

VERBAL AUDITORY TRAINING MATERIAL IN TAMIL

Reg. NO.M9704

**Independent Project submitted as part fulfilment for the first
year M.Sc, (Speech and Hearing), Mysore.**

All India Institute of Speech and Hearing

Mysore 570006

1998

पत्रं पुष्पं फलं तोयं यो मे भक्त्या प्रयच्छति
तदहं भक्त्युपहृतमश्नामि प्रयतात्मनः।

DEDICATED TO THE LORD WITH DEVOTION

CERTIFICATE

This is to certify that this Independent Project entitled *VERBAL AUDITORY TRAINING MATERIAL IN TAMIL* is the bonafide work in part fulfilment for the degree of Master of Science (Speech and Hearing) of the student with Register No.M9704

Mysore

May, 1998



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CERTIFICATE

This is to certify that this Independent Project entitled
VERBAL AUDITORY TRAINING MATERIAL IN TAMIL
has been prepared under my supervision and guidance.

Mysore

May, 1998

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DECLARATION

This Independent Project entitled *VERBAL AUDITORY TRAINING MATERIAL IN TAMIL* is the result of my own study under the guidance of Dr. Asha Yathiraj, Reader in Audiology, Department of Audiology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier at any T Jniversity for any other diploma or degree.

Mysore

May, 1998

Reg. NO.M9704

ACKNOWLEDGEMENT

I express sincere gratitude to **Dr.Asha Yathiraj**, Reader, Department of Audiology, All India Institute of Speech and Hearing, for all the pains she had taken in guiding me with this project amidst her busy schedule.

I would like to thank **Dr.(Miss)S. Nikatn**, Director, All India Institute of Speech and Hearing, Mysore for permitting me to carry out this project.

Amma and Bapa - should I thank you for all your love, affection and encouragement?

Akka - you are such a loving and caring sister. I'm proud of you and you are my greatest possession.

Vandana, Radhika, Sanyu, Hia and Kamlesh - It's rare to find friends like you. The thought that you are always there for me increases my strength and makes me cross hurdles with ease.

Aji, kaka, kaki and athya - what I'm today is because of your blessings and your silent prayers.

KOOLKATS - Ruchi, Sarmi, Neetu, Pallu, Viji, Chamu and Reena. Those three years which I spent with you all is the most memorable ones. Missing you all.

Chandan and Gokul - Thank you for rendering your helping hands when I actually needed them the most.

Sharmi, Shree, Yamuna and Then I'm thankful to God for giving me such good friends.

Thulasi aiji and aunties - Thank you for the love you have shown towards me for the past 3 years.

Aunty, How can I forget your motherly hugs and your imlichutney and parothas which I've relished at your house.

Mukund - I like the way you go on and on with your stories when I'm exhausted after all my work. Don't you ever feel tired of speaking ?? Thank you for all the pains you have taken to proof read my material.

Thanks to all my friends who have brilliant ideas and suggestions for developing this manual. *Special* thanks to **Milind, Muthu and Jayakumar**.

My special regards to **Ayee, Baba, Mamas and N.Kaka**.

My sincere thanks to **Rajalakshmi** akka and **Ganeshiah** for shaping my project.

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INTRODUCTION

Communication is a social process used for the flow of information, circulation of knowledge and ideas and to achieve shared meanings. Man's need for communication with his fellowmen is possibly the greatest need and the fulfillment of his other needs and desires is largely dependent upon or at least greatly facilitated by his ability to satisfy his basic one (Tracy, 1970).

Without the ability to communicate the individual is sentenced to little more than animal existence. Spoken language is one of the means of communication and one which only man has achieved.

Auditory sense is the most suitable perceptual modality by which a child learns speech (Pollack, Stewart, Downs, 1964). Problems encountered by individuals suffering from impaired hearing are many and varied. Sanders (1971) considers breakdown in the process of communication as the core problem. Other problem includes difficulties with emotional and social behaviours, educational progress or in vocational placement.

Earlier, educators of the deaf believed that a hearing-impaired child had to learn most of his communication through his eyes and hands. Later Pollack (1940) found that 95% of the children labelled as deaf had some usable hearing, some less some more but very often they had remnants of hearing as if the gate was slightly open. The hearing-impaired can be taught through this narrow opening.

Helping the hearing-impaired to use his residual hearing, no matter how little it might be and learn to interpret those sounds that surround him in his environment is an integral part of training.

Seeing a blurred shadow is better for a blind person than seeing nothing at all. Similarly, although a hearing-impaired individual does not hear like the normals, he can learn to understand some sounds no matter how imperfectly he perceives them.

WHAT IS AUDITORY TRAINING

Several authors have described about auditory training. Carhart (1960), Oyer (1966) and Ross (1972) reported that the auditory training is a systematic training of an individuals'

residual hearing for the improvement of auditory abilities. Goldstein (1939) viewed auditory training as involving the stimulation or education of the hearing mechanism and its associated sense organs by sound vibration as applied either by voice or by sonorous instrument. It includes differentiation of pitch, rhythm, accent volume and inflection as well as analysis and synthesis of speech sounds presented as tactile impressions. His definition goes beyond the auditory input level to include the perception and integration of speech.

The ultimate aim of auditory training is to achieve maximum communication potential by developing the auditory sensory channel to its fullest. Although the primary goal of auditory training is to maximize communication abilities, it is important to point out that achieving this basic goal can result in other achievements including acquisition of more proficient speech and language skills and successful psychosocial adjustments (Schow and Nerbonne, 1989).

WHO NEEDS AUDITORY TRAINING

Early application of auditory training were directed almost exclusively towards individuals with severe to profound hearing loss.

In recent times, however use of auditory training has been expanded, to include those with less severe impairments who wear or do not wear a hearing aid. Equally significant has been the inclusion of auditory training activities in the management hard-of-hearing adults and children (Schow and Nerbonne, 1989).

Thus, auditory training has become more widespread, in part as a result of significant improvements in hearing aids and the development of other amplification systems for the hearing-impaired, which has made it possible for more persons to use their hearing for communication effectively.

Moog (1996) noted that auditory training had to be given to cochlear implant recipients where both non-speech and speech auditory signals have to be presented to establish recognition of sounds.

Such training is not solely confined to those who suffer hearing handicap. Winitz and Priester (1967) recommended discrimination training prior to production during establishment phase of articulation treatment continuum.

It is also vital for those who erroneously perceive sound around them. (Oyer, 1966). Thus what was once perceived as a procedure to be used only with deaf children has become a more widely utilized aspect of aural rehabilitation.

Carhart (1966) explained the necessity of auditory training where he says that the need is increased if the loss has been present for a long time and if the discrimination ability is poor.

Auditory training for an individual will vary depending upon the degree and severity of loss, nature of speech signal, age of the individual and his ability to synthesize language codes and his speech identification ability (Boothroyd, 1976).

Davis and Silverman (1970) suggested that an auditory training program can be individualized, based on the audiometric information plus the results of ingenious analysis of the therapist. This will show which auditory cues are available to the listener. This will further enable the therapist know the cues that can be made available

through training and those which are not likely to be, available at all

AIM OF THIS PROJECT

Aim of this study is to develop a verbal auditory training manual for the hearing-impaired.

This manual will be useful for those Tamil speaking, hearing-impaired children whose language level is less than six years.

NEED FOR THE STUDY

Any manual giving guidelines for therapy will be useful for the professionals during therapy.

Huggins (1971) said, We live in a world of sound. We are surrounded by all kinds of sounds. We are regulated and also interrupted by sounds. Hearing-Impaired individual lives within a world of sounds but are not fully part of the world. In this sense they are outsiders in a hearing world". This tells us about the importance of hearing. So hearing-impaired should be trained for listening. A manual on

auditory training would help train the hearing-impaired listeners.

This manual has been developed exclusively for the hearing-impaired individual who need intensive auditory training. The hearing-impaired, even after they are fitted with a device, do not always hear adequately. Training has to be given to them to improve the perception of auditory stimulus.

It is important to select speech sounds for auditory training based on the acoustic characteristics of speech. The verbal material in this manual has been developed based on this aspect. Special attention has been given to the frequency and durational aspects of speech sounds. This ready-made material will be useful for speech therapists as it is time consuming to develop material based on the acoustics of speech. In addition to the speech and language professionals, teachers of the deaf and special educators are also involved in training the hearing-impaired. This manual will also be of immense help to them.

REVIEW OF LITERATURE

Development and use of speech as a major component of human communication is primarily dependent upon the possession of normal hearing (Sanders, 1971).

Effects of Hearing Loss

Hearing loss obviously affects the language acquisition process and conjointly the educational achievement and emotional development of the child at any stage and in different ways (Menyuk, 1977). It also interferes with the development of speech perception categories. Auditory feedback loop is essential for self-monitoring speech production which includes intelligible speech. Children with congenital or early hearing loss have difficulty developing this feedback mechanism. Therefore speech production is also affected in the hearing-impaired (Maxon and Brackett, 1992).

Berg (1970) considered auditory training as one of the highly promising aspects of hearing and speech management for hard-of-hearing individuals.

Ling (1986) recommended the term auditory learning rather than auditory training. This term was referred because formal training may make the child conscious and make him perceive the activity as an exercise to satisfy others (external) demands whereas they should actually develop the activities as far as possible unconsciously as they refine their perceptions of acoustic events naturally surrounding them (meet an internal drive). The essential feature of auditory learning is learning through listening and not just learning to listen.

Who can benefit with auditory training

Ling (1984) described a number of factors that can contribute to a child's capacity to learn auditorily which includes -

- Early and accurate diagnosis of hearing loss
- Optimal selection of an amplification system.
- Early full time use of the hearing aid.
- Type, degree and etiology of the hearing loss
- Quality and quantity of auditory stimulation.
- Intact capacity to learn
- Team work among parents and rehabilitationist.

