CHAPTER V

DISCUSSION OF RESULTS
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5.0 Introduction

This chapter presents a discussion on group results and individual performance of selected subjects from both phases of the study.

5.1. Group Results

Group results are discussed hypothesiswise according to the interpretation of results presented in Chapter IV.

5.1.1. Effectiveness of AAC Training in Enhancing Student Teacher’s Ability to Develop Language and Communication in Learners with Severe to Moderate Mental Handicaps.

For children who have speech and language delay, the overriding goal of language intervention should be to increase the students functional communication. As obvious as this goal is, functional communication is easily forgotten when teachers use teaching strategies that require many repeated trials before acquisition of even a simple labeling response is assured (Kaiser et al 1987). Faced with many needs and modest skill repertoires of persons with mental handicaps, teachers easily lose sight of the function of language intervention while focusing on the long list of forms that must be taught.

Functional communication can be promoted by (i) selecting words/forms known to be functional in a particular setting frequented by the child (ii) teaching the child to use form in a functional manner (iii) preparing persons in the environment to respond to new forms in a functional manner.
Another important goal of language intervention should be to teach
the strategies for learning language. "Strategy" refers to a broad class of
behaviours that supports the student in practising language forms, in interacting
with others so as to increase the opportunity for language use, or in soliciting
conceptual information (Kaiser et al 1987).

The specific classes of behaviour that have shown to facilitate
language learning in language deficient children are (i) generalised imitation (ii)
frequent communication attempts and (iii) actively seeking new information

When functional use and concurrent training of language learning
strategies are considered as the primary goals of language intervention,
teachers must use those teaching techniques or systems that address the
students immediate communication needs and enhance his/her interactional
skills in the naturalistic settings.

Training and practice of Makaton Language System given to the
student teachers of experimental groups provided them with such a teaching
technique.

The primary influence on selection of the Makaton Vocabulary has
been functional significance. The original lexicon was derived from observation
and discussion of interaction between institutional residents and their
caregivers. When the Vocabulary was introduced into schools for children with
severe to moderate mental handicaps, it was reviewed by professionals and
parents and their suggestions were incorporated in revised Makaton
Vocabulary (Walker 1987).

The formal teaching of the words / concepts from the Vocabulary
takes place within the framework of conversational exchange. Thus right from
the beginning the teacher encourages the child to use language in functional
manner.
Makaton also ensures that interactive partners use the augmentative modes with the student in order to be responsive to his / her emerging communication skills.

Use of signs & symbols along with speech by the teacher in formal and informal teaching sessions help the student in generalising imitation of augmentative modes. This provides him/her the strategy to learn language.

The early stages of the Makaton Vocabulary contain many terms such as, 'What'? 'Where?' 'Come', 'go', 'here', 'there' give, 'look' etc. which can be used by teacher with students with language deficits to allow for natural conversational exchanges to take place. These not only help the teacher in providing opportunities for communicative initiations but also ensure that students have access to language in order to control the actions of others and to manage their environment (Grove & Walker 1990).

These features of Makaton Vocabulary Language Programme make it a significant technique for teaching language to children with severe to moderate mental handicaps. It is an effecting tool for achieving the goals of language intervention viz teaching functional skills and teaching strategies that facilitate language learning. In this, the system is similar to milieu language training (Hart and Risley 1968) which refers to language and communication training procedures that are brief and positive in nature, carried out in natural environment as opportunities for teaching functional communication naturally occur, and occasioned by child interest in the topic to which training will relate.

Training and practice of AAC system developed within the student teachers of experimental groups the skills to identify topic which is of functional relevance to the child, follow this attentional lead, establish joint attention and then use this need based topic as the focus of teaching. Acquisition of these language teaching skills enabled the experimental group student teachers to have an advantage (M=14.6) over their counterparts in the control group (M=4.6; t=5.01, P<.000).
5.1.2. Effect of AAC Training on General Communication Skills of Student Teachers.

Communication occurs when people interact in some way (verbally or non verbally) so that a message passes from one person to another and a response is given in return.

Value of communication skills in a teacher for classroom interactions cannot be over emphasised. In order to ensure that intended message has reached or been understood by the students, the teacher must be able to explain or state the message clearly, link it with previously known information, present the content systematically while simultaneously using non verbal modes such as gestures, eye contact and facial expression etc.

One of the objectives of the Makaton Training Module was to orient the student teachers of the experimental group to the importance of their communication skills. They were given practice on the features of visual communication, namely eye contact, facial expression, gestures, body language, directionality, placement, movement, besides signing. During the training, emphasis was also given to such features of verbal communication as clarity of speech, use of words and phrases, prosodic patterns of speech and the need to modify cognitive levels of the receivers of the message.

