinforcement was found very effective to get the expected behaviour. Interpersonal approach also helped to get correct verbal responses. The reading programme introduced for early intervention group was centered more around reading readiness programme. Readiness skill was developed through experience and activities at home, in the school, in the playground and in the hostel.
10. Reading skills

Readiness activities are given emphasis in Early intervention Programme. Activities for visual discrimination of colour shape and size, matching objects and classifying objects were given. Identification of letters, naming letters, and development in sight vocabulary, were done. Emphasis was given to the reading of safety words, directional words, names of the week and months of the year. Naming family members and peers was given emphasis. Reading simple and useful words, phrases and sentences useful in daily situations was encouraged. Exercises in the use of vowels and consonants received emphasis. Sight reading of words with and without pictures was emphasised as well. Reading of familiar words, phrases, sentences and paragraphs was encouraged thereafter. Scanning of words from the left to the right side of the page was taught.

11. Activities

Story telling, music, village lore with rhythm, songs containing names of people in the environment, objects, animals, and flowers etc were used with advantage. Informal discussions were held. Labelling of objects around for functional purposes was done (eg: "Toilet", 'Men', 'Women', 'shop', 'milk', 'school', 'class' etc.). Associating words with picture activities, picture matching,
picture reading, activities to acquire sight vocabulary, singing birthday songs etc. were found to be effective. Holding of objects with labels and asking "What is this"; and reading programme for early intervention group was only a small starting step. In the experimental group, poor "readiness" or "immaturity" for learning required special attention through perceptual training and a generalised movement pattern in the children. According to Kephart and Dunsing the readiness for learning "consists of a hierarchical build up of generalizations which allows the child to deal increasingly effectively with his environment (1965 p.81). The training given in movement patterns helped to attain observable responses in the sequential development and also in the perceptual organisation and interpretation of the world of objects, meaningfully (Piaget, 1952, 1954; Murphy, 1960; Kephart, 1960a, 1963b, 1964a; Gibson, 1963). It was found that communication skill developed through Individualized Training and educational programme was enhanced by this approach. Reading is taught by carefully standardised "whole-word" method in few functional words only. As the child progressed through one to two words he was introduced to new simple functional words and phrases. Ecological validity was given weightage as these words had to be applied, in the communication training, situation. Appropriate reinforcements were given immediately after the
completion of a task. Imitation, attention and listening skills were enhanced for oral language. Motivation and Reward were emphasised.

12. Alphabets

Alphabets cut out on sand paper for touching and reading, charts representing alphabets with pictures were displayed, so that the child could reach-picture reading charts.

13. Production of Words

The child was given "language bath" lavishly. Every behaviour of the child in the environment was given running commentary, as in the case of Yooseph. "Yooseph is going to take his brush", "he will go to the water tap". "He will open the tap". "Yooseph will wet the brush". "Yusuff will brush the teeth". "Yooseph has finished the brushing". "Yooseph will wash his mouth and wash the brush". Yooseph will close the tap". "Yooseph will wipe his hands and face". "Yooseph will keep the brush in the proper place". "Oh, Yooseph has finished brushing his teeth". "Very good". Clapping of hands and a smile from teacher were given as rewards for brushing. For self care skills this running commentary was very effective as it was task analysis for the child to do a task. Chaining was done in eliciting
certain functional words, by dividing words into small limits, and then chaining them. Risley (1966) Sloane, Johnstan and Harris (1968) did similar studies to get verbal response from children. The word potato was divided into "po-ta-to" and the divided sounds were chained. New words and phrases could be elicited by such training. When verbal prompting and picture objects were to be presented, immediate reinforcement was found effective. Appropriate expansion of words and phrases were done to bring the idea to the child. Eg: "I go" means I want to go. "Mango" means I want a mango.

Words and phrases used for this training were selected by giving emphasis to functional skills and ecological validity.

14. Pre-writing skill to writing skill activities

This included scribbling on black board with both hands, scribbling with crayons, painting, colouring shapes, manipulating different shapes made of sand paper, and writing in sand pit.

Following were the other activities:

Tracing of Pre-writing patterns
Tracing of horizontal and vertical lines, circles, squares and triangles.
Tracing of names and address, and familiar words.
Copying of Pre-writing patterns independently.
Copying from visuals including vertical and horizontal lines and different shapes.
Copying of names and addresses and familiar words (functional)
Production:
This included:
Drawing vertical, horizontal and oblique lines when asked.
Drawing circle, square, triangle, diamond and rectangle when asked
Writing letters when flash cards are shown.
Writing letters when dictated.
Writing name and address when asked.
Writing simple paragraphs.
Copying, words from the board;
Phrases from the board or book;
Sentences;
paragraphs from the blackboard.
The child could now take dictation of words, phrases and sentences used for daily living and vocational situations;
Put own signature, and write simple experiences.
Write leave letter for school.
Write application for a job and
Write a leave letter to the superior.
15. Socialisation

Free play, eating and playing in a group, sharing and helping in a group, sharing of toys, food, taking turns etc.

16. Physical Education—Music, Dance and Painting

Exercises, Teaching children left and right portions of the body. Balance board walking (move backward and forward). Jumping by using both legs, hopping, crawling, creeping, and step climbing by using alternate legs. Exercises of head, eyes and hands. Tongue movements. Breathing exercises. Other play ground activities were also encouraged. Singing of simple songs with action, keeping rhythm with dance movements, and use of crayons, brush and paint received appropriate emphasis.

