CHAPTER I

INTRODUCTION
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1.0 Introduction

Teacher education is an integral component of the educational system. It is intimately connected with society and is conditioned by the ethos, culture and character of a nation. The constitutional goals, the socio-economic conditions, the growth of knowledge, the emerging expectations and the changes operating in the education system provide the perspective within which teacher education programmes need to be viewed.

When India attained freedom, the then existing educational system was retained on the premise that an abrupt departure to a new system would be disturbing and deestablishing. Consequently, education including teacher education largely remained isolated from the needs and aspirations of the people. However, during the last few decades efforts have been made to indigenize the system. This has had an impact on teacher education too.

A quick look at the way teacher education has evolved indicates that there have been three significant developments. First, there is a physical growth in terms of number of institutions. Second, diversification of teacher education across different levels of education such as pre-school, primary and secondary etc. Third, and the most important is the emergence of teacher education in specific areas of specialisation like science education, mathematics education, art education and special education, (NCTE 1998). As result of these developments teacher education has become a significant part of the educational system as a whole.

It is universally acknowledged that education is an effective means for social reconstruction and, to a great extent offers solutions to the problems a society is faced with. These problems may be economic, social, cultural, political, moral, ecological and educational. Since teachers play a major role in
education of children, their own education becomes a matter of vital concern. Teacher education must create necessary awareness among teachers about their new roles and responsibilities.

This awareness is as much, if not more, required in the field of special education.

At one time, the obvious career route for a person, whose main interest lay in working with handicapped pupils, would lead him or her into a special school. Not only did such schools tend to be more favourably blessed with appropriate teaching and learning aids, and to have a concentration of staff with common interest and concerns; they were likely also to provide a route for eventual professional enhancement and usually, through a policy of encouraging extended training, would give their staff the opportunity to obtain further relevant qualifications. Times, though have changed now.

A few separate yet interconnected developments make it no longer such a simple issue. Firstly, over the last fifteen years there has been an increasing recognition that learning problems of one kind or another, weather the results of factors within the child on his/her environment occur with considerable frequency. As a result, schools have felt the need to have teachers who can meet the specific requirements of pupils within special education programme.

Secondly, the shift from knowledge centered curriculum to child oriented curriculum has forced the special education teacher, trained through 'hands on' experience on in-service programmes, to re-evaluate his/her role. Coupled with this is an acknowledgment that many pupils with severe on moderate intellectual disabilities, who previously, had been confined to special schools and / or residential care for most of their lives, can reasonably be expected to cope up with community life, if some appropriate specialist support is given to them on by their teachers.

Since integrated education is one of the key issues within the National Policy on Education, the population of special schools is likely to contract, or to change, or to be subject to a considerable degree of flux in
future. Against this back drop, there is a need to review the existing teacher training programme in special education. No longer can mere experience or in-service education or the one-year institution based course or its equivalents that provide an orientation to special educational needs and motley of teaching approaches, be assumed to be the most appropriate vehicle for developing specific skills and abilities in the teacher, which can be of direct relevance to the pupil and through him/her to the society.

Integration or mainstreaming which refers to the practice of educating the handicapped pupils in “the least restrictive environment” is an aspect of the normalisation philosophy. Normalisation ensures that patterns and conditions of everyday life as close as possible to the norms or patterns of the mainstream of society be made available to handicapped people (Nirje 1969).

While normalisation is the ultimate goal of special education, it entails that the disabled person be helped to acquire certain basic skills that are essential for functioning in society. One of the most rudimentary of these skills is that of language and communication.

One service that must receive high priority from educators of mentally handicapped students is language intervention. Indeed, a delay or deficit in language development is a symptom of mental handicap. Intellectually handicapped children are delayed in such areas as sentence length, sentence complexity, speech sound discrimination and percentage of nouns in the vocabulary (Spreen 1965). Delays may be caused in part by delayed development of the prerequisite cognitive structures required for meaningful communication (Bowerman 1976). Students with severe learning difficulties are likely to experience problems with processing, retention and recall of information, which limit the amount of language learned, the rate of acquisition and the extent to which language is generalised outside formal teaching situations (Ellis 1979; Goldbart 1986; Leeming, Swann, Coupe & Mittler 1979; O’ Connor & Hermelin 1978; Zeaman & House 1979).

Summaries of various surveys suggest that virtually 100% of the profoundly retarded have impaired language, while 90% of the severely
retarded and 45% of the mildly retarded are so impaired (Gomez & Podhajski 1978, Schlanger 1973). The extent of language impairment is greatest in those with the lowest IQ. However, Ryan (1977) stressed that while non-speaking subnormals tended to be those with lowest IQ scores, there were exceptions to this generalisation in both directions.

Juxtaposed against their human right to lead a 'normal' life, and a genuine inability to develop oral expressive language, the people with mental handicaps need a system that would help them in communication. The language intervention programme should reflect a blending of the person’s cognitive potentials, his/her need to use language and the current linguistic level. For many retarded individuals the goal should not focus on developing fluent adult language, but rather one promoting a functional verbal and/or non-verbal system sufficient to meet their needs.

While many experienced educators realise the futility of their effort to teach language to the retarded through traditional modes i.e. reading, writing and speech, they are forced to continued with it in absence of knowledge about an augmentative and alternative communication (AAC) system.

1.1 Significance of Problem

By and large all teacher training syllabi include a component of language and communication which orients the teacher to the etiology and characteristics of various types of language disorders but the overall thrust for the teacher remains on developing language for the mastery of 3 Rs. in the classroom.

Consequent to this unidimensional view perpetuated by the training they have received the special education teachers treat language merely as a subject within the curriculum instead of considering it as a principal vehicle for communication between themselves and pupils and thus central to the process of education (Harris 1988). Language development is increasingly being recognised as a cognitive and social process which arises at least partly, as a result of a child’s interactions with other people. But limitations in teacher
training programmes force the teachers to adopt the traditional approach to language teaching. This approach emphasises formal instructional methods in which the teacher controls the content, direction and pace of the lesson (Warnock 1978). Within this setting, language has come to be regarded as something which can be analysed and taught alongside a wider curriculum of subjects. Above all it suggests that the best way of assisting children to learn language is to assimilate language to the traditions and practices of the classroom.

Hence it is that many teachers regard development of language for communication purposes, outside their realm of work and only within that of the speech and language therapists. But the fact remains that speech and language training cannot be regretted inside the four walls of therapy room. If a student with mental handicaps needs an intervention programme where the goal is to develop total communication (combined use of speech, signs and symbols) through an AAC system, he/she must be given that by each member of the multidisciplinary team, including the teacher.

With the acceptance to the fact that the disabled must be given what they require, we must appraise the existing teacher training courses. Does the teacher education programme reflect the specific educational and therapeutic needs of the handicapped? Is the trained teacher actually equipped to fulfill the very special demands of his/her students? The review of literature does not provide a satisfactory answer. Researches on teacher education do not include many studies that measure the effect of a particular component of the teacher training syllabus, or the efficacy of the teacher to develop a specific ability in her/his students.