The effect of this training is visible in the performance of the student teachers of experimental group. The post test results show a significantly higher gain (M=6.4) on general communication skills by experimental group as compared to the control group (M=1.53, t=5.93, P <.000).

5.1.3. Effect of AAC Training on Student Teachers Ability for Development of Semantics Skills in Learners with Severe to Moderate Mental Handicaps.

The need to teach vocabulary to retarded children in natural context has already been mentioned earlier. These children have concrete cognitive orientation (Reed 1986). Many retarded children exhibit small expressive vocabulary and an unusually large discrepancy between the number of words
they comprehend and the number of word they actually use. Hence, with many of them vocabulary training should stress word usage. The feature of cognitive concreteness found in retarded children also suggests that they might benefit from such activities as grouping items according to functional attributes, games and hands on experience.

Additionally, the teacher can develop the retarded child's semantics skill by teaching the vocabulary indifferent ways, explaining the critical attributes of the concepts, and introducing new words in simple phrases.

Makaton training oriented the experimental group student teachers to the above skills for semantics development.

Use of manual signing with speech has been reported in establishing both comprehension and expression language in low functioning retarded children who had not responded to oral approaches to language training (Bricker 1972; Daniloff & Shafer 1981).

Iconicity of signs helps in teaching semantic insight by emphasizing the correspondence between sign movements and actions and between form of referent and form of the sign, using drawings or molding the hands around objects (Grove & Walker 1990). Similarly introducing new words by linking with familiar verb or locatives (Come, sit, go, eat, here, there) to form phrases helps in semantic development. Use of simple activities such as turn taking, role play, picture description etc. also achieve the same objective.

The student teachers trained on Makaton systematically used these techniques during the language intervention sessions with children with mental handicaps. Their significantly higher gain ($M=3.00$) on skills for semantics development in comparison to control group ($M=1.06$, $t=3.00$, $P<.006$) is apparently a reflection of this practice.
5.1.4 **Effect of AAC Training on Student Teacher's Ability to Develop Syntactic Skills in Learners with Mental Handicaps.**

Efforts to develop syntactic skills in mentally handicapped children must focus on building receptive and expressive syntax.

Comprehension of language can be improved by (i) teaching specific functional skills - where the child is helped, according to his / her functioning level, to understand the language input that is specific to certain context or interaction of everyday life, and (ii) teaching syntactic structures in a sequence that reflects normal language acquisition - where goals for intervention are based on normal language acquisition sequence (Reed 1986).

Strategies for stimulating expressive syntactic skills may be developmentally oriented. They may stress the development of specific functional speaking skills.

Miller & Yoder (1974) recommend that the earliest two - word utterances taught to a retarded child be utterances reflecting relational functions of single word stage ("more biscuit", "big ball"). Intervention also includes expansion of child's utterances - grammatical form - and modeling the target sentence.

Makaton training focussed on these teaching skills. During the teaching sessions with children the student teachers selected words / concepts that would improve functional skills of the children. The stage based model of the Makaton Vocabulary helps (i) gradual expansion and differentiation of a student's linguistic experience (ii) maintaining a balance within each stage between nouns, verbs and other substantive and relational words, (iii) interactive partners (teachers) to adapt their discourse to the ability level of the students. If they know at which level a student is functioning, they are immediately aware of the kind of vocabulary with which the student is familiar (Grove and Walker 1990).

At the PPF session during Makaton training and subsequently while teaching children, the student teachers of experimental group were made aware
of the above features by the investigator. The experience of interacting with children at the level that was functionally and cognitively appropriate was new to the student teachers. The use of objects, pictures and activities to teach sentence structures produced the desired response from children with respect to receptive and expressive syntactic skills. While these teaching aids were also used by the control group student teachers, the effect was diluted in absence of the skills in them to modulate their own interactions to suit the developmental and functional needs of the children. The gain (M=3.66) in ability to develop syntax appears to be significantly higher due to this in student teachers of the experimental group (F-ratio=10.83 P<.003).

5.1.5 Effect of AAC Training on Student Teacher’s Ability to Develop Pragmatic Skills in Learners with Mental Handicaps.

Children with mental handicaps must be helped to practice and learn appropriate interactive communication skills that will enable them to function well in their particular environment. It is the retarded child’s ability to communicate and interact effectively that should be the primary goal of intervention and not merely the acquisition of specific, artificially isolated skills in grammar or morphology (Hedrick and Kemp 1984).