17. Educational Equipments used

For colour concept: Beads, Dominoes, cubes, blocks, pegs, puzzles, plastic or wooden geometrical shapes (all coloured). For shapes: Square, round, triangle and other shapes. For development of seat work ability, attention span and concentration: 2 to 4 pieces of puzzles.

Occular persuit: follow the finger-clown, moving toys, cloth frame with fixed buttons and button holes cloth frame with zips, tying frame, teaching simple bow knot, hook
frame etc. Eye-hand activities: try-cycles, trucks, rocking ducks, rocking horse, balance beam etc.

18. Play Ground Equipments

Monkey bars, ladder and slide, swings, bars for climbing, sand pits, small water tank.

Stage III: Designing the Curriculum for Control Group

Objectives

The main objective of the traditional curriculum for the mentally retarded children is to prepare the child to live in the family and community as independently as possible, by helping him to attain educational psychological, social and vocational adequacy, making him a productive member of the society.

Content of the curriculum and the Texts adopted

The traditional method of teaching mentally retarded children is based on 2 principles: (1) The curriculum for the normal, can be suited to the need of mentally retarded by diluting the existing curriculum. (2) Adopt the regular school curriculum to suit the of standards of the retarded, ie., Reader for Standard I may be adopted for standard children in standard II or III depending on the capability of the child to master the content. This was the
subject-matter approach.

For this study the curriculum content is limited to communication - oral communication, reading communication, writing, motor and socio-emotional skills.

Text Books used for this study are "Kerala Padavali" Standard I, "Bhasha Parichayam" Standard I, "Aalekhana Parichayam" Standard I, and "Bhasha Parichayam" Standard II. These books were used for oral reading and writing skill development. For motor skill development, physical exercises, drills, "Nadan Kalikal" like playing with ball, "kutti and kol", "Kalithattu Kali", Jumping and running were introduced.

Class-room activities, eating time activities, and play ground activities were used to develop socio-emotional skill development.

Class Activities

Morning classes with a duration of 20 minutes each, consisted of three periods, one each for oral, reading and writing skill development. The teachers were given the text and the needed teaching aids. The activities were clearly defined and supervised by the researcher. The teacher encouraged the students to express orally in the first period. She asked the group to participate in the answering of questions and help those who faced difficulty.
She gave encouragement to the child who answered correctly. Discrimination of different sounds, identification of familiar sounds, animal sounds, production of alphabets, simple words to name self and friends, were taught for the groups.

The teacher used "Kerala Padavali" I & II for developing reading skills. The teacher started with picture reading. She showed interesting pictures arranged sequentially and read stories for them. Then she asked the children to read the same. She encouraged the children. The pictures with label and without labels were introduced and thus identification of alphabets and words were practiced. Stories are read out and the children were asked to answer the questions. Matching of objects, matching peg board designs sight reading, reading words, phrases and sentences, were taught. Those who could read books were introduced to text book reading, and newspaper reading. In writing, 'Aalekhana Parichayam' (Standard I) was introduced. Prewriting patterns were introduced and those who could do alphabet writing were taught to write simple words, phrases and sentences. Those who could write higher skills according to the check-lists were taught to write the same.

Motor skill development activities were taught in the afternoons. Emphasis was given to the attainment of items specified in the check-list under 'motor'. For socio-
emotional skill development, opportunities were provided during morning and evening assembly, lunch time, and during play ground activities.

The main difference in the strategy is that children in the control growth were taught in group situations.

Teaching Strategies

Modelling and prompting and reinforcers from behavioural approaches, were used as teaching strategies in the control group, besides other strategies.

1. Exercises of practical life

Some exercises for practical life which the children enjoyed, were implemented during daily class situations.

2. Exercises in sensory training (Montessory Method)

Perception of size, perception of form, colour, touch, and discrimination in sound formed part of this training.

3. Tracing

Tracing of shapes, alphabets, and words were introduced.
4. Copying

Copying alphabets and words from the given model was exercised by the children. Training and phonetic sounds of the letters were taught simultaneously. Visual, muscular, factual and auditory sensations were tapped for writing.

Montessori method was also adopted for the development of reading skills.

Evaluation

After the implementation of the programme for three months, the same check list was administered to find the progress and also problems if any. Pre-planning was done on the basis of this evaluation. At the end of the treatmental period of six months, final evaluation was done to find out the effect of treatment.

Stage IV - The Experiment

Experimental Design

To fulfill the objectives of the study, the two group experimental design was adopted with comparison of pre-test and post-test scores.

Experimental and Control Groups

As described earlier in this chapter, the following experimental and control groups were identified:
Experimental treatment

The Individualized Training Programme was implemented on the experimental groups and the control groups were exposed to the traditional methods treatment. The duration of the experiment was 6 months. The Pre-test scores and Post-test scores were collected and compared by the application of statistical procedures. The analysis was done in two stages.

1. Comparison of mean pre-test scores of experimental and control groups and post-test scores of experimental and control groups by testing the differences between the means.

2. By testing the differences between the means of gain scores of control and experimental groups.

Findings

The findings of the study are presented in Chapter IV.