Cole and Gregory (1986) conducted a study to know the attitudes of the educators of the hearing-impaired about the population for which auditory approach will be suitable. 13 recognised authorities in the field of education of the hearing-impaired showed willingness to participate in this study. The respondents agreed with the following :

- Most children with impaired hearing can benefit from auditory work but the amount of dependence may vary.
- Best results can be achieved with children whose training starts early (as neonates, infants and preschoolers).
- In addition to early start the child needs sufficient intelligence and parent commitment and involvement for the best results.
- The decision about suitability should not be made purely on the basis of degree of hearing loss. Even children with profound hearing loss should be given a chance of learning to listen.

Hopkins and Hudgins (1953) aimed at determining the relationship between the degree of hearing loss and response to auditory training. They found a wide variation among hearing impaired on their response to training. The

variability noted was not meaningfully related to severity of hearing loss or to the extent of frequency range involved.

Luteman and Chasin (1981) did a study to determine if children with a high Deafness . Management Quotient (DMQ) in pre-school years continue in an auditory oral educational program. DMQ is a screening program which consists of 5 components: (1) Hearing loss (2) Brain damage (3) Xntellectual factors (4) Social-economic status (5) Family status. DMQ was administered to 31 subjects who had been attending either an aural-oral nursery program or a total communication program. It was found that children with high DMQ scores were in an aural-oral program. Also it was found that the DMQ did not correlate with the degree of hearing loss. In this study, it was found that there was clinical discrepancy (< 10%) between a child's DMQ assigned during the preschool years and his/her actual performance several years later. Thus, it can be concluded that high DMQ score indicates that the child is a good candidate for an oral-aural approach and he will benefit with auditory training irrespective of his hearing level.

Aims of Auditory Training

Hudgins(1954) and Watson (1964) identified 5 major objectives of auditory training. They are

- Greater understanding of the spoken language of others.
- More rapid development of the use of language and its extension in the direction of normality.
- Better speech in terms of voice quality, articulation, rhythm
- Higher attainments in scholastic subjects especially in basic skills.
- Better social and emotional adjustment through providing direct link with other people and the world at large.

Different approaches to auditory training

Carhart approach : Carhart (1947) was one of the first audiologists to describe a systematic program of auditory training for children. His theory of auditory training comprises four major stages.

1. Development of awareness of sound. Goal of this stage is to make the child recognize sounds related to daily activities.

2. Development of gross sound discrimination. Training at this stage includes discrimination of several parameters of sounds such as

intensity [loud (vs) soft]

duration [long (vs) short]

frequency [high (vs) low]

Once this gross discrimination is achieved, finer discriminations along each parameter should be trained.

3. Development of broad discriminations among simple speech patterns.

4. Development of finer discrimination of speech.

Here the child is taught to make all of the discriminations among speech sounds that are possible within the limits imposed by hearing-impairment.

Verbo-tonal approach : Guberina (1964) proposed verbo-tonal approach of auditory training. This method is based on the theory that amplification of the frequencies at which hearing-impairment is greatest results in added distortion of auditory signals. This approach advocates the use of a special auditory training unit (SUVAG II). This unit is composed of banks of filters that can deliver selected bands of frequencies from 20-20,000 Hz. SUVAG II is adjusted to

pass only the optimal field of hearing, determined for each child individually. In early stages of verbo-tonal training, non-sense syllables or single words are used. Later sentences are taken up. This method confines auditory training to perception.

Cognitive auditory approach

Grammatico (1975) proposed an auditory approach where she considered auditory training as a global approach. For the development of children's listening skills she considered the following as key factors.

- Sound awareness
- Discrimination
- Intonational patterns (voice melody)
- Auditory memory, and
- Localization of sound.

These skills are similar to those described by other authors, but the purpose given by this author, for their development are unique. As she viewed audition as the basis for development of cognitive skills, materials and procedures employed are designed to foster thinking as well as listening skills. Here, children are encouraged to classify or group

sounds, to determine similarities and differences and to generalize information from one situation to another.

Traditional approach

Hirsh (1966) has described four levels of audition that contribute to the perception of conversational speech. The four levels are detection, discrimination, identification and comprehension. Only difference between this approach and Carhart's approach is that non-speech sounds were not considered in this approach as Ling believed that there are marked differences in the way speech and non-speech sounds are processed and hence no benefits to speech discrimination can be expected from training with non-speech sounds.

Erber (1982) gave a generalized approach to auditory training for children based on a careful analysis of a child's auditory perceptual abilities through the use of the Glendonold Auditory Screening Procedure (GASP). He constructed a stimulus response matrix with four response patterns and six stimuli patterns which are as follows :

Response patterns : Detection
Discrimination
Identification
Comprehension

Detection is the basic process of determining whether sound is present/absent. Discrimination is the level where the child has to identify whether two stimuli are same/different. Identification is the next level of auditory processing where the child has to describe the stimulus exactly by repeating/by pointing. Comprehension is the most complicated auditory ability where the child has to understand the meaning of the acoustic messages, usually by reference to his or her knowledge of language.

The above activities are carried out using six stimuli patterns which are as follows:

- Speech elements
- Syllables
- Words
- Phrases
- Sentences and
- Connected speech

He considered mastery of a lower level as a pre-requisite for successful performance at the higher levels.

Speech Tracking

DeFilippo and Scott (1978) developed a method called "speech tracking" to provide communication utilizing a connected discourse. This tracking method can be applied

in aural rehabilitation. The hearing-impaired individuals' task is to repeat verbatim what was read by the clinician. The clinician can use various strategies to help the individual achieve 100% recognition. A few of the strategies which can be used are repeating the word missed, repeating the words heard correctly and using a synonym for the word missed. The responses are scored by calculating the words per minute.

Windle and Stout (1984) developed an approach to successfully begin listening for both hearing aid and cochlear implant users. Outline of their approach is as follows:

A. Sound awareness sub-skills

Initial use of instrument and sound awareness sub-skills which includes awareness of both environmental sound and speech.

B. Phonetic listening sub-skill

1. Vocal duration and sound patterns discrimination.
2. Rate of speech discrimination and also vocal intensity and frequency discrimination.
3. Vowel discrimination and identification.
4. Consonant discrimination and identification.

C. Auditory comprehensive subskills

1. Stereo type praxis, environmental sounds, voice quality, familiar sentences.
2. Auditory memory
3. Critical elements and thinking.

General Guidelines for auditory training

Murray (1995) suggested the following general guidelines for speech perception training.

- a) Training stimuli should become more challenging to discriminate over time. In initial training, discrimination should be between sounds that differ in more number of features later they should be trained to discriminate between sounds that differ only in one feature.
- b) A variety of talkers should speak the training stimuli.

Patients should be made to realize that the same sounds/words can be acoustically different when repeated/when spoken by different talkers. This realization will allow

them to generalize what they learn in therapy to a variety of talkers.

c. Many training items should be presented during a relatively short period of time.

This maintains patients interest leading to fast learning.

d. Non-speech training stimuli should be used only with young patients who are pre-lingually deaf and this training should be only for a short period.

e. Speech perception exercises can include both phonetic and phrase/sentence level stimuli.

f. Training should progress from a closed set to an open set response modes.

g. Formal training should become a part of daily routine.

h. Formal training objective should be pursued informally throughout the day.

i) Training activities should be interesting and engaging.

Wolfe (1951) gave general guidelines for auditory training where he specified some of the useful parts of learning theory that are applicable to this training. They are

- i) Distribution of practice should be suitable for the task to be learnt.
- ii) Active participation be the learner.
- iii) Practice material should be varied.
- iv) Accurate performance need to be maintained to evaluate progress and effect of training.
- v) Provision for immediate knowledge should be given to the learner regarding their performance.

Test material used to evaluate the auditory capability of an individual can be used for training purposes. Ideas for therapy can be formulated from the sub-sections of Minimal Auditory Capabilities (MAC) test battery which is used to evaluate the hearing abilities of persons with hearing-impairment.

Owens et al. (1985) gave the MAC test battery which has the following sub-sections :

- 1) Identification of accent: The patient is required to indicate the stressed word. Its 20 item prosodic test contains one accented or stressed word. This is a four alternative closed response test where one of the word is stressed.
- .2) Identification of pitch change : This is also a 20 item test of prosody in which patients are required to determine if the phrase has a rising or falling inflection, and whether the phrase is a statement or a question.
- 3) Discrimination between voice and noise : This contains 40 items 2 choice test. It contains sentences spoken by 5 different voices (both males and females) and four different noise spectra in temporal intensity envelopes derived from the same spoken sentences.
- 4) Identification of vowel : 15 vowels and diphthongs are presented with a four alternative multiple choice set. Each phoneme occurs four times in CVC context, which results in a total of 60 items. The patient's task is repetition.
- 5) Discrimination between spondees : It has 20 item 2 choice test in which 4 spondee words are used in contrasting pairs. The patient is instructed to determine and state whether the two words of the pair are same/different.

- 6) Spondee Recognition : Open "response spondee list in which the patients are required to listen and repeat the spoken word.
- 7) Everyday sentence : 4 lists of CID (CHABA) everyday sentences are combined resulting in a list of 40 sentences with 200 Key words. Patient is instructed to listen and to repeat the sentence as much as possible.
- 8) Initial consonant recognition : Consonants are represented in a 4 alternative multiple choice. Patient is asked to repeat the words.
- 9) Words in context test : This test consists of 50 sentences from the revised high context items of speech perception in noise (SPIN). Last word of a sentence is highly predictable from the words preceding it. The patient has to listen to the whole sentence and repeat only the final word.
- 10) Everyday sound list : 15 familiar sounds are presented in an open response format. Patients are asked to identify the sounds.
- 11) Monosyllable word test : NU-6 words were taken to test one syllable open response word recognition. Patients have to repeat the word.
- 12) 43 choice spondee test : 20 items in 4 alternative choice, closed response test. Patient is required to

listen to the word and make selection from a set of 4 words.

13) Final consonant test : 52 test items in a 4 alternative closed set.

Items in this, are not arranged in the order of difficulty.