In order to foster pragmatically appropriate communication the teacher needs to arrange conditions so that there is a reason for children to use language. Many professionals have noted that mentally retarded children are better able to learn new words when they are presented within a meaningful experiential and natural language contexts (Spiegel 1983; Stevens 1976).

The teaching procedures recommended in the Makaton Vocabulary Language Programme ensures that the selected words are used within the framework of a conversational exchange. The goal of the programme is to develop functional use of speech, manual signs and graphic symbols, through encouraging students to express and interpret communicative needs in daily living. Through the formal and informal teaching processes (Walker 1987), the
students first imitate teacher's model and subsequently initiate the use of manual signs, graphic symbols and spoken words to express a range of pragmatic functions.

These guidelines in the Makaton language system ensure that the teacher practices the required techniques for development of pragmatics in handicapped children.

Practice of Makaton entailed that the student teachers of experimental group follow the guidelines of the programme. The regular language intervention strategies used in school focusses mainly on grammar and morphology development. hence the student teachers (while giving practice lessons) are not often required to give lessons that are aimed towards development of pragmatics. It is due to this fact that student teachers of experimental group had a higher gain (M=1.93) on skills for pragmatic development in children with mental handicaps as compared to control group student teachers (M=1.00, t=2.11, P<.000).

5.1.6. **Effectiveness of AAC System in Enhancing Language & Communication Skills in Learners with Severe to Moderate Mental Handicaps.**

In general, the language problems of children with mental handicaps seem linked to more pervasive deficiencies in cognition or general mental abilities. Specifically, retarded children characteristically display an abnormally concrete cognitive orientation that is particularly apparent in their use of language. Their language development seems to depend on the cognitive milestones of the late sensorimotor period (Finch - Williams 1984).

Many studies (Kahn 1975 ; Finch - Williams 1984) suggest that late sensorimotor cognitive skills appear necessary for language development in regarded as well as for those children who are developing normally. The implication is that efforts to teach language when underlying cognitive skills are absent will probably be unsuccessful.
Use of an AAC system, particularly one which utilizes total communication method, has potential advantages for development of language in children with mental handicaps. When information is presented through a speech and sign system, the input signal is altered. The visual input is typically produced at a slower rate than the speech signal. When speech is paired with visual signal it is generally of a longer duration (Shane et al 1982) and less complex than when a spoken communication is presented alone. This helps the mentally handicapped child to process the information more easily as the amount of "verbiage" s/he hears is both decreased and simplified.

The auditory trace of a spoken word is momentary, difficult to process and imitate. It is dynamic, cannot be held, is hard to shape, and provides no constant source of feedback (as is possible with signs and symbols). Although a sign is also a temporal dynamic signal, it can be held static as a model to imitate. Hands can be moulded and shaped into signs for more easily than sounds can be shaped into words. The signers see and feel themselves making signs in most cases. This helps in visual and kinesthetic feedback which is important for memory. Action as a trigger for memory is a familiar process. Bruner calls it 'enactive memory' and suggests that it is the earliest form of representation for young children for whom action and perception are intimately linked.

The feature of iconicity in signs used with Makaton ('house', 'table', 'book', 'car' etc.) provides a cue to learning of signs as labels for objects and events - a cue that is not available to same extent in spoken word. Besides, gestures appear to be a more primal avenue of communication than the spoken word (Bates et al 1979). According to Bonvillian (1983) both deaf and hearing children who are acquiring signs as a first language from their signing parents develop vocabularies earlier than babies who are learning to speak. Other studies (Daniloff & Shafer 1981; Wells 1981) observe spontaneous speech development as a consequence of sign training.
Several studies suggest that pairing signs with words (as is done in Makaton Programme) leads to transfer for learning and acquisition of spoken words (Bricker 1972, Penner and Williams 1982). According to Reid (1984) children who learned signs first subsequently found it easier to learn words.

The significant improvement in language and communication skills of children in experimental group (Phase 2) appears to be due to the factors discussed above. Use of AAC system, which adopts signs and symbols, provided a linguistic scaffolding for development of receptive and expressive language to these children. While the control group children also showed significant change (M=7.13) from pre to post test but when compared with the children in experimental group (M=33.80) the changes shown by the latter was more and statistically significant (t = 11.75, P<.000). It would be safe to assume that this significant gain by experimental group subjects was due to use of the AAC system.

5.1.7. Effect of AAC System on Development of Semantics in Learners with Severe to Moderate Mental Handicaps.

Among the strategies facilitating language acquisition by mentally handicapped children is the core vocabulary strategy. This strategy is based on theories of semantic relations (Bloom 1970). The retarded child / person is taught the meaning and the verbal symbol for a limited number for function words that are generally first acquired by the normal child. The function words are divided into relational functions (recurrence, nonexistence, disappearance, rejection, cessation, and existence) and substantive functions (agent, object, action, and possession).