It is in this respect that the proposed research study attains significance. Augmentative and alternative communication (AAC) systems are designed to meet the specific needs of those with communication difficulties through electronic aids, communication boards, sign language or combined use of speech, signs and symbols. Use of AAC systems was rare and sporadic in India till the Makaton Vocabulary Language Programme (an AAC system) was
introduced seven years ago. A large number of special education teachers and therapists from different parts of the country were oriented to this AAC system through a series of training workshops. The feedback from these participants regarding the usability of Makaton for intellectually disabled had been positive. This feedback is compatible with the research studies on use of AAC cited in chapter 2 (Review of Literature). Success has been reported in establishing both comprehension and production of basic language in retarded children, many of whom were non-verbal and/or had not responded to oral approaches to language training (Bricker 1972; Daniloff & Shafer 1981; Lanville 1977).

Since this researcher has been involved in conducting Makaton training workshops, such a confirmation from the participants challenged her to systematically study and document the long-term effect of a Makaton training on language teaching skills and attitude of teachers and the value of this AAC systems in developing language and speech among children with intellectual handicaps and communication difficulties in India.

Inclusion of AAC training in the curriculum of pre-service teacher education programme was done with a significant purpose. The participants of Makaton workshops has been experienced teachers and professionals. While they appreciated the value of the programme (some also using it successfully with their students) many found it difficult to give up their traditional methods to teach language and a few felt inhibited to use a technique which involves more than mere speech.

One of the pitfalls of extended training is that its application and productive value is difficult to assess as the teachers who attend the programme come with set motions and ideas which often obstruct the application of new learning. The openness and diligence with which a student teacher (at pre-service level) views each component of the course curriculum in frequently missing in the participants of extended training programmes.

Would training on system of AAC at pre-service level, when they imbibe and apply every teaching technique included in the curriculum, have a deeper effect on student-teacher skills to teach language? Would application of
an AAC system under guidance and supervision of an AAC tutor during practice teaching, and subsequent assessment of gain in language development by children ensure better and wider usage of the system by people with disabilities and their interactors (the teachers)? Since curricular input-on communication in special education teacher training syllabi focuses only on theoretical aspects, the teachers find themselves adequately quipped to teach communication to their students. Will practical training in alternative and augmentative system of communication improve the teachers performance while teaching communication skills as compared to teachers who have been trained theoretically?

The review of literature on teacher education and related issues did not provide a positive answer to these questions. Similarly while many studies conducted in the West report the efficacy of AAC systems with non verbal and or language delayed mentally handicapped persons, such studies had either not been done in India or had not been systematically documented till now. It was, therefore, considered important to study the effect of including AAC system in teacher education curriculum on enhancement of language teaching skills, and attitude of teachers, and language development of children with mental retardation.

1.2 Theoretical Framework

The theoretical framework related to the problem is presented below in order to provide basis for the hypotheses in the present study.

1.2.1 Mental Retardation

Over the years there have been various attempts to define mental retardation. Some definitions have viewed the disability from a medical point of view while others have highlighted the behavioural aspect. Mental retardation from a medical point of view refers to an arrested or incomplete mental abilities induced by disease or injury before adolescence, or arising out of genetic causes (Jervis 1952). According to Luria (1963) mentally retarded
children are those who have suffered severe brain disease while in uterus or in early childhood which has disturbed the normal development of their brain, and has produced serious anomalies in their mental development.

Bijou (1966) defines mentally retarded individual as the one who has limited repertory of behaviour shaped by events that constitutes his history. Mental retardation is an inadequate intellectual ability for independent functioning in society (Neisworth & Smith 1975).

The most widely accepted definition of mental retardation describing the characteristics of the person affected by the condition is the one devised by American Association on Mental Deficiency (Heber 1959). and subsequently revised in 1961, 1973, 1977 and 1983. Mental retardation refers to significantly subaverage general intellectual functioning resulting in or associated with concurrent impairments in adapting behaviour and manifested during the developmental period (Grossman 1983).

This definition includes a number of terms which must be clearly understood in order to fully grasp characteristic features of mental retardation.

- General intellectual functioning is defined as results obtained through assessment with one or more individually administered intelligence tests.
- Significantly subaverage is defined as a measured IQ of 70 or below based on a standardised test of intelligence.
- Impairments in adaptive behaviour is defined as significant limitations in an individuals effectiveness in meeting the standards of maturation, learning, personal independence and / or social responsibilities that are expected for the individual’s age level and cultural group.
- Developmental period is defined as a period between conception and the eighteenth birthday. Developmental deficits are typified by slow arrested or incomplete development (Grossman 1983).

**Classification**

Over the years a number of systems have been used to classify mentally retarded individuals. Gelof (1963) reported 23 classification systems.
that were being used in English-speaking countries alone. Classification is necessary because the retarded are such a heterogeneous group.

There have been 3 primary systems of classification:

(i) Etiological
(ii) Psychological
(iii) Educational

(i) Etiological:

It has at different periods been fashionable to classify mentally retarded children according to the cause (etiology) of their retardation. A member of etiological classification systems simply divided the children into two groups: those for whom the cause of retardation could be identified, and those for whom a cause could not be identified.

These early etiological classification systems were not of much use for educational purposes. The cultural familiar classification is still used by some psychologists and social workers who believe that mental retardation is often caused by a combination of environmental and hereditary factors. Studies do show that environmental factors such as poverty can seriously affect the intellectual development of children, and there is some evidence that heredity sometimes limits intellectual development.

Retarded children are still classified according to etiology by physicians and medical persons. The 1983 AAMD Manual on Terminology and Classification in Mental Retardation lists 10 medical classifications including those based on causes such as infections & intoxicants, trauma, metabolism, brain disease, condition due to unknown pre-natal influence, chromosomal abnormality, gestational disorders, psychiatric disorders, environmental influence and others.

(ii) Psychological:

In this classification system attempt is made to separate the symptoms of the retardation from its causes. The earliest system that classified
retardation according to severity of symptoms was developed by the American Association for the study of Feebleminded (later to become AAMD) at the turn of the century. They used the term ‘Moron’ to denote those with IQ score between 50 to 70, ‘imbecile’ for those with IQs between 25 & 50, and ‘idiot’ for those who had IQ below 25. Though this derogatory terminology has been now eliminated, retarded individuals are still classified according to the severity of their deficits in intellect and adaptive behaviours. The AAMD now classifies peoples level of retardation as ‘Mild’, Moderate’, ‘Severe’ and ‘Profound’ according to their IQ scores and their levels of adaptive behaviour. This classification system is most widely used by diagnosticians.

(iii) Education:

A system of classification that is parallel to the AAMD categories has also evolved. Smith (1971) describes these categories as ‘educable mentally retarded’, ‘trainable mentally retarded’ and severely / profoundly retarded’. The mildly retarded are called educable, the moderately retarded, trainable, the severe and profound categories are same under both systems. This classification system is currently the most useful in special education.