2. Ideas from the sub-tests of IOWA Test Battery can also be used in an auditory training program.

IOWA test battery was developed by Tyler, Tye-Murray (1986). The sub-tests of this test are as follows:

1. Speech detection test : To make a person aware of the presence of speech.
2. MAC item noise/voice test. This is similar to the subsection noise/voice test of MAC test battery.
3. Accent Test : The patient has to identify the stressed word in a sentence.
4. Sentence test with context.
5. Environmental sounds test
6. Minimal pairs in quiet
7. Minimal pairs in noise
8. IOWA NU 6 Test. Identification of monosyllabic words
9. Vowel test
10. MAC item 12 spondee four choice in quiet.

11. MAC item 12 spondee four choice in noise
 12. Medial consonant test.
 13. Sentence list without context.
3. Speech Pattern Contrast Test (SPAC)

This test was given by Boothroyd (1985).

SPAC is a forced choice procedure to measure perception of phonologically significant contrast.

The specific contrasts that are investigated are segmental contrasts.

- Location of stress
- Direction of pitch change
- Male/female speaker
- Pitch variation
- Vowel height
- Vowel place
- Initial consonant voicing
- Final consonant voicing
- Initial consonant continuance
- Final consonant continuance
- Initial consonant place
- Final consonant place.

According to Boothroyd, these effectiveness of auditory training sub-sections have to be administered in three modes, auditory alone, visual alone, auditory plus visual.

The first four sub-tests can be taken up for auditory training.

Effectiveness of Auditory Training

(i) Effect on speech perception

Itard (1821) was the first researcher who discovered that regular exposure to loud sounds improved speech perception in hearing impaired children. He found that training the hearing-impaired with musical tones, drum and bell resulted in improving vowel discrimination and very little improvement was observed in terms of consonant discrimination.

Studies by Alos (1972) Walden et al. (1981) Rubenstein and Boothroyd (1987) have found that formal auditory training results in statistically significant improvement in speech recognition performance.

ii) Effect on speech production

McCroskey (1967) reported the effects of early auditory training for young infants on speech production. Comparisons of production of the phoneme /a/ through sonographic evidence, indicated that children entering the nursery school who had been through a training program as infants had tracings that more closely resembled those of normal hearing children than did the tracings of those without infant exposure to amplified sound.

iii) Effect on speech production and perception

There are several studies to show that after a brief period of auditory training, there is improvement both in terms of speech production and perception.

Hudgins (1953) did an experimental study to find the effectiveness of auditory training. He took profoundly deaf children in both control and experimental groups. Auditory training was given to experimental group for 2 years. Results indicated that constant use of powerful high fidelity hearing aid and auditory hearing resulted in improvements in speech perception and to a lesser degree speech intelligibility.

Kelly (1953) utilized listening drills in communication training for hard of hearing children. He noted that speech perception scores typically improved about 20% following a six week remedial program which includes daily auditory training.

The children also improved in speech intelligibility which might be attributed to a combination of transfer effect from perception to production and/or to practise in speaking during remedial program.

Study by Wedenberg (1954) has also found that even profoundly hearing-impaired children could benefit from auditory training. He taught 3 profoundly hearing-impaired children beginning at one-and-a-half to two-and-a-half years of age to perceive auditorily dynamic, temporal and certain phonetic features of speech. All these 3 children developed spontaneous speech and a listening attitude after many months of training.

Research by Larson (1970) confirms the hypothesis that speech perception and production improves with auditory training- He conducted auditory training for a 9 year old boy having a relatively flat binaural hearing impairment of 92 dB. The instruction was conducted during a short period

on a daily basis of 10 weeks. During the first 4 weeks, the subjects demonstrated varying improvement in discrimination between members of many pairs of isolated consonants and vowels.

During 6 additional weeks, they similarly improved in the auditory recognition of selected words. In addition, pre and post spectrographic comparison of training words uttered by the subject showed corresponding improvements in accuracy of speech production.

After a short period of auditory training, areas of improvement were stated to be language understanding, vocabulary level and voice production (Imai and Hoshi, 1966).

Jerger and Speaks (1968) reported that there was positive effects of auditory training on synthetic sentence identification (SSI) by hearing-impaired listeners. It was found that latency of response decreased as a function of training and this improvement in listeners decision making processes is relevant to many practical listening situations.

The effects of auditory training on frequency discrimination was illustrated by Gengel (1969). He provided

three sessions of training for 23 deaf children and for 23 hard of hearing impaired children. Initially the DLF was determined for 250 and 500 Hz by the method of constant stimuli. During trained paired frequencies were presented to each child individually with the difference between standard and comparison stimuli decreasing over the test period. Training had an effect on the DLF children in the experimental group showed decrease in DLF for both the frequencies such that after the 3rd session, median value was half of the initial value. Amount of hearing loss was found to be correlated with the size of the DLF.

Bode and Oyer (1970) conducted a study to find the effectiveness of four approaches to train the hearing impaired. Four approaches which were evaluated in this study were two listening conditions and response conditions. 32 adults with SN loss participated in the short-term auditory training program in two listening conditions (S/N varied, S/N ratio constant) and in two response formats (open set and closed set). Results indicated that the two listening conditions were equally effective. Similarly the two types of training material brought about equivalent increase in overall speech discrimination.

Difcarlo (1958) found the effects of auditory training based on delayed auditory feedback (DAF). He reasoned that if severely hard of hearing children were using auditory cues, as a result of auditory training their speech production would be disrupted by DAF.

Amount of the disruption could serve as a measure of the effect of auditory training. More the child depends upon the speech sounds as auditory cues, then more disruption the patient would show.

Hutchinson (1990) described and evaluated an auditory training program which used an analytic distinctive feature approach. The goal of the program was to improve consonant recognition in single syllable words. At the basic level, participants were required to make same/different judgements successive, more complex tasks like short term memory and long term memory skills and the final task required closed set identification. Two hundred exercises were given for the three auditory features : voicing, nasality and sibilancy. Results showed that the subjects improved on tests given before and after practice within each task level. Although no significant change in performance was measured (pre course and post-course) on the phonemic identification test.

Ling and Doehring (1971) used programmed instruction in auditory vowel discrimination to eight children. All children showed steady increase in the rate of learning over four series of discrimination. However there was no transfer of the learned vowel discrimination to a word-recognition task.

Thus it can be seen from the review of literature that hearing impaired, a multifaceted condition usually results in difficulty with language and communication. This produces a barrier to normal social interaction. But this can be overcome by intensive training to the hearing impaired individual. Through auditory training an individual can be taught to make maximum use of his/her residual hearing. This results in improvement in both speech perception and speech production. The auditory approach to learn spoken language should be an option for all hearing impaired children irrespective of their degree and type of hearing loss. The procedures used for auditory training and the amount of dependence on the auditory channel is individualistic and depends upon the child's capacity.

METHODOLOGY**PROCEDURE USED FOR THE DEVELOPMENT OF THIS MANUAL**

This verbal auditory training manual has been recommended for those Tamil speaking hearing impaired children whose language level is less than six years

The manual was divided into the following four sections, which progressed from the simplest level of auditory processing to a more complex level.

Section I - Detection

Section II - Discrimination

Section III - Identification

Section IV - Comprehension

For the development of this manual, special attention was given to the frequency characteristics of speech sounds.

Classification of phonemes based on the frequency

Ainsworth (1979) gave F1 and F2 values of the vowels and classified them as low and high frequency vowels.

F1 and f2 values are as follows:

	F1	F2
/a/	250	2320
/i/	640	2020
/e/	790	2060
/o/	490	820
/u/	250	880

Based on the F2 values /a/ /u/ and /o/ were classified as low frequency vowels and /i/ and /θ/ as high frequency vowels. Jorgensen (1967) classified consonants as high, mid and low based on their frequency components.

Bilabials and nasals were classified as low frequency consonant, while velars and retroflex as mid frequency, dental and palatal as high frequency consonant.

Selection of material for the manual

To develop the items in the lists, meaningful words from UKG and Grade I Tamil text books were taken. To confirm that these words were familiar, a pilot study was conducted. 30 normal children who were within the age range of 4-6 years were considered as subjects. These children were from three different schools.

During testing, each child was asked to describe the words read out by the tester. The responses were noted down as correct or incorrect. Words for which a description was correctly given was considered familiar to the child. Simple sentences and stories were also constructed and their familiarity was checked in a similar fashion. Only those words and sentences with 85% correct response was selected for the word lists for the manual, while the rest were discarded.

General rules to use the manual

The lessons and also the word lists in each lesson are given in the order of difficulty ranging from the simplest to the most difficult level. Hence, the order of presentation of the stimuli should be as given in the manual.

The patient should be seated at a distance of approximately four to six feet from the clinician. The clinician has to cover his/her mouth with a dark cloth fixed to an embroidery frame while presenting the verbal stimuli.

The manual contains 16 lessons under the four sections i.e. detection, discrimination, identification and comprehension. Section I and III has two parts i.e. part 1 and Part 2.

The sixteen lessons are as follows :

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+-----+
| Section I |
+-----+
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```
+-----+
| Lesson 1 | Detection of the verbal
+-----+ stimulus
```

```
+-----+
| Section II |
+-----+
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Part 1 : Discrimination between number of syllables.
Part 1 has three lessons

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| Lesson 2 | Discrimination - Monosyllabic
+-----+ words vs. (6-9 syllable)
phrases/sentences
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+-----+
| Lessons | Discrimination 3-4 syllabic
+-----+ words/phrases vs 6-8 syllabic
phrases/sentences.
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+-----+
| Lesson 4 | Discrimination - /monosyllabic
+-----+ vs. trisyllabic words.
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Part 2 : Discrimination between words based on the frequency characteristics.
Part 2 includes four lessons

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+-----+
| Lesson 5 | Discrimination between words
+-----+ which differs with respect to
consonant and vowels in terms
of their frequency
characteristics.
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+-----+
 | Lesson 6 | Discrimination between words
 +-----+ which differs with respect to
 the frequency characteristics
 of the vowels.

 | Lesson 7 | Discrimination between words
 +-----+ which differs with respect to
 the frequency characteristics
 of the consonants.