Makaton, an open ended lexicon, is based around a core vocabulary which includes the words for relational (recurrence - 'more', non existence - 'no more' ; disappearance - 'go, gone' ; rejection - 'no' ; cessation - 'stop'. existence - 'there') and substantive (agent - 'mummy' ; object - 'ball' ; action - 'give' ; possession - 'my'.) functions in the first three stages.
Total communication strategy employed in Makaton helps in development receptive language skills. For many mentally handicapped children one overriding problem is processing the auditory information. Use of sign and / or symbol with speech alters the input modality to overcome this difficulty.

The Makaton teaching principles recommend signing of key words in a sentence. These signed words represent the meaningful or semantically relevant information in the sentence. This highlights the critical information, minimising the need to process those auditory inputs that may not be as relevant.

The concrete cognitive orientation of severe to moderately handicapped children contributes to a high proportion of nouns in their vocabulary. It is important that they be taught comprehension and use of words representing other parts of speech (Reed 1986). In this regard, certain verbs and adjectives may be good choices because many are relatively concrete. The Makaton Vocabulary contains a large number of such words. The children in the experimental group were exposed to them systematically from the beginning of training sessions.

Experiential activities have also been reported to have increased semantic skills (Reed 1986). The formal and informal teaching procedures recommended in the Makaton Programme ensure that concepts taught are understood and the client is helped to use them in “real life” opportunities.

The experimental group children were initially taught the selected words from Makaton Vocabulary through the use of speech and signs, and subsequently asked to use the words (By signing and / or speaking) to describe objects and events in their environment.

This functional approach, in Makaton Programme, to development of receptive and expressive language has contributed to a significantly higher gain (M=28.00) on semantics skills by experimental group subjects in comparison with that of subjects in the control group (M=5.80, t=9.43, P<.000).
5.1.8. Effect of AAC System on Development of Syntax in Learners with Severe to Moderate Mental Handicaps.

As mentioned earlier in Chapter 1 children with mental handicaps have significant problems in understanding certain syntactic constructions. As far as expressive syntax is concerned, this skill in retarded children is generally qualitatively comparable to that in normal children but quite different quantitatively (Coggins 1979).

Receptive syntax can be developed on the basis of normal development sequence. Some professionals consider appropriate intervention for receptive abilities to be a cornerstone of intervention for expressive skills (Goda 1969; Wheldall 1976).

Use of visual mode (manual signs) with speech in the Makaton Programme aids development of receptive syntax. Signing of key words ensures that the child understands the individual words in a sentence. During the teaching sessions receptive abilities are built up through showing models or pictures of the syntactical forms (eg. ‘boy is sleeping and boy is not sleeping’) while speaking and signing the key sentences.

When a child is put on a Makaton Programme, establishing comprehension skill precedes learning of corresponding expressive skills. From two - word expression (‘big ball’ ‘cat gone’) the child is encouraged to combine syntactic structures such as agent action object (‘boy drinks milk’) and action object locative (‘throw ball there’).

Use of augmentative modes by the teacher during classroom interaction provides the child the opportunity to participate and employ his/her newly learned expressive skills.

Effects of these unique features of the AAC system is visible in the performance of the experimental group subjects on syntactic skills. Their gain (M=3.80) on syntax from pre to post test condition is significantly higher than
that of the control group subjects who were not given this treatment (M=0.13, t=4.07 P<.000)

5.1.9 Effect of AAC System on Development of Pragmatics in learners with Severe to Moderate Mental Handicaps.

A mentally retarded child who has acquired new vocabulary and syntax abilities may still not be able to use these skills effectively for social interaction. It is important that language behaviour should be viewed not as a goal in and of itself but as a means for interacting with others. What is taught in language programmes must bear resemblance to the language of normal social discourse.

The Makaton Language Programme is based on the premise that communication occurs in an interactive, interpersonal context and that attempts to develop communication skills in the mentally handicapped persons should take this into account.

The goal of the Programme is to develop functional use of speech, manual signs and graphic symbols. The formal teaching takes place within the framework of conversational exchange. As soon as receptive abilities are built, the student is encouraged to use them in describing events, asking questions, acceptance - rejection, greetings etc.

In the experimental setting the subjects were taught the words from the Vocabulary and later asked to describe pictures using the words. Subsequently they were encouraged to label / describe objects and events in their immediate environment. Similarly when they were taught words such as 'milk' 'biscuit', 'bread', 'apple' etc., the teacher provided them the opportunity to name / sign these food items during meal time. Other activities that motivated the children to use the learned vocabulary spontaneously were narration of simple stories and action songs.