Mental retardation exists at different levels of severity, that is, while some individuals possess mental retardation at mild levels, others possess mental retardation at more severe and debilitating levels. Four level of mental retardation ranging from mild to profound have been identified (Grossman 1983).

<table>
<thead>
<tr>
<th>Retardation level</th>
<th>Suggested IQ Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>50-55 to 70</td>
</tr>
<tr>
<td>Moderate</td>
<td>35-40 to 50-55</td>
</tr>
<tr>
<td>Severe</td>
<td>20-25 to 35-40</td>
</tr>
<tr>
<td>Profound</td>
<td>Below 20 or 25</td>
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</table>

*Learning Characteristics:*
Given below are the characteristics that have substantial implications for educators who develop skill-building programmes to facilitate retarded persons entrance into community.

(i) Attention:

Many retarded individuals have trouble attending to relevant cues while performing tasks. They do not appear to differentiate the more significant aspect of the situation from those that are less useful (Zeaman & House 1979). Retarded learners also have a tendency to focus on specific cues rather than shifting attention to new cues (Lovass et al 1971). This overselectivity or perseveration, may hinder learning. mentally retarded individuals have a narrower breadth of attention. They do not simultaneously attend to as many dimensions of a given task as normal individuals do. Retarded learners require more frequent and lengthier opportunities to practice a task before they can master it. Once the task is mastered, however, retarded person can perform it at a rate similar to that of a non-retarded person (Berdine & Blackhurst 1985)

(ii) Memory:

Mentally retarded individuals often perform poorly on nonserial short-term memory tasks such as memorizing numbers out of rote order. This problem occurs because their use of strategies is limited. They may lack spontaneous rehearsal techniques and not practice unless they are specifically directed to do so (Butterfield et al 1973). Mentally retarded individuals do not appear to cluster items according to recognizable categories (Jensen & Fredericksen 1973). They have trouble recognizing recurring patterns or redundancy in stimuli (Spitz 1973). It has been demonstrated that mentally retarded individuals retain less information in sensory storage and iconic memory. This deficit increases as the amount of information increases (Baumeister 1979)

(iii) Generalization & Transfer:

The ability to generalize or transfer recently learned skills to new situations is another problem area for the retarded. In programmes for the moderately and severely retarded it is not unusual to require the pupil to
demonstrate mastery of a skill (a) in reaction to, or in presence of, at least three different persons; (b) in atleast three different natural settings; (c) in response to at least three different sets of instructional materials; and (d) in response to at least three different appropriate language cues (Brown et al 1976)

(iv) Language:

Language learning is closely tied to cognitive development. A language deficit is very often a criterion for definition of mental retardation. Most researchers suggest that retarded children develop language at a slower rate but in a similar manner to normal children. Delays may be caused in part by delayed development of the prerequisite cognitive structures required for meaningful communication (Bowerman 1976). A higher incidence of voice and articulation defect is found among the retarded individuals, in part because of delays in motor development. The delayed development of language and its crucial role in social and cognitive development make this a major area of concern for those working with mentally retarded pupils.

*Severe Mental Retardation*

Severely retarded persons have an IQ ranging from 20-25 to 35-40, with a mental age rough from 3 years and 9 months to 6 years (Maloney and Ward 1979). Neurological damage is common in this group. Special training can teach them to talk and care for personal needs. Focus of training is on self-care skills and little independent behaviour occurs.

According to AAMD manual, some specific abilities of the highest functioning severely retarded persons are as follows:

(i) Independent functioning:

Feed adequately with spoon and fork, can apply butter on bread, can put on clothes and can button and zipper clothes; may tie shoes; bathes self with supervision; is toilet trained; washes face and hands without help.
(ii) Physical:

Can run, skip, hop, dance; uses skates or jump rope; can go up and down stairs alternating feet; can throw ball to hit target.

(iii) Communication:

May communicate in complex sentences; speech is generally clean and distinct; understands complex verbal communication including words such as 'because' and 'but'. Recognises signs, words but does not read with comprehension prose materials.

(iv) Social:

May participate in group activities spontaneously; may engage in simple competitive exercise games, may have friendship choices which are maintained over weeks or months.

(v) Economic activity:

May be sent on simple errands and make simple purchases with a note; realises money has value but does not know how to use it except in limited way.

(vi) Occupation:

May prepare simple feeds; can help with simple household tasks; can set and clear tables.

(vii) Self-direction:

May ask if there is 'work' for him to do; may pay attention to task for 10 minutes or more; makes efforts to be dependable and carry out responsibility.

**Moderate Mental Retardation**

The moderately retarded has an Q ranging from 35-40 to 50-55 and an approximate mental age of 6 years and 1 month to 8 years and 5 months (Maloney and Ward 1979). These individuals often have observable physical features that indicate abnormality through they are much less obvious than with severely retarded. The chief focus of training is on self-care and other practical
skills and the majority become fairly proficient in such skills as dressing, toileting, eating and grooming.

The AAMD manual lists the following specific skills as typical of the highest functioning persons in this category.

a) Independent functioning: Feeds, bathes, dresses self, may select daily clothings, may prepare easy foods for self & others; combs / brushes hair, may wash, iron and store own clothes.

b) Physical: Good body control, good gross and fine motor coordination.

c) Communication: May carry on simple conversation, uses complex sentences, recognises words, may read sentences, signs and simple prose material with some comprehension.

d) Social: May interact cooperatively and / or competitively with others.

e) Economic activity: May be sent on shopping errands for several items without notes, make minor purchases, adds coins to a fair degree of accuracy.

f) Occupation: May do simple household chores (dusting, garbace, dishwashing, preparing simple foods which require mixing).

g) Self-direction: may initiate most of own activities; attend to task for 15-20 minutes (or more) ; may be conscientious in assuming much responsibility.

1.2.2 Language

Language has been seen as the most human of human characteristics. The ability to communicate complex ideas through an organised system of meanings supports not only everyday social interchanges but may play a major role in cognitive development of each human individual.

Sapir (1921) defined language as a purely human and non-instinctive method of communicating ideas, emotions, and desires by means of
a system of voluntarily produced symbols which are auditory and produced by
organs of speech. According to him language is a function exclusive to humans;
it is learned; it is a method of communicating; it is systematic and symbolic,
and the symbols are vocal. The arbitrariness of symbols is pointed out by
Hughes (1962), who defined language as a system of arbitrary vocal symbols
by which thought is conveyed by one human being to another. Hill's (1958)
definition brought out the concept of 'meaning' in language. He said entities of
language are symbols, that is, they have meaning but the connection between
symbols and things are arbitrary and socially controlled".

Bloomfield, Langer and Lenneberg use definitions that are limited to
one aspect of language. According to Bloomfield (1933) study of language is
the study of the coordination of sounds with meaning. Langer (1942) stressed
that the essence of language is the formulation and expression of conceptions
rather than the communication of natural wants. The tendency to see reality
symbolically is the real key-note of language. The communicating and
behavioural functions of language are considered by Lenneberg (1973) to be its
most important characteristics - not the labels or 'names'. According to him
language is relational. To teach someone to speak is essentially to invite him to
relate aspects of environment.