+-----+
 | Lesson 8 | Discrimination between
 +-----+ sentences which differs in
 terms of their frequency
 characteristics of consonants
 which occurs frequently in a
 sentence.

 | Section III |
 +-----+

Part 1 - Identification of single words
 part 1 has one lesson

+-----+
 | Lesson 9 | Identification of single words
 +-----+

Part 2 - Identification of minimal pairs based on the
 frequency characteristics
 Part 2 has 3 lessons

 | Lesson 10 | Identification of paired words
 +-----+ which differs in terms of the
 frequency characteristics of
 both consonants and vowels.

+-----+
 | Lesson 11 | Identification of minimal pairs
 +-----+ which differs with respect to
 vowels in terms of their
 frequency characteristics.

Lesson 12	Identification of minimal pairs which differs with respect to consonants in terms of their frequency characteristics.
Section IV	This section has four lessons
Lesson 13	Comprehension of single words
Lesson 14	Comprehension of simple commands
Lesson 15	Comprehension of related questions
Lesson 16	Comprehension of unrelated questions.

For each lesson, activities and the expected responses are suggested. Each lesson contains

- a) 1-4 practice items
- b) a list of materials required for carrying out the activity
- c) a list of materials for scoring and reinforcement
- d) instruction to the clinician
- e) instruction to the child, and
- f) the scoring system and reinforcements which can be used.

The instruction to the child can be made easier, if the child has difficulty in comprehending it. Activity can also be demonstrated to the child to make the task easier.

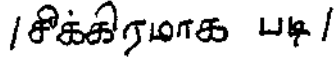
For each lesson, initially the practice can be done with visual cues. Following this, the same practice items can be carried out without visual cues.

Description of each lesson

Section I Lesson 1 Detection of the verbal stimulus.

The material in this list consists of phrases/bisyllabic and monosyllabic words. In total it contains 18 items. The list has equal number of high and low frequency phrases and words.

The clinician has to say a phrase/word and the child has to indicate the presence/absence of the verbal stimulus by pointing to the appropriate picture indicating presence of the verbal stimulus or silence.

Eg.1 : Clinician says 
/si:kkirama:ga padi/

The child has to respond by pointing to a cartoon of a child speaking.

Eg.2 : Clinician maintains silence

The child has to point to the silent cartoon.

Section II - Discrimination task

At this level of auditory processing the child is target to differentiate between two verbal stimuli. The child's task is to indicate whether the two stimuli are same/different.

Section II Part-1 :

Section II part-1 contains three lessons

Lesson-2

Discrimination : Monosyllabic words versus (6-9) syllabic phrases/sentence

This lesson has three practice items and one list with 20 items for therapy. The items were arranged in the order of difficulty ranging from the simplest to the most difficult.

In the initial part of the list discrimination is between monosyllable and a nine syllabic phrase/sentence while in the end of the list, discrimination is between monosyllabic word and a six syllabic phrase/sentence. The test also contained words/sentences of equal length. The order of same/different length items is randomly presented.

The clinician has to say the pair and the child has to indicate whether the two pairs presented were same/different by pointing to the picture with same length trains/to the picture with different length trains.

eg. 1: Clinician says |கார்| - |கனகா கடதம் எழுதினாள்|

/ka:r/-/kanaka kadidam ezudina:1/

The child has to point to the picture where the two trains are of different lengths.

eg.2 :Clinician says |நில்| - |நில்|

/nil/ - /nil/

The child has to point to the picture where both the train of same length.

eg.3 :Clinician says |i:/ - |நில்|

/i:/ /nil/

The child has to point to the picture where both the train of same length.

Section II :Part 1

Lesson 3

Discrimination : 3-4 syllabic words/phrases vs. 6-8 syllabic phrases/sentences.

This list has three practice items and twenty items for therapy arranged in the order of difficulty from the simplest

to the most difficult level. Initially, to make the task easier, the discrimination is between four syllabic word/phrase and eight syllabic sentence/phrase. Towards the end of the list, discrimination is between three syllabic word and six syllabic sentence/phrase. In between discrimination items, there are items where the length of the word or phrase/sentence are the same. There are arranged in a random manner.

The clinician has to present the pair and the child has to indicate whether the pair is same/different in terms of their length. The child has to pick up two small pencils when the pair is same and two different length pencils when the pair is different.

eg.1 : Clinician says |சர்க்கரை| - |சர்க்கரை|.

/sarkarai/ - /sarkarai/

The child has to pick up two pencils of the same length.

eg.2 : Clinician says |சர்க்கரை| - |பூசினிக்காய்|

/sarkarai/ - /pu:sinikkai/

The child has to pick up two pencils of the same length.

eg.3 : Clinician says |பூசினிக்காய்| - |நாம் காதல் கெட்கிறோம்|.

/pu:sinikkai/ - /na:m ka:da:l ke:tkirom/

The child has to pick up two different length pencils.

Section II part 2

Lesson 5

Discrimination : Between words which differ with respect to both consonants and vowels in terms of their frequency characteristics

This lesson has two practice items and four lists for therapy. Each list has ten items where the pairs of words differed in the frequency characteristics of both consonants and vowels.

List 1 : High frequency consonant + Low frequency consonant
(vs)

Low frequency consonant + Low frequency consonant

eg. /செடி/ - /படி/.
 /sedi/- /padi/

List 2 : Low frequency consonant + High frequency consonant
(vs)

High frequency consonant + Low frequency consonant

eg. /பெட்டி/ - /தொட்டி/
 /pettii/ - /totti/

List 3 : Low frequency consonant + Low frequency consonant
(vs)

Mid frequency consonant + Low frequency consonant

eg. /பசு/ - /கொசு/.
 /pasu/ - /kosu/

List 4 : Mid frequency consonant + Low frequency consonant
(vs)

Low frequency consonant + Low frequency consonant

eg. /கூதிரை/ - /மாத்திரை/
/kudirai/- /ma:ttirai/

The clinician has to say the paired word. The child has to respond by picking up two similar looking finger puppets if the pairs of word are same. Otherwise the child has to pick two dissimilar puppets.

eg.1 : Clinician says /பால்/ - /கோல்/
/pa:l/ - /ko:l/

The child has to pick two different puppets from the clinicians finger.

eg.2 : Clinician says /கோல்/ - /கோல்/
/ko:l/ - /ko:l/

The child has to pick two similar puppets from the clinicians finger.

Section II part 2

Lesson 6

Discrimination between words which differ with respect to the frequency characteristics of vowels

This lesson has two practice items and two lists for therapy. Each list has fifteen items where the minimal pairs differed only with respect to the vowels in their frequency characteristics.

A description of each list is given below:

List 1: Low frequency vowels (vs) High frequency vowels

eg. /pasu/ - /pe:su/

/pasu/ - /pe:su/

List 2: Low frequency vowels (vs) low frequency vowels

eg. /ku:dai/ - /kadai/

/ku:dai/ - /kadai/

Within each list catch trials are given.

The clinician has to say the pairs of word and the child has to respond by pointing to puppets which are similar or dissimilar depending on whether the pairs of words are same/different.

eg.1 :Clinician says /poy/ - /pa:y/

/poy/ - /pa:y/

The child has to point to the puppet whose ribbon does not matches to its dress.

eg.2 :Clinician says /poy/ - /poy/

/poy/ - /poy/

The child has to point to the puppet whose ribbon matches to its dress.

The child has to point to the puppet whose ribbon does not match to its dress.

Section II part 2

Lesson 7

Discrimination between words which differ with respect to the frequency characteristics of consonants

This lesson has two practice items and four lists for therapy. Each list has eight items where the minimal pairs differed in terms of the frequency characteristics of the consonants.

List 1 : High frequency vs. Low frequency vowel

eg. **|சிரி| - |பிரி|**
 /siri/ - /piri/

List 2 : Mid frequency vs. Low frequency vowel

eg. **|கூடி| - |மூடி|**
 /kudi/ - /mudi/

List 3 : High frequency vs. Mid frequency vowel

eg. **|தட்டு| - |கட்டு|**
 /tattu/ - /kattu/

List 4 : Low frequency vs. Low frequency vowel

eg. **|நாக்஠ு| - |பாக்஠ு|**
 /na:kku/ - /pa:kku/

Within each list, catch trials are given.

The clinician has to say the pairs of words and the child has to respond by picking two balloons of same colour

if the paired words are same. Otherwise the child has to pick two balloons of different colour.

eg. 1 Clinician says |கல்| - |பல்|
/kal/ - /pal/

The child has to pick two balloons of two different colours.

eg. 2 Clinician says |பல்| - |பல்|
/pal/ - /pal/

The child has to pick two balloons of the same colours.

Section II part 2

Lesson 8

Discrimination between sentences which differ in terms of the frequency characteristics of consonants which occurs frequently in a sentence.

Sentences were constructed in such a way that either high frequency, low frequency or mid frequency consonants occurred frequently in a sentence.

This lesson has two practice items and three lists. Each list has ten items where the sentences differ in terms of the frequency characteristics of consonants which occurred frequently in a sentence.

List 1: Discrimination between sentences with frequently occurring high frequency consonant vs. low frequency consonant.

eg. 1 |சரசு சாதம் சாப்பிட்டாள்|
/sarasu sa:dam sa:pitta:l/

List 2: Discrimination between sentences with frequently occurring low frequency consonant vs. mid frequency consonant.

eg. 1 /பாப்பா பணியில் போகாதே/ - /கமலா குடை கொண்டு வர/.

/peppa paniyil poga:de/-/kamala kudai kondu va/

List 3: Discrimination between sentences with frequently occurring high frequency consonant vs. mid frequency consonant.

eg. 1 /தாத்தா தட்டு தா/ - /குடையில் காய்கறிகள் உள்ளன/

/ta-tta tattu ta/ - /ku:daiyil ka:ikarigal ullana/

Within each list, catch trials are given.

The clinician has to say the sentence pair. The child has to respond by placing red bead into red bowl if the pair is same. Otherwise the child has to place red bead into blue bowl.

eg. Clinician says /முத்துவக்டு தக்காளி பிடிக்கும்/

/kanaka kadarkarai senchail/

/muttuvukku takkali pidikkum/

The child has to place red bead inside the blue bowl.

eg.2 Clinician says /தாமரை தண்ணீரில் மலரும்/

/தாமரை தண்ணீரில் மலரும்/.