It is obvious that situations such as these were more reinforcing for learning new vocabulary and using them than traditional picture naming drill.
The significantly higher gain on pragmatic skills by experimental group (M=2.346, t=2.60, P<0.05) subjects reflects the value of AAC system for effective language intervention.

5.1.10. **Attitude of the Student Teachers towards AAC System for Development of Language & Communication in Learners with Severe to Moderate Mental Handicaps.**

The student teachers of experimental group were found to have a positive attitude towards AAC system, as a means for development of language and communication in learners with severe to moderate mental handicaps. The Reaction Scale, which was administered to the group included positive and negative statements on Makaton with respect to its usefulness in developing receptive and expressive language, its suitability as a teaching technique for children with mental retardation, usefulness of multi modal approach for interaction, recommended teaching procedures, and the need for interactors to be trained on the system.

The reaction of the student teachers was positive to all areas mentioned above. Normally people express positive reaction to an object or event when they feel it is of interest to them or it is useful in attaining their goal. The high scores (range 92-118) of the student teachers show a very favourable reaction towards AAC system and could be due to the reasons mentioned above.

5.1.11. **Correlation between Posttest and Reaction Scale Scores of Student Teachers in Experimental Group.**

As mentioned in Chapter 1 the use of AAC is comparatively new in India. Thus a large number of professionals are unaware of its usefulness. The review of literature did not reveal any evidence of AAC being systematically included in the B Ed (Special Education) courses in the country. As such, for the student teachers of the experimental group it was a new experience to be
trained on a system that employed multimodal approach to language intervention. The novelty of an item can also generate positive reaction towards itself.

A high correlation (0.70, P<.002) of their posttest scores with the scores on Reaction Scale suggests that the positive attitude of the student teachers is not merely due to the newness of AAC. Makaton provided them teaching techniques for language development, which were different from regular strategies, and which they found appropriate for children with severe to moderate mental handicaps. Their positive attitude seems to be due to the changes they found in their own language teaching abilities and the responses of the children during the intervention period.

5.2. Individual Performance

The discussion below features the performance on selected variables by subjects of experimental group from both phases of the study. Two cases from each phase have been included for this purpose.

5.2.1. Phase 1

A discussion on performances of subjects A and B are presented below.

1) Subject A was a 23 year old student teacher belonging to a middle class family of Mumbai.

As per the procedure described in Chapter III, the subject was to give a language lesson to a group of mentally handicapped children, before and after treatment. The investigator, along with another observer observed the subjects language teaching skills on TEBSLAT.
Comparison of group mean score and score of subject A at Pretest.

A comparison of group performance and the performance of subject A at pretest is presented in Fig 5.1. It can be seen that the subject's score (11.00) is almost equal to the group mean (11.06). This suggests that the subject had similar language teaching abilities as other student teachers in the experimental group.

The effect of Makaton training on general communication skill of the subject was considerable. Fig. 5.2. presents a comparison between pre and posttest scores on general communication skills of subject A.
Subject A’s Performance on Skills for General Communication

It can be seen from Fig 5.2 that subject A made significant improvement in general communication. ‘A’ was systematic in explaining the topic to be taught. Selection of topic was more appropriate for functioning level of the learners. Appropriate use was made of much non-verbal communication techniques as gestures, eye contact and facial expression.
Subject A’s Performance on Skills for Semantics Development in Learners.

Training in use of signs and/or symbols enabled the subject to teach the word/concept in different ways. Iconicity of signs - symbols helped in explaining the function or shape of the objects that the words represented. ‘A’ also used the stage-based approach in Makaton to introduce new vocabulary in simple sentences. These skills in ‘A’ promoted the development of semantics in learners. The significant change in ‘A’s abilities in this area can be seen in fig 5.3.

The effect of AAC training and use is also visible in subject ‘A’s skill for development of syntax in learners with mental handicaps.

Subject A’s Performance on Skills for Syntax Development in Learners
Fig 5.4. Shows that ‘A’ used familiar words to teach new sentence structures. The sentences were taught through appropriate use of objects and pictures. The procedure for formal and informal teaching in Makaton enabled the subject to use the sentences / words (being learned by the child) in a variety of contexts.

Subjects ‘A’ also improved on skills for development of pragmatics in learners with mental handicaps. But change from pre to post test was not as much in this area as it was in other areas of language development discussed above. Fig 5.5 presents a comparison of both pre and post test scores.