Taken together, the definitions characterise human language as (i)
symbolic (ii) representative of categories of reality events (iii) arbitrary (iv)
systematic (v) coded (vi) vocal (vii) used to communicate ideas (viii) a
means of relationship with others and (ix) a behavioural process.

Dimensions of Language

In order to understand the complex human behaviour system of
language its characteristics must be integrated into four major components or
dimensions. These dimensions according to Carrow-Woolfolk & Lynch (1982)
are:

(i) The dimension of linguistic knowledge:
This is the study of linguistic code. Linguistic is concerned with lexicon and with phonology, grammatic, semantic and pragmatic rules that comprise a system by which a message is transmitted. The code and the rules together make up the task the child must learn in order to use language.

(ii) The cognitive dimension:

This is the dimension of cognitive system by which language is learned i.e. the sensory, perceptual, memory, conceptual and representational abilities human must possess in order to acquire the rules the code and its meaning.

(iii) The dimension of language performance:

This is the dimension of the behavioural processes human learn and use in order to handle the code internally, in transmission from external to internal states, and vice versa. These behavioural processes include comprehension and production of language.

(iv) The dimension of communicative environment:

This is the dimension of communication relationship that supports the exchange between two persons. It includes motivations, desires and needs to communicate on part of the speaker as well as the environmental factors that stimulate support and maintain language as it emerges.

Structure of Language

The scientific study of the structure of language has provided a theoretical basis for studies on how children acquire language as well as for studies on disordered language.

(i) Syntax - The Grammar of language:

Syntax is defined by Pierce (1932) as the relationship between linguistic symbols. The work of Chomsky (1957) focused attention on the study of grammar. He proposes that rule-generating capacity of language is innate in human beings. According to him grammar has three major
components: phonological, syntactic and morphological. Phonemes of language are the sounds that distinguish meanings in that language. Morphemes refer to the smallest meaningful unit in a language.

The syntactic component specifies for each sentence a deep structure that determines its semantic interpretation and a surface structure that determines its phonetic interpretation. For example a deep structure that carries the meaning of Sunil eating a biscuit may have any of the following surface structures: (a) A biscuit is being eaten by Sunil, (b) Sunil eats a biscuit and (c) Sunil is eating a biscuit.

(ii) Semantics - The meaning of language:

Semantics is defined by Pierce as the relationship of meaning between linguistic symbols and their referents. Semantics describes the way meanings are marked into the phonological, lexical, and morphosyntactic systems in a particular language. In semantics there must be a relationship between content and structure.

While it may seem that the referent of a linguistic symbol is the same as its meaning, very often in actuality, that to which a symbol may refer may not be the meaning it has for an individual (e.g. words in slang expression). Individuals structure reality uniquely both because their biological make up receives different information about reality, and because they have had particular experiences with reality. Individuals, therefore, bring "meaning" to symbols; they do not get meaning from them.

While discussing "meaning" the psychologists and the linguists often refer to two different aspects. The psychologists have been concerned with psychological process by which a linguistic stimulus can evoke meaning in the listener. The linguists interest has been the manner in which the language structure represents the content of language.

(iii) Pragmatics - The function & context of language:

Pragmatics is concerned with the relationship between linguistic symbols and their the rules governing the use of language in context.
The interest in pragmatics came about through the realisation that semantic and structural analyses of language did not provide an adequate and complete account of language and its development. Language is a social event carried out by human beings in realistic communicative contexts (Bates et al 1977).

The notion of pragmatics in language refers to the identification and description of factors and rules that affect the structure and use of the linguistic code. The choice of structures and the fluency and style with which the structures are used are influenced by factors that may be described under two major categories: Function and context.

The function of language is both communicative and non communicative. While communicative function is always in a social setting, the non communication function are of concept formation, self-direction, magic and establishment of self-image (Rees 1978).

Context influences the focus that language takes - both in comprehension and performance. It refers to factors in the environment or in the individual that influence the form of linguistic utterance. The environmental context may be social and/or situational and includes (a) the listeners, (b) the shared intensions, (c) roles of participants, (d) the presuppositions that participants bring in communication. Situational factors are time and place in which communication takes place.

Individuals communicate nonverbally through gestures, eye contact, postures etc. Each individual has unique style of performance which is related to intelligence, personality and social experience. There are rules governing the use of language for specific functions - eg. conversation, discussion, or teaching, and for specific context eg. home, office, school, or public performance. Most individuals absorb these rules by observation and practice in real life settings.
Language Development

The newborn makes few sounds other than cries. The fact that within a few years the human child can form many complex sounds of speech, understand spoken and written language, and express meaning verbally is one of nature's great miracles. The major milestones in this 'miraculous' ability to use language are fairly well known to the child development specialist. The underlying mechanisms that control the development of language are still not well understood, however. What parts of the process of learning language are innate, and what parts are controlled by the environment? Scholarly research is guided by a variety of theoretical models.

Skinner (1957) states that language is a type of stimulus-response association and so can be fitted into stimulus response terms. The basic mechanism is verbal operant which according to Skinner is the dependency relationship between verbal response of some sort and an antecedent condition.

According to Chomsky (1957) children possess an internal structure capable of taking a corpus or body of linguistic input and converting it to an internal grammar. Children acquire language by discovering the relationship that exists between the surface structure of sentences and universal aspects of deep structures; the latter are the manifestation of children's own capacities.

A basic factor in language development is the change in the direction of target language through the established stages (Brown 1973). The amount of change required of a child at any stage corresponds to the distance the child's approximations are from his adult models but his performance must be measured against himself at a previous stage. The child's motivation to reach the models in the basis for change. If for some reason the child stays at the same level of approximation for any sound or grammatical structure, the probability that he will remain at that level increases with the time he is at the level and the frequency of occurrence of the approximation.

Although the stage model process appears to reduce the child's role to a passive acquirer of language, this is far from the truth. Bloom and Lahey (1978) describes the development of operative knowledge in children. By moving objects from place to place, infants see them in relation to one another.
and in relation to their own actions. This activity focuses a basis for subsequent stages in development and ultimately for the development of language.

(i) Maturation:

Maturation is the term used for the process by which the physiological and psychological systems gradually change toward completion, full potential and full capability.

According to Lenneberg (1967) language cannot begin to develop until a certain level of physical growth and maturation is attained. However, he says, it is not only the general maturation factors that are responsible for language but also a language specification. He traces the universal behaviour of language and correlates it with other forms of emergent and largely untaught behaviour and stages of brain maturation. Children in all cultures learn to walk and also to say words at similar ages. Moerk’s (1977) interpretation of maturation and nativism is that there are innate structures for behaviour and perception. The structures interact with the environment and result in cognitive and behavioural functions. A wide variety of these functions (discrimination, vocalisation etc) develop before and help to produce verbal behaviour.