/ta:marai tanneiril malarum/

/ta:marā: tanne:ril malarum/

The child has to place red bead inside the red bowl.

Section III Identification Task

In this level of auditory processing the child is taught to identify the verbal stimulus presented.

This section was also divided into two parts

Part 1 : Identification of single words.

Part 2 : Identification of paired words which differ in their frequency characteristics

Section II Part 1

Lesson9

Identification of single words

This lesson has five practice items and five lists which includes identification of animals body parts, numbers, vehicles and colours respectively for therapy.

The clinician has to say the word and the child has to identify the word. The kind of response expected for each list is different.

For identification of animals the child has to pick up the full picture of the animal named and paste it on dot-dot picture of that animal.

eg. Clinician says **(யானை)**.

/ya:nai/

The child has to pick up the full picture of the elephant and paste it on the dot dot elephant picture.

For identification of body parts the child has to pick up the body part which was named and stick it to the outline sketch.

eg. Clinician says /கண்ணி/ /kan/.

The child has to pick up the cut-out of the eyes and stick it to the outline sketch.

For identification of numbers the child has to jump into box which represents the number.

eg. Clinician says /நாங்கு / /na:ngu/

The child has to jump into the box which represents the number.

For identification of vehicles the child has to make the doll ride the vehicles.

eg. Clinician says /காரி/ /ka:r/

The child has to pick up the doll and make it ride the toy car.

For identification of colour, the child has to pick up painted match stick of the colour named by the clinician and stick it to a geometrical figure.

eg. Clinician says /வெள்ளை/ l l a i /
/vellai/

The child has to pick up one white coloured match stick and stick it to one of the geometrical figures.

Section III part 2

Lesson 10

Identification of paired words which differs in terms of the frequency characteristics of both consonants and vowels.

This lesson consists of one list of 12 items. Each paired word in the list differs in terms of the frequency characteristics of both consonants and vowels.

The clinician has to say the paired word. The child has to respond by pointing to the pictures representing these words.

eg.1. Clinician says *பெட்டி - தொட்டி*.
/petti/ - /totti/

The child has to point to the picture of the box first and then to the picture of the task.

Lesson 11

Identification of minimal pairs which differs with respect to the vowels in terms of their frequency characteristics

This lesson consists of one list of 12 items. Each paired word in the list differs in terms of the frequency characteristics of the vowels.

The clinician has to say the paired word. The child has to respond by pointing to the pictures representing these words.

eg.1.Clinician says /பார்/ - /பொர்/
/pa:r/ - /po:r/

The child has to point to the picture of the look first and then to the picture of the war.

Section III part 2

Lesson 12

Identification of minimal paires which differs with respect to the consonants in terms of their frequency characteristics

This lesson consists of one list of 10 items. Each paired word in the list differs in terms of the frequency characteristics of the consonants.

The clinician has to say the paired word. The child has to respond by pointing to the pictures representing these words.

eg.1.Clinician says /கம்பி/ - /தம்பி/
/kambi/ - /tambi/

The child has to point to the picture representing these words.

Section IV Comprehension Task

In this section, the child has to understand the spoken verbal stimuli and carry out an appropriate activity. This section has four lessons.

Lesson 13

Comprehension of simple words

The activity for list 1 involves the child having to comprehend the word presented and then selecting a picture representing its antonym.

eg. 1 Clinician says /குண்டு/.
/gundu/ (fat)

The child has to respond by pointing to the picture representing thin.

List 2 involves the child having to comprehend whether the word presented was singular or plural. The clinician has to say the word. The child has to pick up one or three objects of the said word based on whether the word was singular or plural.

eg. 1 Clinician says /தீப்பெட்டி/.
/te:ppetti/

The child has to pick up one match box

eg.2 :Clinician says /புத்தகங்கள்/.
/puttagangal/

The child has to pick up two/three books from the table.

Lesson 14

Comprehension of simple commands

This lesson consists of 15 commands. The clinician says the command and the child has to enact the command. If required, the child can use objects placed in front of him to carry out the commands.

eg. 1 Clinician says /பல் காட்டு./
 /pal ka:ttu/

The child has to show his teeth.

eg. 2 :Clinician says /பாடம் படி./
 /pa:dam padi/

The child has to pick up a book and read.

Section IV

Lesson 15

Comprehension of Related Question

This lesson consists of two simple stories. Each story has five questions which the child has to answer after having heard the story. Picture series of the stories can be used to make the child comprehend the story easily. However, while asking the questions no visual cues are to be given.

eg. 1 Clinician has to ask the question
 /இந்த காதலில் குறிப்பிடக்கூறாத பழவை எது./
 /inda kadaiyil kurippithela pazavai edu/

The child has to respond by saying / காகம் /

Section IV

Lesson 16

Comprehension of Unrelated Questions

There are 10 unrelated questions. The child's task is to answer three questions. The question can be repeated and rephrased in case the child does not answer it the first time. If the child is unable to answer an open ended question four multiple choices can be given. The child has to respond by selecting the appropriate answer and by pointing to the picture representing the correct answer.

eg.1 :Clinician says /யானை எந்த நிறமுடையது/.
/ya:nai enda niramudayodu/

The child has to say black/point to the picture of black on the card board by moving the arrow.

SUMMARY AND CONCLUSION

Auditory training is an important aspects in an aural rehabilitation program. Apart from hearing impaired individuals auditory/ear training is required by individuals with voice and articulation problems.

This verbal auditory training manual has been developed for hearing impaired individuals who speak Tamil and have a language level less than six years.

To develop this manual, phonemes were classified based on their frequency characteristics. To construct the word list, meaningful words were taken from UKG and Grade I books. To confirm that the words were familiar to children less than six years of age, familiarity test was conducted on thirty normal school going children whose medium of instruction was Tamil. The age range of these children was 4-6 years.

The different sections and lesson of this verbal auditory manual are as follows :

Section I DETECTION

Lesson 1 Detection of the verbal stimulus

Section II DISCRIMINATION

Part 1 : Discrimination between number of syllables.

Lesson 2 Discrimination - Monosyllabic words vs. (6-9 syllable) phrases/sentences

Lesson 3 Discrimination 3-4 syllabic words/phrases vs 6-8 syllabic phrases/sentences.

Lesson 4 Discrimination - monosyllabic vs. trisyllabic words.

Part 2 : Discrimination between words based on the frequency characteristics.

Part 2 includes four lessons

Lesson 5 Discrimination between words which differs with respect to consonant and vowels in terms of their frequency characteristics.

Lesson 6 Discrimination between words which differs with respect to the frequency characteristics of the vowels.

Lesson 7 Discrimination between words which differs with respect to the frequency characteristics of the consonants.

Lesson 8 Discrimination between sentences which differs in terms of their frequency characteristics of consonants which occurs frequently in a sentence.

Section III IDENTIFICATION

Part 1 - Identification of single words part 1 has one lesson

Lesson 9 Identification of single words

Part 2 - Identification of minimal pairs based on the frequency characteristics.

Part 2 has 3 lessons

Lesson 10 Identification of paired words which differs in terms of the frequency characteristics of both consonants and vowels.

Lesson 11 Identification of minimal pairs which differs with respect to vowels in terms of their frequency characteristics.

Lesson 12 Identification of minimal pairs which differs with respect to consonants in terms of their frequency characteristics.

Section IV COMREHENSION

Lesson 13 Comprehension of single words

Lesson 14 Comprehension of simple commands

Lesson 15 Comprehension of related questions

Lesson 16 Comprehension of unrelated questions.

For each lesson, instructions are given to the clinician and the materials required for carrying out the activity. To make the child understand the activity, instructions are given to the child in simple form. Scoring system and reinforcements are also suggested for each activity.

Recommendations

1. Clinicians are advised to develop more therapy material based on the idea presented in this manual.
2. Test items can be developed for older age groups.
3. Similar verbal auditory training manual can be developed in other Indian languages.

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APPENDIX -1

AUDITORY TRAINING MANUAL IN TAMIL FOR CHILDREN WITH LANGUAGE LEVEL LESS THAN 6YEARS

The purpose of developing this manual is to help the hearing impaired child to make maximum use of his/her residual hearing.

While presenting the verbal stimulus, cover your mouth with a dark cloth fixed on an embroidery frame. The distance between the clinician and the child should be 4-6 feet.

The lessons in this manual are arranged in the order of difficulty ranging from the simplest level of auditory processing to the most difficult level. The order of presentation of the verbal stimulus between lessons and within the list should be as given in the manual.

For each lesson, an activity and the expected responses are suggested along with the scoring system and reinforcement. Activities and the reinforcement strategies can be changed/modified depending on the child's¹ interest and language level.

Practice items are given for each lesson. You can use visual cues during practice initially and later the child has to respond correctly even without the visual cues for the same practise items. In addition to this, clinicians are instructed how to carry out each lesson and the instructions which has to be

given to the child. Instruction to the child can be made easier, if it is complex to the child. The clinician can even demonstrate to the child to make him/her understand.

Clinicians are also advised to develop more therapy material using the ideas from the manual.

Section I: Detection Task

Aim of this task is to make the child aware of the verbal stimulus.

LESSON-1

DETECTION OF THE VERBAL STIMULUS

Practice Items

1. சீக்கிரமாக படி
2. சிங்கம்
3. ஈ
4. நிலம்

List 1

1. மல்லிகைப் பூ
2. இரண்டு கண்கள்
3. என் வீடு
4. சிகப்பு ரோஜா
5. சின்ன சீப்பு
6. சோறு சாப்பிடு
7. மாலை
8. பூனை
9. குயில்
10. சங்கு
11. தந்தை
12. தண்ணீர்
13. மான்
14. வால்
15. காய்
16. தீ
17. தா
18. தாய்

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIAL REQUIRED : i) for carrying out the activity. The following pictures are required.