![Graph showing pre and post test scores](Fig. 5.5)

Performance of Subject A on Skills for Development of Pragmatics in Learners.

At pre test condition ‘A’ had encouraged learners for usage of language, and created situations for such usage but these strategies were inadequately used at that time. Subsequent to training on Makaton ‘A’ was able to use these techniques adequately and systematically.
The overall effect of the treatment on A’s ability to develop language and communication in learners with mental handicaps was visible at posttest. Fig 5.6 presents a comparison of the group mean and A’s score obtained on the posttest. It can be seen that A’s score (22) is only a little below that of the mean score (25.66) obtained by the group.

On Reaction Scale ‘A’s score (105) is higher than the group mean score (100.6). ‘A’ found the Makaton Vocabulary Language Programme a very effective communication system for children who have speech and language deficits. According to ‘A’ Makaton enabled the child to (i) understand language, (ii) express his/her own needs and wishes, and (iii) interact with peers and family members in a functional manner. ‘A’ reported a change in self in terms of teaching skills - a fact which is corroborated by the investigator’s own observation of ‘A’s lessons at pre and posttest conditions.

(2) Subject B was 26 years old and belonged to a middle class family living in Mumbai.
‘B’s language teaching behaviours as observed on TEBSLAT were comparable with other student teachers in the experimental group at pretest. Fig 5.7 compares B’s score on TEBSLAT with the mean score of the group.

![Graph showing comparison between group mean score and pretest score of subject B.]

**Y axis:** Numbers represent maximum attainable

**Comparison of Subject B’s score with group mean score at pretest.**

It can be seen from Fig 5.7 that there is only a small difference between the teaching abilities of ‘B’ and others in the group. B’s score (11.00) on TEBSLAT is almost the same as the group mean score (11.06).

The effect of AAC training was very pronounced on general communication skills subject B.
Comparison of Pre & Post test scores of subject B on general Communication Skills.

The subject used set induction prior to teaching by linking the topic to previous knowledge of the students. Communication was further improved by appropriate use of joint attention technique, body language, facial expression and gestures.

The subject gave sufficient examples to illustrate the topic under consideration. Application of these teaching techniques improved the subject's general communication skills as can be seen in Fig. 5.8.
Performance of Subject B on Skills for Semantics Development in Learners.

The subject’s score on skills for development of semantics improved from pre to post condition. But the change was not as much as one seen on general communication. However, AAC training ensured that subject B introduced new words, during language teaching, in simple sentences and phrases. This improvement on skills for semantics development in the subject is presented in Fig. 5.9 above.

Performance of Subject B on Skills for Development of Syntax in Learners.
Fig. 5.10 presents a comparison of subject ‘B’ s score on skills for development of syntax, at pre and post tests. As can be seen, Makaton training has been effective in developing these skills. During language lesson at post test ‘B’ was seen to make systematic use of familiar examples and words while introducing new sentence structure. Sentence structures were also taught with the help of pictures. These techniques enabled the learners to understand and acquire the syntactic aspect of language at a level which was functionally relevant to them.

![Graph](image)

**Fig. 5.11**

Performance of subject B on Skills for Development of Pragmatics in Learners.

Effect of AAC training on skills for development of pragmatics was almost as pervasive in subject B as it was on skill for general communication ‘B’ encouraged language usage in children by prompting and rewarding attempts by them to express themselves. Pictures were used during teaching session in order to elicit responses from the children in the form of picture description or picture talk. The improved posttest score on skills for pragmatics development as shown in Fig. 5.11 is due to the application of the above mentioned techniques by subject B.
The effect of AAC training on subject B’s ability to develop language and communication in handicapped children can be seen in Fig. 5.12. A comparison of B’s performance at post test with that of the group finds B’s score (26) slightly higher than the mean score (25.66) of the experimental group.

On Reaction Scale, Subject B’s score (93) was within the 4th quartile of the total score (120). This score, though less than the mean score (100.6) of the group, is indicative of ‘B’s positive inclination for Makaton as a suitable system for children with speech and language deficits.

*Qualitative changes in Subjects ‘A’ & ‘B’*

Besides observing the student teachers on TEBSLAT at the post experiment stage (when they had completed 10 sessions of language intervention with learners with severe to moderate mental handicaps), the investigator sought from them a feedback on the entire process of training and
use of Makaton Vocabulary Language Programme. This was done with the purpose of augmenting their response on the Reaction Scale.

A brief report of the feedback received from the selected subjects is given below.