(ii) Imitation:

According to Piaget (1962) there is two kinds of imitation: a) imitation that is an immediate repetition of a model; and (b) deferred imitation which is delayed and produced in absence of the model. Piaget considers imitation to precede and form one of the bases for language learning. During the early stages of imitation, the infant will only imitate what he is already capable of producing and auditorily monitoring. The next stage finds the infant attempting to establish a correspondence of “shared features” in imitation serving as mediators between new behaviour of the model and his familiar action schemas. At a subsequent stage, the imitation involves active discovery and systematic attempts to modify the action schemes in order that more exact correspondence exist between the child’s behaviour and the behaviour of the model.
Representation is seen in imitation at the next stage when behaviour is imitated without the model being immediately available to perceptual activity. According to Piaget this accommodation forms images that function to designate objects or events not immediately available to perception.

Moerk (1977) states that the child learns about the structure of verbal and nonverbal behaviour from adults whom he observes and imitates. This imitation leads first to the selection of sound pattern of the mother tongue, then to single words, and later to the acquisition of the complete adult language skills.

(iii) Conditioning:

Conditioning, a behaviourist term, is used primarily in literature pertaining to S-R learning theory, and refers to the process by which stimuli and responses are associated.

According to Palermo (1971) acquisition of child’s first word is a function of simple conditioning or paired associate learning, and that sequences are developed through chaining, and word classes equivalences. Skinner’s (1957) functional approach stipulates that the emission of verbal responses is shaped and maintained by a verbal environment. The emission of response followed by reinforcement serves to strengthen the dependency of response upon any and all antecedent conditions.

Reinforcement of behaviours make up a considerable preparation of the child’s language-learning environment, modeling and expansion serve as means of supporting the verbal output of the child.

(iv) Linguistic Input:

The effect of material linguistic input on language acquisition is an issue that has been of considerable interest in the history of child language development. Chomsky (1965) and Mc Neill (1970) state that the language input to the child is disorganised, disfluent, ungrammatic, and haphazard and consequently cannot serve as primary basis for child language acquisition. They suggest that since the child is equipped from birth with a certain information about linguistic structures and operations, that child processes the input he
hears in accordance with his knowledge of the language. The behaviourist position relies heavily on input in describing the language-learning process. According to the behaviourists, the input of parents is of paramount importance to the learning of language. Parents adopt their speech input to the linguistic and general cognitive level of their children, particularly when the child is 2 to 5 years of age. As the child grows and improves in using language, qualitative changes in input seem to predominate even quantitative ones.

1.2.3. Communication Pattern

The basic impetus for language learning is the urge to communicate. The child has a need to find out about the objects and events in the environment, to know what others think and say, and to pass on feelings and views. The child is motivated, then, to discover more about the world through communication.

Observation of mothers and babies show that patterns of communication are established very early on, well before the child has words. Mothers deliberately stimulate the infants through singing, handling and cuddling. The child is actively engaged in social activity. Schaffer (1977) has shown that the timing of mother’s stimulation is very closely tied to the child’s response. The baby’s laughing, cooing and gurgling is reciprocated by the mother by taking a turn to react. Burner (19975) suggests that early dialogues lay the foundation for later conversations.

According to Brown (1977) conversation is “to understand and to be understood, same topic” This view of communication holds true for children and adults across the age range. Linguists have identified three types of processes which are used by parents with young children in order to accomplish the task of keeping both minds fixed on the same target (Webster & McConnell (1987).

One kind of process serves to capture and hold the child’s attention whilst expressing affection. Within this the adults may speak in high-pitch/nursery tone, whisper in child’s ear, use exaggerating intonation and
rhythm, make use of child's name to start a sentence; use special vocabulary or nicknames for child; use touch, eye-level contact, gesturing and pointing.

The second major process used in adult-child talk is that of simplifying - choosing the right way to say something to make sure that the child understands. This is done by using shorter sentences; simple structures, omitting word endings; avoiding pronouns; selecting simple vocabulary, and avoiding complex sentences.

The third process is that of clarifying, which also helps to ensure communication takes place. Adults speak slowly and clearly; pause between sentences; employ 'here and now' topics of conversation in familiar environments; provide commentary on child's activities; use present tense; use more content words and fewer function words, repeat key words; and provide sentence frame for new vocabulary.

When all these devices and strategies are put together it is obvious that the spontaneous skills which adults display in talking to young children seem designed to enable that the adult and child will share what is said and what is meant on the same topic. Adults claim the attention of children, simplify what they say, tie words and sentences to familiar objects and events, and ensure that the child comprehends through repetition.

Wells (1981) proposes that the whole process of early language learning is an active one in which both listener and speaker create and search a context for clues to intended meaning.

One of the most striking findings of Well's research is the consistency amongst individuals in the devices and strategies that are learned in order to become more expert communicator. Without the two participants in a conversation alternating in taking turns to respond, a fundamental condition for successful communication would not be met.

**Language and communication system**

A functional analysis of communication channels and linguistic processes form the basis for a general system for language and communication.
The communication channel involves sensory input, integrative and mediation functions, and response output. The modes of sensory input are visual, auditory, tactile and olfactory. The integrative and mediation process levels are imitation, symbolisation, construction and transformation. The modes of output are gross motor actions, signing, writing and speech (Hollis and Schiefelbusch 1979).

The psycholinguistic analysis includes receptive functions, both non-linguistic & linguistic conceptualisations, linguistic rules and expressive language.
Figure 1.1

A General System for Language (Hollis & Schiefelbusch 1979).
The language and communication system as illustrated in Figure-1.1 helps in understanding the issue of alternative modes i.e. input - sensory modes (receptive language) and output-response modes (expressive language).

Language intervention strategies are directed toward those individuals who are deficient in receptive language, mediation and integrative functions, and expressive language (Hollis & Carrier 1978). A general system of language with its models of communication channel and psycholinguistic analysis provides a convenient method for assessment of language deficiencies.

**Deficits in Language & Communication**

There are different types of impairments or deficiencies that could affect the communication process. These could be in the areas of input, integration output, decoding, encoding, feedback and a combination of any three. Schiefelbusch and Hollis (1980) explain these through the deficiencies model (Figure 1.2). Here the communication channel appears on the life with overlapping circles. Within the channel the input - integration (S-O) interaction and integration - output (O-R) interaction appear as areas of functional difficulty. The psycholinguistic analysis on the right represent the areas of difficulty as interaction between receptive language and linguistic rules (A-B) and the interaction between linguistic rules and expressive language (B-C).

**COMMUNICATION CHANNEL**

**PSYCHOLINGUISTIC ANALYSIS**

Fig. 1.2.

COMMUNICATION AND LANGUAGE DEFICIENCIES

Critical or Failure Points.
(Schiefelbusch & Hollis 1980)
A handicapped child might be deficient in any or more of the areas mentioned above. If we assume that the child's integration, decoding and encoding processes are functional, as in a deaf child then the communication deficiencies could be overcome by shifting to a visual input (S or A) and a manual sign output (R or C). However if the deficiencies also include problems of integration (e.g. mental retardation), it may be necessary to institute remedial or prosthetic training. Communication involves a social transaction. An important attribute of communication is the process of reference i.e. the use of symbol modes to designate objects or referents (Rosenberg & Cohen 1966). The dyad has often been used to illustrate communication situations. A common dyadic situation is one in which a receiver (listener) must select a lever or an object, known as the referent, from a set of nonreferents on the basis of a message (manual signs, speech and so forth) provided by another individual, the expressor (speaker).