! ii) for scoring and reinforcement 10 paise coins

INSTRUCTION TO THE CLINICIAN

In the above pictures, one cartoon indicates presentation of the verbal stimulus and the other one indicates silence. Keep both the pictures on the table.

Present the verbal stimulus in the order given in the list. The child has to respond by pointing to the speaking cartoon. Maintain silence between the words randomly for different durations of time to make the child detect the presence or absence of the phrase/word.

INSTRUCTION TO THE CHILD

Listen to me carefully. If you hear me speaking, then point to the speaking cartoon. Otherwise point to the cartoon which is silent.

eg 1 : Clinician says சீக்கிரமர்க படி /Sikkiramarga padi/

The child has to point to the speaking cartoon,

eg 2 : Clinician maintains silence.

The child has to point to the silent cartoon.

SCORING SYSTEM AND REINFORCEMENT

Have around twenty ten-paise coins. If the child responds correctly, give one coin to the child. If the child responds incorrectly, don't give the coin. At the end count the number of coins collected by the child. That will be equal to the number of correct responses. Maximum score which can be obtained is 18, (ie) 18 coins can be collected by the child.

Section II: Discrimination Task

Part I: DISCRIMINATION OF NUMBER OF SYLLABLES.

Aim of this activity is to help the child to discriminate between two stimuli which differ in their length (Number of syllables).

LESSON-2

DISCRIMINATION : MONOSYLLABIC WORDS (VS) MULTISYLLABIC [6-9] PHRASES/SENTENCES

Practice Items

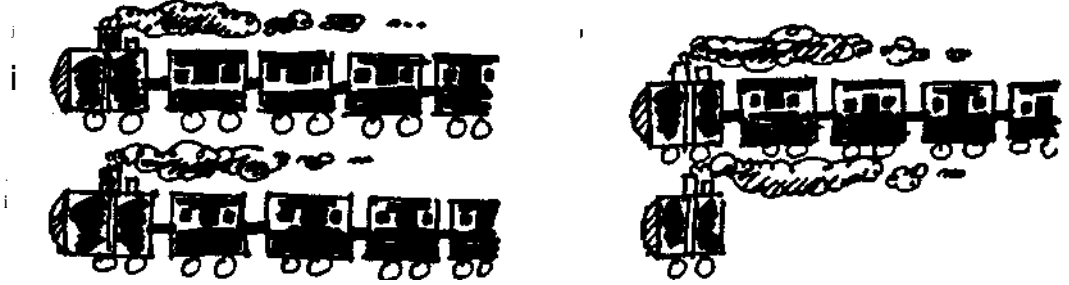
1. கார் - கனகா கடிதம் எழுதினாள்
2. நில - நில
3. ஈ - நில

List 1

1. மீன் - பள்ளத்தில் சைக்கிள் விழுந்தது
2. மான் - பூக்கள் செடிகளில் மலரும்
3. வா - நான்
4. பாய் - தமிழரசு தாழ்பாள் போடு
5. மேஜை எங்கே இருக்கு - பெரிய பந்து எங்கே
6. அப்பா வீட்டில் இல்லை - கோல்
7. நாளை பள்ளி விடுமுறை - உன் செருப்பின் விலை என்ன
8. கண் - பாய்
9. பார் - பார்
10. வா - உன் வீட்டில் வண்டி இல்லையா
11. பால் - பால்
12. பூ - பூனைக்கு நான்கு கால்கள் உள்ளன
13. காய் - பாய்

14. மீன் - மான்
15. நாய் - நாய்
16. நாம் காதல் கேட்கிறோம் - மேஜை மேல் புத்தகம் வை
17. சீதா சினிமா சென்றாள் - பார்
18. தம்பி தரையில் தூங்காதே - மாமா மாமரம் ஏறினார்
19. அக்கா தட்டு தா - தோல்
10. மேஜை எங்கே இருக்கு - பெரிய பந்து எங்கே

MATERIALS REQUIRED : i) for carrying out the activity. The following two pictures are required.



- ii) for scoring and reinforcement, thread,
20 beads of the same colour.

INSTRUCTION TO THE CLINICIAN

In one picture card, there are two trains of the same length. In the other card there are two different length trains. Place both the picture cards on the tables in front of the child.

The list contains pairs of monosyllabic word and sentence. Say the first word/sentence of the pair. Give a gap of around 2-3 seconds and then say the second word/sentence of the pair. Once the child responds to the pair

pointing to the picture representing same/different, then say the next pair. The order of presentation of the pairs should be given as in the list. Don't give visual cues while presenting the stimulus.

INSTRUCTION TO THE CHILD

Listen to both the sets of words carefully. If the two sets are same in length [number of syllables] then point to the card in which both the trains are of same length. If they are different, point to the picture which has two different length trains.

eg 1 : clinician says நில் - நில் /nil/ - /nil/

The child has to point to the card where both the trains are of same length,

eg 2 : clinician says ஈ - நில் - /nil/

The child has to point to the card where both the trains are of same length,

eg 3 : clinician says /கார் / - /கனகா கடிதம் எழுதினர் /ka:r/ - /kanaka
kadidam ezhuthina:l/
• n •

The child has to point to the card which has two different length trains.

SCORING SYSTEM AND REINFORCEMENT

Thread beads to make a chain. Everytime the child responds correctly, add one bead of the chain. The length of the chain depends upon the number of correct responses. At the end, give the chain to the child. Maximum score which can be obtained by the child is twenty, (ie) child can make a chain with a maximum of 20 beads.

Section II: Part 1

LESSON-3

DISCRIMINATION : 3-4 SYLLABIC WORD/PHRASE (vs)
6-8 SYLLABIC PHRASES/SENTENCES

Practice Items

- | | |
|----------------|--------------------------|
| 1. சர்க்கரை | - சர்க்கரை |
| 2. சர்க்கரை | - பூசணிக்காய் |
| 3. பூசணிக்காய் | - நாம் காதால் கேட்கிறோம் |

Listl

- | | |
|---------------------------------|------------------------------|
| 1. விளையாட்டு | - பள்ளிக்கு போ |
| 2. கடிசாரம் | - கடிசாரம் |
| 3. பின்னாடி போ | - உன் அக்கா ஊரில் இல்லையா |
| 4. நான் கருப்பு காரில் சென்றேன் | - உன் அப்பா வீட்டில் இல்லையா |
| 5. பேனா காட்டு | - பள்ளிக்கு போ |
| 6. நான் கருப்பு காரில் சென்றேன் | - நாளை பள்ளி விடுமுறை |
| 7. வீட்டுக்கு வா | - உன் செருப்பின் விலை என்ன |
| 8. கீழே பாரு | - உன் வீட்டில் வண்டி இல்லையா |
| 9. முயற்சி செய் | - கமலா குடை கொண்டு வா |
| 10. கை தூக்கு | - நீ நேற்று எங்கிருந்தாய் |
| 11. கை கட்டு | - கை தூக்கு |
| 12. நாம் காதால் கேட்கிறோம் | - மெதுவாக ஓடு |
| 13. சட்டை ஈரமாக உள்ளது | - சர்க்கரை |
| 14. அண்ணன் ஊருக்கு சென்றான் | - சீக்கிரமாக படி |
| 15. சிகப்பு ரோஜா | - பல்லவி பாடம் படி |
| 16. கருப்பு | - மெதுவாக ஓடு |
| 17. விளக்கு | - பாப்பா பொய் பேசாதே |
| 18. நாற்காலி | - கரடி |
| 19. கரடி | - கரடி |
| 20. எருமை | - தாத்தா என் தட்டு தா |

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIALS REQUIRED : i) for carrying out the activity and for reinforcement.
2 short pencils
1 long pencil

INSTRUCTION TO THE CLINICIAN

Keep two small pencils and one long pencil on the table in front of the child.

Present each pair, one at a time in the order as given in the list. Give a gap of around 3-4 seconds between the two pairs of verbal stimuli. The child has to respond by picking up two pencils of the same length if the two sets of words are same in terms of their length. Otherwise the child has to pick up two pencils of different lengths.

INSTRUCTION TO THE CHILD

You will hear two sets of words. Listen to them carefully. If the two sets are same in terms of their length then pick up two pencils of the same length. Otherwise pick pencils of two different lengths.

eg 1 : clinician says சர்க்கரை - சர்க்கரை /sarkarrai/ - /sarkarrai/

The child has to pick up two short pencils.

eg 2 : Clinician says சர்க்கரை - பூசணிக்காய் /sarkarrai/ - /Pusinikkai/

The child has to respond by picking up two pencils of the same length.

eg 3 : clinician says பூசணிக்காய் - நாம் காதால் கேட்கிறோம் /pusinikkai/ -
/ na:m kada:l ke:tkirom/

The child has to pick up two pencils of different lengths.

SCORING AND REINFORCEMENT

Everytime the child gives correct response, mark '1' and make a star in his note book. If the child responds incorrectly, give '0' and star should not be made.

At the end, count the number of correct responses by counting the number of stars. If the number of correct responses is between 5-10 give one small pencil to the child. If it is between 10-15 give two small pencils and if it is between 15-19 give one long and one short pencil. Maximum score which can be obtained is 20. If the child reaches the maximum score, give all the three pencils to the child.

Section II: Part 2

LESSON-4

DISCRIMINATION : MONOSYLLABIC WORDS VERSUS TRISYLLABIC WORDS

Practice Items

1. நில் - நில்
2. நில் - சிகப்பு
3. சிகப்பு - கருப்பு

List 1

1. காய் - நெருப்பு
2. பூ - கனவு
3. கால் - கண்ணாடி
4. கார் - கார்
5. கை - சூரியன்
6. மான் - தக்காளி
7. ஒன்பது - மிளகாய்
8. வா - செருப்பு
9. எனது - எனது
10. கதவு - நெருப்பு
11. நீ - நீ
12. சக்கரம் - கருப்பு
13. நான் - தாமரை
14. வாய் - பாய்
15. பாய் - சந்திரன்
16. கிணறு - கிணறு
17. பலகை - புத்தகம்
18. கை - உணவு
19. பல் - நீ
20. தா - பறவை

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED :
- i) for carrying out the activity
 - Two toy cars.
 - ii) for scoring and reinforcement
 - small toy doll
 - Ladder
 - 2 balloons

INSTRUCTION TO THE CLINICIAN

Draw roads on the floor or on a slate with white chalk as given in the picture below.