(i) Makaton Training - The training on Makaton was given in the form of a workshop that required active participation from the student teachers throughout. While subject A enjoyed the process, Subject ‘B’ was inhibited and shy initially in using the signs. This is a reaction of many people who are exposed to signing for the first time. Signing requires an overt, manual and physical communication. Investigators' own experience of conducting Makaton training has been that such people get over their inhibition as soon as they see others participating in the exercise. ‘B’ also reported of feeling comfortable after seeing others in the group learning to sign and draw symbols.

According to both ‘A’ & ‘B’ the Peer Practice Feedback during the training was very useful because it monitored their level of competence in the use of total communication modes, and also prepared them for using the Makaton teaching method with children.

(ii) Teaching Sessions - Both ‘A’ & ‘B’ reported a feeling of anxiety and fear during the initial sessions of using the AAC system with learners with severe to moderate mental handicaps. Their anxiety was firstly because they were not sure if they would be able to use signs and symbols competently, and secondly because they doubted if the AAC system would actually be helpful to the children. This uncertainty is common human feeling when individuals are asked to adopt a new method or system of working.

The investigator’s presence during the teaching sessions provided to the subjects the required support for using the augmentative modes competently with children. The subjects’ concern that the children might not be able to comprehend or produce the signs was soon put to rest by seeing their positive response to the training. The subjects reported that in the remaining
teaching session their focus was on the content, teaching methods and the progress of children.

(iii) Reaction of children - As reported above the reaction of children towards use of speech with augmentative modes was different from what was expected by subjects 'A' and 'B'. The children with severe to moderate mental handicaps found the combined use of signs and / or symbols with speech very interesting and easy to comprehend. Additionally, for a child with little or no speech it was easier to express himself / herself by signing or pointing to a symbol. The student teachers found that the children had become active participants in the teaching - learning process.

(iv) Change in self - Both subjects reported a significant change with respect to planning need - based training programmes, and viewing a handicapped child as a significant partner in a communication dyad. Through the use of AAC system they were able to teach a large number of functionally relevant words to children. Since the children could now express themselves with signs / symbols, the student teachers could understand their needs easily, and hence related with them better.

5.2.2. Phase 2

A discussion on performances of subjects X and Y from Phase 2 of the study is presented below.

1) Subject ‘X’ was a 6 years old child with Down’s Syndrome, coming from a middle class home. ‘X’ had severe mental retardation (IQ=30) with delayed development in speech and language. ‘X’ had difficulty in both comprehension and expression of language ‘X’ also had a short attention span and could be distracted easily.
Comparison of subject ‘X’ score with group mean score at pre test.

From Fig. 5.13 it can be seen that due to severe mental retardation (mental age about 2 years) and communication difficulties, ‘X’ performance (score =15) at pre test was quite below the group mean score (38.2). During the test it was found that ‘X’ had poor concept of words and could not identify many items of daily use when shown objects and pictures representing them.

The focus of intervention for subject ‘X’ was to teach words of functional relevance so that the subject could identify them when requested and express them when needed.
Fig 5.14
Comparision of subject ‘X’s score on receptive language at pre and post test.

As result of using AAC system the child gained substantially on acquisition of receptive language, as can be seen from Fig. 5.14. The use of augmentative modes enabled the subject to process the auditory information provided by the teacher. Processing of words was apparently helped by the fact that the subject now paid more attention to what was being expressed. The combined mode of speech and manual signs presented an audio - visual input that improved attention on task. There was a significant increase in X’s score (7) on receptive language from pretest to posttest (score =27).
Comparison of pre and post test scores of subject X on expressive language.

Once comprehension of language built up, X improved on expressive skills. Where at pretest the child had a score of 2, the score at post test was 18 on expressive language as can be seen from Fig 5.15. The child mainly used manual signs to express self, but by the end of the treatment period had learnt to name a few objects / pictures verbally too.

While the emphasis during treatment was to teach functional vocabulary to subject X and thereby develop semantics, the effect of the training was visible in areas of syntax and pragmatics also. This was possible because the student teacher working with ‘X’ followed the recommended teaching method in Makaton, and linked the introduced vocabulary into simple phrases and sentences right from the beginning. Nouns were combined with verbs and adjectives to make communication meaningful.
Comparision of pre & post test score of subject X on Syntactic Skills.

From Fig. 5.16 it can be seen that ‘X’ has gained on syntactic skills though the gains nominal. The improvement was seen mainly in the area of comprehending verbal instruction.

Comparison of pre & post test scores of subject X on pragmatics skills.

From Fig. 5.17 it can be inferred that the child’s gain in pragmatics skill was also nominal. However during post test the child spontaneously expressed the functions of objects / toys when these were presented.
From the trend visible in Fig 5.16 and 5.17 it can be deduced that if the treatment had continued for a longer period, the subject would have shown significant improvements in syntax and pragmatics skills as well.