The dyad has been used to study communication between severely mentally retarded children (Hollis 1966). The result shows that members of the dyad can learn referential communication. That is, in a four - choice lever the operator (receiver) could select the correct lever (referent) from a group of four levers (referents) on the basis of informant's situation, (speaker's) message (symbol mode). Analysis of data from the study suggests that encoding is the most difficult to learn, or reflects the greatest potential for deficiency in the communication system.

1.2.4 Communication Deficits & Mental Retardation

Mentally handicapped children typically display delays in nearly all aspects of their development. In many cases acquisition of language and speech skills lags even further behind the development of other skills. Language and speech problems are also frequently complicated by the presence of hearing losses, auditory perceptual deficits, and physical conditions such as cerebral palsy or cleft palate. Communication problems are, therefore, very significant
aspects of mental retardation and may even be the first problems noted by the parents (Machello 1986).

It appears that a relationship exist between IQ and the seventy of a language handicap (Wing 1981). In his study Gould (1976) found that more than 95% of those children with IQ below 20 obtained no scores on any language tests used. In contrast about 50% of the children with IQ between 20 & 34 and nearly 25% of these with IQs between 35 & 49 demonstrated no language skills, suggesting that the lower a child’s IQ the more severe the communication impairment. The degree of communication impairment generally exists along a continuum as one moves though a hierarchy of mental retardation levels from profound retardation to normal development.

Language Characteristics of Children with Mental Handicaps

When professionals evaluate the skills of mentally handicapped children, consistent developmental lags are observed in all areas assessed with no skills reflecting chronologically age appropriate development. Deficits in gross and fine motor, socialisation, cognition, self-help, and communication skills contribute to a flat developmental profile. In many instances, language skills may be the most depressed of all developmental areas (Bateman & Wetheral 1965).

(i) Relationship of Cognition & language:

In general the language problems of mentally retarded children seem linked to more pervasive deficiencies in cognition. Retarded children characteristically display an abnormally concrete cognitive orientation that is particularly apparent in their use of language (Cornwell 1974). These children tend to use words that refer to items and actions in the here and now - “eat”, “chair”, “house” - rather than words whose referents are more difficult to visualize such as “freedom”, “protect”, “spirit”. Cornwell also observes that children with Downs Syndrome are able to perform rote, automatic tasks but are unable to form concepts or to group objects by category.
A Piagetian view of mental retardation suggests that a retarded child’s progress through the early stages of cognitive development is slower than normal, with a characteristic halt in this progress often seen at some point in the normal sequence (Finch Williams 1984). Studies indicate that retarded children of with IQs upto 50 rarely attain cognitive level of pre operational through. Furthermore, nearly, 30 to 50% of mildly retarded adolescents display only concrete operational thinking (Reiss 1967).

A view that contrasts with a Piagetian view of the relationship between cognitive development and language skills among mentally retarded children is that of Luria and Yudovich (1971). This approach maintains that language serves a crucial function in mediating and regulating other aspects of behaviour and that certain cognitive skills are actually dependent on language. Milgram and Furth (1968) explain that language in a normally developing child is internalized and provides complex cognitive cues for regulation of behaviour. For instance a child might be asked to stop an ongoing activity when a red light appears, but to continue it if a green light appears. A normally developing 5 year old uses internal verbal commands such as ‘red -stop, green - go to perform task correctly. Mentally retarded children often display particular difficulties in applying this internalised language to solve problems (Luria & Yudovich 1971). The development of internalised language in mentally retarded children appears to be arrested at the age in which the children give themselves audible commands to inhibit or initiate action. According to Rotundo & Johnson (1981) this corresponds to normal developmental age of 3 and 4 1/2 years.

(ii) Semantics Skills :

Mentally retarded children consistently display smaller and poorer vocabulary than their normally developing counterparts (Bloom & Lahey 1978; Wolfensberger et al 1963). The more severely retarded a child, the smaller will be the child’s vocabulary.
For some moderate retarded children, the order of difficulty for various syntactic structures may be different than that for mildly retarded. As a result both delayed and qualitatively abnormal language functions may coexist in the same retarded child (Bliss et al 1978).

A member of professionals have described the grammatical problems typical of mentally retarded individuals. They display difficulties in usage of verbs, personal pronouns and commit many grammatical errors when attempting to produce syntactical constructions above the level of simple sentences.

(iv) Pragmatic Skills:

Many retarded children have difficulties in using language for social functions. These difficulties can reflect pragmatic behaviours that are both qualitatively and quantitatively different from those of normally developing children. A few researchers have compared the acquisition of certain pragmatic skills in retarded and normally developing children (Coggins et al 1983; Owens & MacDonald 1982). Their findings suggest that retarded children functioning at young mental ages may develop at least some pragmatic skills in a qualitatively normal manner. In a group with normally developing children, preschool retarded children are often socially and physically isolated. Even in groups with their retarded peers they may behave in the same way (Beveridge 1976).

As partners in conversational interchanges, mentally handicapped children tend to give information much more frequently than they request it. However, the information they give often fails to take the listener's point of view into account. They may provide information about which the listener is already aware, yet not provide adequate information regarding something about which the listener knows nothing. Retarded children also fail to modify their messages when it is apparent that listener has not understood the information (Longhurst 1972).

These findings suggest that although mentally handicapped children may learn to use certain language skills in restricted teaching settings, many of
them have difficulty in applying these skills to real communicative situations in everyday life. The findings also underscore the crucial importance of pragmatic abilities with communication development of mentally handicapped children.

1.2.5 **Augmentative and Alternative Communication System**

Augmentative and alternative communication (AAC) systems are methods of communication that are used as a supplement to vocal speech. These systems are used with handicapped persons who are unable to use speech as their primary communication method. They are used as permanent alternative substitutes for oral speech or as supplemental communication methods when oral speech is difficult to understand or delayed in development (Harris and Vanderheiden 1980).

AAC systems are used with many types of handicapped persons, through the choice of the system may differ for the non vocal hearing impaired, non vocal mentally retarded, non vocal autistic or non vocal severely physically handicapped. Generally an AAC system is used

(a) as an initial communication system and a means for communication interaction, language, and personal skill development with a child who is not yet vocal but who may later develop functional speech.

(b) as a supplementary mode of communication for an individual who has only limited intelligible speech comprising a small vocabulary that only a limited audience can understand.

(c) as a supplementary mode of communication for nonspeaking persons who can use other non vocal techniques, such as manual sign, for communicating with message receivers who do not understand the system (eg. signing).

In the above applications the AAC supplements whatever other communication systems the individual has or may be able to develop (including speech, gesture, and facial expression). The goal of AAC use is to develop effective communication ‘systems’ for nonspeaking persons. These systems
include the development and use of whatever modes of communication may be available to the individual.