Present the pairs of words in the order given in the list. Say the first words in the pair, give a gap of 3-4 seconds and then say the next word. The child has to listen to both the words. If the words are same in terms of their length, then the child has to move both the cars on the similar looking roads. Otherwise he has to move one car on the road with a single speed breakers and the other on the road with three speed breakers •



INSTRUCTION TO THE CHILD

Listen to me carefully. I will say two sets of words. If both the words are of same length, then move both the cars on the same looking roads. Otherwise move each car on differently looking roads.

eg 1 : clinician says /நில்/- சிகப்பு /Nil/ - /Sigappu/

The child has to move one car on the road with single speed breakers
the other one on the road with three speed breakers

eg 2 : clinician says /நில் / - /நில்/ /Nil/ - /Sigappu/

The child has to move the cars on similar looking roads .

eg 3 : clinician says / சிகப்பு / - / கருப்பு / - /Sigappu/- Karuppu

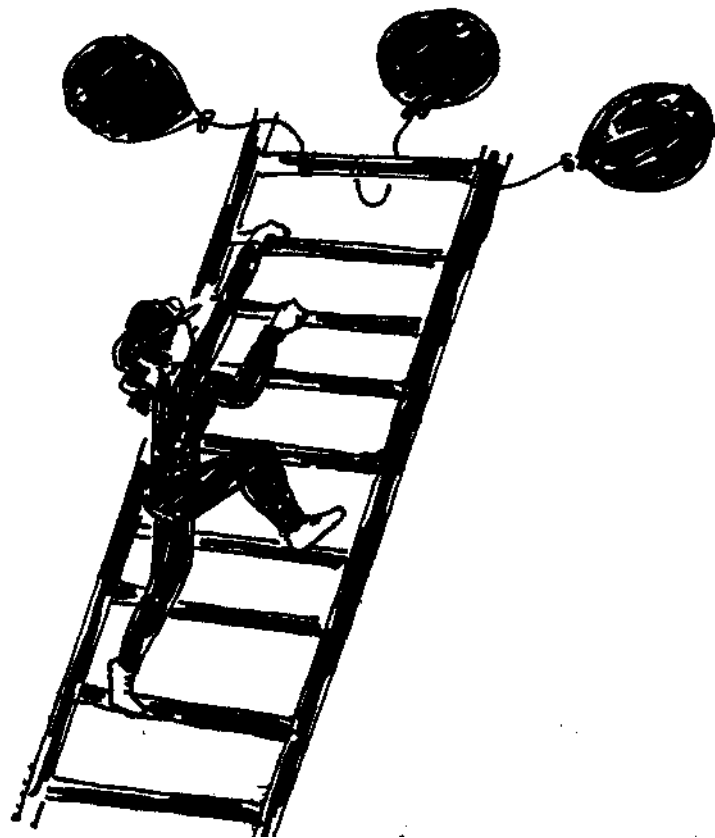
The child has to move the cars on similar looking roads. .

SCORING SYSTEM AND REINFORCEMENT

Have a ladder with 20 steps .when the child responds correctly, move the doll one step upwards on the ladder. If the child's response is incorrect move the doll one step downwards. Tie three balloons to the last step of the ladder.

Once the doll reaches the last step, the child can take all the 3 balloons.

Maximum score for this lesson is 20. The doll will reach the last step of the ladder only if the child responds to all the answers correctly.



Section II: Part 2

**DISCRIMINATION BETWEEN WORDS BASED ON THE
FREQUENCY CHARACTERISTICS**

Aim of this activity is to make the child discriminate between paired words which differ in their frequency characteristics.

LESSON-5

**DISCRIMINATION BETWEEN WORDS WHICH DIFFER WITH
RESPECT TO BOTH CONSONANTS AND VOWELS IN TERMS OF
THEIR FREQUENCY CHARACTERISTICS**

Practice Items :

1. பால் - கோல்
2. கோல் - கோல்

List 1

1. தேன் - நான்
2. தேன் - தேன்
3. நான் - நான்
4. தேர் - பார்
5. சிலர் - சிலர்
6. சிலர் - பலர்
7. சேலை - மலை
8. பார் - பார்
9. மலை - மலை
10. படி - செடி

List 2

1. பொடி - பொடி
2. தொட்டி - தொட்டி
3. மீசை - தோசை
4. தோசை - தோசை
5. பொடி - தடி
6. படி - படி
7. பெட்டி - பெட்டி
8. செடி - செடி
9. பெட்டி - தொட்டி
10. தடி - தடி

List 3

1. வடை - வடை
2. பசு - பசு
3. வடை - கூடை
4. கூடை - கூடை
5. பசு - கொசு
6. கொசு - கொசு
7. வடை - குடை
8. குயில் - குயில்
9. குடை - குடை
10. மயில் - குயில்

List 4

1. குதிரை - மாத்திரை
2. மாத்திரை - மாத்திரை
3. நடை - நடை
4. குடை - குடை
5. குடை - நடை
6. குதிரை - குதிரை
7. கோலம் - பலம்
8. பலம் - பலம்
9. கோலம் - கோலம்
10. குதிரை - குதிரை

LIST 1 : High frequency consonant + high frequency vowel (vs) Low frequency consonant + low frequency vowel.

LIST 2 : Low frequency consonant + high frequency vowel (vs) High frequency consonant + low frequency vowel.

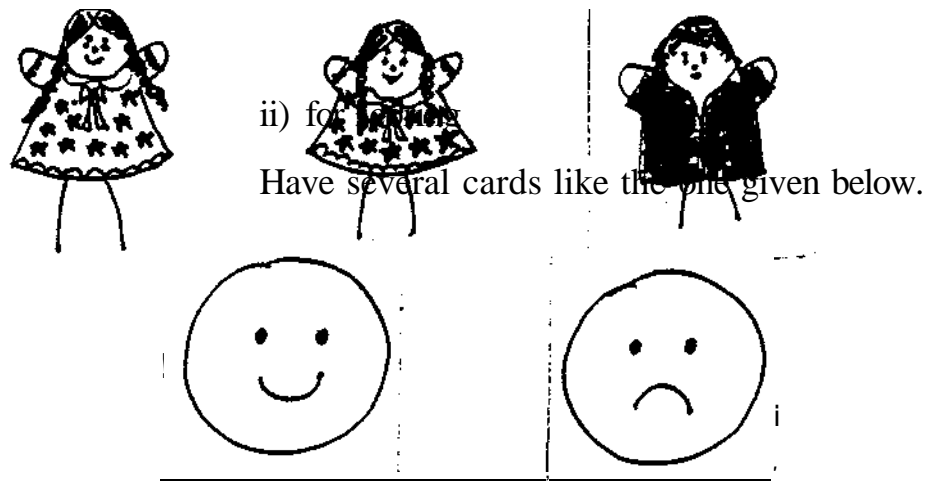
LIST 3 : Low frequency consonant + low frequency vowel (vs) Mid frequency consonant + low frequency vowel.

LIST 4 : Mid frequency consonant + low frequency vowel (vs) low frequency consonant + low frequency vowel.

Within each list, catch trials are given in a random manner.

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIALS REQUIRED : i) for carrying out the activity
 2 girl finger puppets and
 1 boy finger puppet



INSTRUCTION TO THE CLINICIAN

Make three finger puppets as given in the diagram. Out of the three, two should be similar and one different.

Present the paired words from list 1 in the order given. Give a gap of around 2-3 seconds between the presentation of the words in the pair. If the paired words are same, then the child has to pick up two puppets which are similar. If the paired words are different, the child has to pick up two different puppets from the clinician's finger.

Once list 1 is over, move to the second list and then to the third and finally to the fourth list in a similar fashion.

INSTRUCTION TO THE CHILD

There are three puppets on my 3 fingers. I will say two words listen to me carefully, if the words are same then pick up two similar puppets from my finger otherwise pick two different puppets.

eg 1 : clinician says /பால்/ - /கோல்/ /pa:l/ - /ko:l/

The child has to pick two different puppets from the clinician's finger.

eg 2 : clinician says /கோல்/ - /கோல்/ /ko:l/ - /ko:l/

The child has to pick two similar puppets from the clinician's finger.

SCORING SYSTEM AND REINFORCEMENT

Everytime the child responds correctly, give one card with a happy face and if the response is wrong, give the card with a sad face.

For each list, maximum score which can be obtained is 10 and the total maximum score for this lesson is 40.

After the presentation of all the paired words, count the number of happy face cards. If the number of happy face cards is above thirty give the child one of the finger puppets. If it is between 20-30 give the child two toffees and if it is less than 20, give only one toffee to the child.

Section II: Part 2

LESSON-6

**DISCRIMINATION BETWEEN WORDS WHICH DIFFER WITH
RESPECT TO THE FREQUENCY CHARACTERISTICS OF VOWELS**

Practice Items :

1. பொய் - பாய்
2. பாய் - பாய்

List 1

1. பசு - பசு
2. ஆடு - எடு
3. ஆடை - எடை
4. தா - தா
5. ஆறு - ஏறு
6. தீ - தீ
7. ஆறு - ஆறு
8. ஆணி - ஏணி
9. ஏணி - ஏணி
10. பசு - பேசு
11. மீன் - மீன்
12. எடு - எடு
13. ஏறு - ஏறு
14. கரை - கீரை
15. மான் - மீன்

List 2

1. கால் - கோல்
2. பார் - பார்
3. கால் - கால்
4. ராஜா - ரோஜா
5. கோல் - கோல்
6. பாய் - பாய்
7. பார் - போர்
8. குடி - குடி
9. குடை - கடை
10. தட்டை - தட்டை
11. கடை - கடை
12. கொடி - குடி
13. ராஜா - ராஜா
14. கூடை - கடை
15. தொடை - தட்டை

LIST 1 : Low frequency vowel (vs) High frequency vowel.