![Graph showing comparison of group mean score with score of subject X at post test.](image)

**Fig. 5.18**

Comparison of group mean score with score of subject X at post test.

However the use of AAC system was effective in developing language and communication skills in subjects ‘X’ as can be seen in Fig. 5.18. Though ‘X’ score (43) is much lower than group mean score (72.00) the subject has shown a substantial improvement from pretest score (16).

2) Subject ‘y’ was a 8 year old child with microcephaly, belonging low middle class family, ‘y’ had moderate mental retardation (IQ=35) and significant delay in language development. The subject also manifested inappropriate behaviours such as aggression and screaming.
A comparison of ‘y’ score (19) with group mean score (38.2) is presented in Fig. 5.19. It is clear that the subject’s performance on pretest was below the average performance of the experimental group. ‘Y’ had a pervasive deficit in all the three areas - semantics, syntax and pragmatics-of language development. The child was poor in comprehension and expression.

The treatment aimed to gradually build functional vocabulary and through it to teach linguistic structures and pragmatic functions.
Fig. 5.20
Comparison of Pre and Post test scores of subject Y on receptive language skills

Fig. 5.20 shows a significant improvement by ‘Y’ on task of identification of common objects and pictures. From the pretest score of 12 the subject improved own performance so as to achieve the maximum score (30) on this task at the post test. The iconicity and translucence in manual signs apparently helped the subject in processing and recall of vocabulary that was taught.

Fig. 5.21
Comparison of pre and post test scores of subject Y on expressive language skill.
The use of AAC system improved the expressive language skills of subject 'Y' as can be seen in Fig. 5.21. The subject had poor verbal ability and in the absence of an augmentative system, had not learnt any alternative form of communication. The use of Makaton was very effective in this case. The signs and symbols therein provided the required support in expression. As such the subject improved the pretest score of 3 to 23 at the post test. With use of manual signs the pressure for verbal expression reduced, as such the subject was more motivated to learn. The impact of this self-direction was seen when the subject was able to name many objects verbally.

Syntactic structures were taught to the child through linking nouns with verbs, adjectives and locatives.

From Fig. 5.22 it can be seen that the subject improved own syntax skill during treatment. At pretest condition 'Y' was found to be poor at comprehension of verbal instruction and commands. After treatment the performance of the subject showed a small but significant improvement in this area.

Similarly the effect of training on AAC was seen on child's pragmatics skills. Comparison of pre and posttest score of subject Y on pragmatics skills.
Once the pressure of speaking was reduced the child was able to express self spontaneously as was seen when made available during post test. The subject was able to describe pictures or functions of objects through a combined use of speech and signs. This improvement can be seen in Fig. 5.23.
Fig. 5.24 presents a comparison of subject ‘Y’ performance with that of group performance at post test level. It is evident that use of AAC system was effective in improving the language and communication skills of ‘Y’ as can be seen from the individual score (58) which is not much below the group mean score of 72.00.

*Qualitative changes in Subjects ‘X’ & ‘Y’.*

Besides assessing the subjects of experimental group on CLAT at the pre and post test, the investigator also observed their performance while supervising the student teachers assigned to work with them. The observation was made with a view to note any other effect of Makaton training beyond those that were measured on CLAT.
Some of these effects on subjects X and Y are mentioned below.

(i) Motivation:

Learning language through AAC methods was a new experience for the learners. Student teachers working with X and Y reported that the children were highly motivated to learn. This was also observed by the investigator when during the later sessions the subjects wanted the lessons to continue beyond the stipulated time period.

(ii) Interaction:

As the subjects acquired alternative modes of expression, their interactions with the teacher and peers within the classroom and outside improved significantly. They could express their needs, desires, describe events that had taken place in immediate past.

(iii) Behaviour:

An overall reduction in such behaviours that impede learning was evidenced in the subjects. There can be many causes for maladaptive behaviours or behaviour deficits. Since this study does not focus on them, the investigator cannot claim that Makaton can remedy behaviour problems. But by the end of the treatment, it was observed that subject X who initially could not attend to task on hand for more than 5-10 minutes, was able to sit through an entire teaching session of 30 minutes. Similarly, maladaptive behaviours of Y reduced when the student teacher taught ‘Y’ to manually sign for the objects that the subject needed instead of communicating through aggression and crying. As the sessions progressed Y found it easier and more rewarding to express needs & wishes through using Makaton rather than through temper tantrums.

Use of Makaton Vocabulary Language Programme appears to bring about an overall improvement in experimental group learners, besides developing their language & communication.