AAC systems are generally of two types: (i) aided and (ii) unaided. Unaided communication systems use only the physical body for communication. Sign language, gestures, vocalisations and facial expressions are unaided communication methods. Typewriters, communications boards, pen and paper, microcomputer can all be used as aided communication methods. Although aided communication methods are physically cumbersome, they have the advantage of being easily understood by most interactors. Unaided communication systems usually require familiarity with the nonspeaking person for the communication system to be understood.

Effective augmentative and alternative communication systems should promote social and communication interactions. To enhance interaction across many social situations, more than one type of AAC system may be needed. The handicapped person should be able to use a variety of methods and apply them appropriately. A handicapped person may rely on a large microcomputer for lengthy conversations, school work, and phone calls through a modem. Because a large microcomputer is not portable, the same person may have a communication board to go outside with. In addition head nods, simple signs and gestures, and vocalisation might be used for rapid communication with people who are familiar with the person. Using a combination of communication methods can enhance social interaction.

The AAC systems have also been categorised into:
(i) The Visual Motor Systems
(ii) Written and Symbol Systems
(iii) Combined Modes.
(i) The Visual Motor System:

The system involves the manual mode of communication as the means of interaction (Moores 1974). It includes the use of sign language, finger spelling and gestures. The manual system may be used either independently or in coordination with the spoken word. Though there are many forms of manual communication, two of the more common are Seeing Essential English (SEE) (Anthony 1971), and Signing Exact English (SEE) (Gustason, Pfetzing and Aswolkow 1972). Both these forms use manual signs that correspond closely or match exactly the sequence of morphemes in English syntax.

Sign language (e.g. American sign language, British sign language, Indian sign language) is also one of the common forms of manual communication. As with the two SEEs, reception takes place through visual modality and expression is in form of gestures. A sign language differs from a spoken language in that the coding system and the rules for coding are not the same. According to Bellugi and the Klima (1972) in its deepest and most interesting respects, sign seems to be a language in its own right, with properties that are different from spoken language in general.

Finger-spelling requires spelling each letter of a word or message using manual alphabet. This system in conjunction with manual signs and speech has been found to be favourable for deaf children (Quigley 1969).

(ii) Written and Symbol system:

The written mode of communication involves the use of written words, phrases and sentences to communicate. The basic elements of this mode would be the written letters of the alphabet. Many cerebral palsied children because of severe motor disabilities, are unable to develop functional speech. For the most basic communication a child may be provided cards with the words “yes” and “no” printed on them to convey basic agreement on disagreement. MacDonald & Schulz (1973) enabled such children to express their needs by providing pictures and printed words on a language board and allowing children to point to the appropriate pictures and words. Marshall &
Hegrenes (1972) worked with an autistic boy allowing him access to a typewriter.

The symbol system mode refers to a nonspeech system that may use symbols varying in size, colour, and other attributes, in order to provide the child with the means of receiving and/or expressing messages. Symbols, which can be written words, or sentences or other symbolic visual representations are placed on a board. Through some type of motor response the user indicates on the board which symbols convey the thoughts. Motor response may consist of activating an electronic indicator or pointing, however the output modalities, in some way are gestural. Input for the receivers of the messages is visual - the symbols indicated on the board. Input to the user of the board may be visual, may be auditory or may be both (Reed 1986). A number of symbol systems have been used with handicapped children.

The Blissymbols (Bliss 1965; Clark & Woodcock 1976) employs indeographic symbols to represent concepts and has been used with non-vocal physically handicapped children with some success (McNaughton & Kates 1974).

The Rebus system uses ideographic symbols as a means of initiating reading instruction for a variety of children exhibiting a range of communication problems. It has also been used with non handicapped children as a mechanism for developing pre-reading skills while phasing into traditional orthography.

(iii) Combined Modes:

Although any mode of communication might be relied on separately, a combination of vocal, manual and symbol modes has been found to be successful (Moores, Clark & Woodcock 1975a). Combined modes have been effective with hearing impaired, severely mentally handicapped and children with developmental language deficits.

Among the programmes that offer combined modes and have been potentially useful with non vocal children are the Minnesota Early
Language Development Sequence (Moores, Clark & Woodcock 1975b) and the Makaton Vocabulary Language Programme (Walker 1973).

**Need for AAC in Handicapped Children**

Intellectual disability, which is often accompanied by severe physical and motor impairment, can have many effects on the communication, cognitive and motor development of handicapped children. According to Harris and Vanderheiden (1980) the potential barriers to the development of communication and interaction skills include.

(a) Reduced or inconsistent ability to interact with or explore environment.

(b) Reduced or inconsistent ability to play/interact with other persons motorically and vocally and to stimulate vocal feedback from caregivers and others.

(c) Inability to express emotions, needs and thoughts and to exchange information with others in consistent, reliable and effective manners.

(d) Inability to develop control of ‘normal’ communication mechanisms (oral speech and fine motor coordination).

Severe handicaps can have pervasive effects on development of social, interpersonal, play, language, communication and interaction skills. In infancy and throughout the sensorimotor period (0-18 months) Piaget (1964) and others have postulated that motoric interaction and object manipulation are important for the development of symbolic representation and related cognitive skills that are prerequisite to development of language.

Spastic or athetoid motor movement, persistence of infantile reflex patterns, involuntary facial grimaces, lack of a consistent social smile, inability to engage in typical infant games (eg. cooing, babbling) may hinder or decrease social interacting with the child. Motor related handicaps can thus result in social / emotional, interactional motivational and communicative handicaps.

Additionally, the children may experience speech-related barriers to communication development. Most communities of speaking persons view
language as speech. Non speaking children as seen as non communicative or nonlinguistic, and speech development programmes are implemented to develop language. Insensitivity to the children non speech communicative and interactive behaviour, in conjunction with lack of positive reinforcement for other than speech-related communication, may seriously inhibit the development of communication and interaction (Harris & Vanderheiden 1980).

As a result the non speaking children reach the stage when they would be normally communicating through referential speech, they may have poor interactive skills, limited social and physical interaction, limited control of social and physical environments, no effective mechanism for producing symbols for communication (voice, gestures, graphics), limited familiarity with a symbol system to communicate and interact, and deficits in cognitive, motoric and social development. Intervention programmes for such children should adopt AAC that enable / enhance interaction without concentrating solely on provision of augmentative physical means of expression. The AAC should encourage development of interrelated skills in natural self-motivating and evolutionary manners, starting with basic forms of interaction and communicative exchange and slowly evolving to more advanced symbolic forms of communicating through referential language.

1.2.6 The Makaton Vocabulary Language Programme

Designed in UK in 1972 by Margaret Walker the Makaton Vocabulary Language Programme is an AAC system that encourages functional communication and interactive behaviour in children and adults with communication and language difficulties. The programme consists of an open ended lexicon, based around a common core of functional concepts which is taught with manual signs and/or graphic symbols accompanied by speech (Walker & Grove 1990).

The Makaton Vocabulary is one of the most widely used systems of AAC in UK (Reid, Jones & Kiernan 1983) and has been introduced in India in 1992.
The philosophy underlying Makaton is that communication occurs in an interactive, interpersonal context and that attempts to develop communication skills in people who have communication and intellectual disabilities (Walker 1987)

According to Walker, successful communication requires:

(i) A common language - based on a referential vocabulary constructed around shared daily living experiences and needs of the interactors

(ii) Knowledge and the ability to use the same method(s) of communication

(iii) A sensitive and flexible approach to using these combined features in order to accommodate:

(a) The specific learning difficulties of the students eg. poor memory and concentration, limited retention and retrieval skills, expressive production problems.

(b) The situational demands made on all interactive partners by the environment, eg. transfer of information and skills from one person to another, shortages of manpower and time, whether the environment is conducive or not to the type of communication being use.

(iv) That the interaction itself is rewarding and satisfactory.

The initial goal of the Makaton programme is to establish basic communication. Once this has been achieved the student may progress toward more comprehensive language use, in whatever mode or combination of modes, is appropriate. Makaton should thus be viewed as a facilitation of communication rather than an end in itself (Walker & Grove 1990)

The system comprises of:

- a core vocabulary supported by additional or resource vocabulary.
- taught with signs and/or symbols and always with speech
- using specific structured teaching procedures.

The Makaton Vocabulary was originally designed in the early 1970s for a group of deaf adults with mental handicaps living in an institution and for their carers, peers & instructors (Walker 1987). Words in the core vocabulary
were derived through monitoring and collecting samples of communicative interaction between the residents and the interactors. The list was gradually refined so that only necessary and frequently used concepts were retained.

The core vocabulary comprises of words arranged in eight sequential stage of increasing complexity and communication priority. There is also an additional stage - stage 9 which is an open-ended stage and represents a resource of additional words to be introduced into the core at the discretion of the "teacher" if any of the interactive partners require them specifically.

**Design Features of Makaton stage Model**

According to Walker (1987)

(i) The stages allow for the gradual expression of child/adults experience in semantic fields.

(ii) Substantive and relational items are distributed throughout the Vocabulary in a way that allow individual items first to be used as single concepts for communication and then to be combined in short sentences from the beginning.

(iii) An analysis of Makaton Vocabulary stages, using Brown's definitions (Brown 1973) and the categorisation of them on the basis of semantic roles have been described by Armfield (1982) and reveals that a compatibility between them both, showing that principle features of child language acquisition are present in the stage of Makaton.

(iv) working gradually through the stage gives the "teacher" an added advantage by restricting the amount of information processing provided to the learner. It reduces the chance of cognitive overloading in mentally handicapped children/adults.

(v) The arrangement in stage and teaching in this sequence provides the "teacher" with an indication of a child's current level of understanding.

*Communication Systems Used with Makaton*
Speech and signs are commonly used to teach the Makaton vocabulary and if required, symbols may be used as well.

Signs:

Signs used with the Makaton Vocabulary are derived from the sign language of the deaf community. Since the programme has been introduced and adapted for use in 27 countries in the world, sign match has been effected with respective sign language of each country. Thus the original Makaton Vocabulary (UK. version) derives its signs from the British Sign Language and the Indian version is matched to signs from the Indian Sign Language used in the western region.

Key words only are signed in spoken word order and are accompanied by normal grammatical speech. Some features of the natural sign language, such as directional marking, facial expression, and some modifications of hand shape are incorporated.

Symbols:

A symbol is a graphic description of a concept. Symbols have been matched to all stage of the Makaton Vocabulary to provide an alternative means of communication for physically handicapped children if speech and signs are not inadequate.

Makaton symbols have also been found to be of significant value, when used with the core vocabulary and speech & signs, to help pre-reading and reading skills in children and adults with severe learning difficulties (Carpenter 1986; Henderson 1986)

Teaching Procedures:

According to Walker (1987) teaching should being at stage 1. Vocabulary is selected for the student and for the interactors from each stage, and concepts not required are omitted and additional essential items are introduced from later stages, if necessary. Teaching then begins at two levels.

a) Formal, where emphasis is on the acquisition and practice of skills associated with language & communication, and the techniques associated with actual use of method of communication.
b) Informal, where concepts learnt in the formal teaching are generalised and used in a functional manner in the setting of daily life.

The teaching is done in following sequence:

- setting up acts of communication
- establishing a learning pattern
- use in the context of real objects & events
- teaching a range of functions
- teaching new concepts
- teaching understanding & use of phrases.

For details about the Makaton Vocabulary language programme please refer to appendix —

1.3 Research Question

Answer to the following research questions were sought in the present study.

(i) Would training on a system of AAC, improve the special education teacher's ability to develop language and communication in their students?

(ii) Would use of an AAC system bring about an enhancement in the receptive and expressive language of students with mental handicaps?

(iii) Would training on a AAC system effect a change in teacher's attitude in favour of learner based language programme?

1.4 Objectives of the Study

The purpose of this research work, was as given below:

(i) To study effect of AAC raining on student teacher's ability to teach language to learners with severe and moderate mental handicaps.

(ii) To study the impact of an AAC system on development of language and communication in learners with moderate to severe mental handicaps.
(iii) To study the effect of learning an AAC system, on attitude and perceptions of the student teacher regarding need-based language programme.

1.5 Operational Definition of the Keyterms:

**Augmentative & Attention Communication System**
Makaton Vocabulary Language Programme a multimodal system which employs a combined use of signs and symbols with speech.

**Student Teachers of Special Education**
Trainees of the B.Ed courses that prepare teachers for working with mentally handicapped children.

**Children with Mental Retardation**
Children with severe to moderate grade of mental retardation.

**Language Teaching Skills**
Language teaching behaviours as observed on TEBSLAT (Teacher’s Behaviour Scale for Language Teaching).

**Language Development**
Increase in receptive and expressive language as measured on CLAT (Children’s Language Acquisition Test).

**Attitude**
Student teacher’s opinion regarding the usefulness of an AAC system for language intervention as measured on the Reaction Scale.

1.6 Selection of Variables

The purpose of the present research was to study the inclusion of AAC system in the curriculum of teacher training in special education and its effect on language development of children with mental handicaps. Hence, the dependent variables under consideration were as given below.
1. Student teachers' skills for
   (i) general communication
   (ii) language development (in children with mental handicaps) through development of
       (a) Semantics  
       (b) Syntax  
       (c) Pragmatics.
2. Language development in children with mental handicaps through the acquisition of skills for
   (i) semantics  
   (ii) syntax  
   (iii) pragmatics
3. Student teachers' attitude towards training and practice of AAC system.

1.7 Scope of the Study

The scope of the study was as per the following parameters.

1.7.1 Limitations

The study was conducted on the student teachers of the B.Ed (special education) courses in Mumbai. The sample of mentally handicapped children was drawn from special schools situated in city and suburbs of Mumbai. Both student teachers and children were residents of the city.

1.7.2 Delimitations

The study was concerned with special education teachers of children with mental retardation, and children with mental retardation. The outcome of this study may be generalised to teachers and children across the socio-economic status within this population.