LIST 2 : Low frequency vowel (vs) low frequency vowel.

Within each list, catch trials are given in a random order.

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIALS REQUIRED :

- i) for carrying out the activity
 - 2 girl puppets
- ii) for reinforcement
 - Bindies
 - Bangles
 - Frocks
 - Ribbons
 - Socks
 - Laces

INSTRUCTION TO THE CLINICIAN

Ask the parents of the child to get two girl puppets along with the ribbon which has the same design as that of its frock.

Tie on one puppet a ribbon made of the material similar to that of its frock. On the other one, tie a ribbon that is dissimilar to its dress. Place both the puppets in front of the child.

Say the first word from the pair. Give a gap of around 3-4 seconds and then say the next word from the set. If both the words are same, then the child has to point to the puppet whose ribbon matches with its frock. Otherwise the child has to point to the puppet whose ribbon does not match with its frock.

Present the paired words in the order given in the list. Once you finish all the paired words in the first list move to the next list in a similar fashion.

INSTRUCTION TO THE CHILD

There are two puppets on the table. One puppet has the ribbon tied which matches with its dress and the other puppet has a ribbon which is not similar to its dress. Listen to me carefully, if both the words are same, then point to the puppet which has the ribbon matching to its dress, otherwise point to the other puppet when the words are different.

eg 1 : clinician says **പാ:യ് - പാ:യ്** /pa:y/ - /pa:y/

The child has to point to that the puppet whose ribbon is matching to its dress.

eg 2 : clinician says **പായ് - പാ:യ്** /poy/ - /pa:y/

The child has to point to the puppet whose ribbon does not match with its dress.

SCORING SYSTEM AND REINFORCEMENT

Everytime the child responds correctly, give one of the items (ie) bindi, bangle, rock, frock, ribbon, lace for the puppet. If the response is incorrect, withdraw one of the items. Count the number of items collected by the child which will be her final score. Maximum score for this lesson is 30 (ie) the child can collect a maximum of 30 items.

Section II: Part 2

LESSON-7

**DISCRIMINATION BETWEEN WORDS WHICH DIFFER WITH
RESPECT TO THE FREQUENCY CHARACTERISTICS OF
CONSONANTS**

Practice items :

1. கல் - பல்
2. பல் - கல்

List 1

1. சிரி - பிரி
2. சிரி - சிரி
3. தலை - தலை
4. தேரு - பேரு
5. மலை - தலை
6. தலை - மலை
7. சங்கு - பங்கு
8. பிரி - பிரி

List 2

1. முடி - முடி
2. குடி - முடி
3. காரு - பாரு
4. பால் - பால்
5. பாரு - காரு
6. கால் - பால்
7. பாரு - பாரு
8. குட்டி - முட்டி

List 3

1. சண்டை - கடை
2. சண்டை - சண்டை
3. கடை - கடை
4. தம்பி - கம்பி
5. கம்பி - கம்பி
6. தோல் - கோல்
7. தட்டு - தட்டு
8. தட்டு - கட்டு

List 4

1. பால் - ால்
2. பை - பை
3. வால் - பால்
4. நாக்கு - நாக்கு
5. பை - மை
6. மை - மை
7. நாக்கு - பாக்கு
8. பாக்கு - டாக்கு

LIST 1 ---> High frequency (vs) Low frequency consonant

LIST 2 ---->Mid frequency (vs) Low frequency consonant

LIST 3 ----> High frequency (vs) Mid frequency consonant

LIST 4 -----> Low frequency (vs) Low frequency consonant

each list, catch trials are given in a random manner.

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIALS REQUIRED :

- i) for carrying the activity
 - 1 pin
 - 20 balloons of two different colours,
- ii) for scoring and reinforcement
 - cake
 - cherries

INSTRUCTION TO THE CLINICIAN

Blow all the balloons and tie them on a card-board sheet. Place this sheet just in front of the child on the table. Give the pin to the child.

While presenting each pair of words, say the first word. Give a gap of around 3-4 seconds and then say the next word. If both the words are same, then the child has to prick two balloons of the same colour. Otherwise he has to prick two different coloured balloons. Once the child responds by pricking the balloon, next word pair has to be presented. Present the word pairs in the same order as given in the list. Once, list 1 is complete move to the second and then to the third and finally to the fourth in a similar fashion.

INSTRUCTION TO THE CHILD

Listen to both the words carefully. If both the words are same, prick two balloons of the same colour. If the paired words are different then prick two balloons of two different colours.

eg 1 : clinician says / கல் / - / பல் / /kal/ - /pal/

The child has to prick two balloons of two different colours,

eg 2 : clinician says / பல் / - / பல் / /pal/ - /pal/

The child has to prick two same coloured balloons.

SCORING AND REINFORCEMENT

Everytime the child responds correctly place one cherry on the cake. If the response is incorrect remove one cherry from the cake. At the end count the number of cherries on the cake. This will be equal to the number of correct responses.

Maximum score which can be obtained by the child is 32.

Section II: Part 2

LESSON-8

DISCRIMINATION BETWEEN SENTENCES WHICH DIFFER IN TERMS OF THE FREQUENCY CHARACTERISTICS OF CONSONANTS WHICH OCCURS FREQUENTLY IN A SENTENCE

1. தாமரை தண்ணீரில் மலரும் - தாமரை தண்ணீரில் மலரும்
2. முத்துவுக்கு தக்காளி பிடிக்கும் - கனகா கடற்கரை சென்றாள்
1. சரசு சாதம் சாப்பிட்டாள் - பாப்பா பாட்டு பாடு
2. பாப்பா பாட்டு பாடு - பாப்பா பாட்டு பாடு
3. சீதா சினிமா சென்றாள் - பல்லவி பாடம் படி
4. மேஜை மேல் புத்தகம் வை - மேஜை மேல் புத்தகம் வை
5. பெரிய சிகப்பு பந்து எங்கே - பெரிய சிகப்பு பந்து எங்கே
6. திருடன் தட்டை திருடிச் சென்றான் - பூமியில் புல் பரவியுள்ளது
7. சரசு சாதம் சாப்பிட்டாள் - சரசு சாதம் சாப்பிட்டாள்
8. தீபாவளிக்கு புது துணி வாங்கு - பெரிய சிகப்பு பந்து எங்கே
9. பல்லவி பாடம் படி - பல்லவி பாடம் படி
10. அதை பத்து தோசை சாப்பிட்டாள் - மேஜை மேல் புத்தகம் வை

List 2

1. பாப்பா பொய் பேசாதே - கனகா கடிதம் எழுதினாள்
2. போட்டியில் பல்லவி பங்கு கொள்கிறாள் - கருப்பு காக்கா மரத்தி
உட்கார்ந்திருந்தது
3. பாப்பா பனியில் போகாதே - பாப்பா பனியில் போகாதே
4. மாமா மாமரம் ஏறினார் - கமலா காரில் சென்று காய்கறிகள் வாங்கி வந்தாள்

7. பாப்பா பொய் பேசாதே - பாப்பா பொய் பேசாதே
8. மாம்பழம் மஞ்சள் நிறமுண்டது - அக்கா பாடக் கேள்விகளை கேட்டாள்
9. மாம்பழம் மஞ்சள் நிறமுண்டது - மாம்பழம் மஞ்சள் நிறமுண்டது
10. பாப்பா பனியில் போகாதே - பாப்பா பனியில் போகாதே ✖

List 3

1. தாத்தா தட்டு தா - தாத்தா தட்டு தா
2. முத்துவுக்கு தமிழ் தெரியாது - கமலா கடலை மிட்டாய் கடித்தாள்
3. சரசு சாதம் சாப்பிட்டாள் - சரசு சாதம் சாப்பிட்டாள்
4. தமிழரசு தாழ்ப்பாள் போடு - தமிழரசு தாழ்பாள் போடு
5. தாத்தா தென்னை மரத்தடியில் தூங்கினார் - கத்திரிக்காய் எனக்கு ரொம்ப பிடிக்கும்.
6. கனகா குடை கொண்டு வா - கனகா குடை கொண்டு வா
7. தாத்தா தட்டு தா - கூடையில் காய்கறிகள் உள்ளன.
8. முத்துவுக்கு தமிழ் தெரியாது - முத்துவுக்கு தமிழ் தெரியாது
9. சரசு சாதம் சாப்பிட்டாள் - கனகா குடை கொண்டு வா
10. கூடையில் காய்கறிகள் உள்ளன - கூடையில் காய்கறிகள் உள்ளன

LIST 1 : Discrimination between sentences with frequently occurring high frequency consonant (vs) sentences with frequently occurring low frequency consonant.

LIST 2 : Discrimination between sentences with frequently occurring low frequency consonant (vs) Mid frequency consonants.

LIST 3 : Discrimination between sentences with frequently occurring high frequency consonant (vs) mid frequency consonant.

Within each list, catch trials are given in a random manner.

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED :**
- i) for carrying out the activity.
 - 2 different colour bowls (ie) red and blue
 - 30 red coloured beads.
 - ii) for scoring and reinforcement
 - one bowl
 - shells
 - stickers

INSTRUCTION TO THE CLINICIAN

Place the bowls and the beads in front of the child. Present the paired sentences in the order given in the list. While presenting the paired sentences, say the first sentence, give a gap of around 5-6 seconds and then say the second sentence. If both the sentences are same, then the child has to respond by picking up a bead and keeping it in the bowl whose colour is same as that of the bead. If the two sentences are different the child has to respond by picking up a bead and keeping it in a bowl of some different colour. Once the child responds by placing the bead into the bowl say the next pair. The paired sentences are to be presented in the order as given in the list. When all the paired sentences in the list have been presented, move to the next list.



INSTRUCTION TO THE CHILD

Listen to both the sentences carefully. If the sentences are same, then place a red coloured bead in the red bowl. If the sentences are different, place the red bead in blue coloured bowl.

eg 1 : clinician says /தாமரை தண்ணீரில் மலரும்/ /தாமரை தண்ணீரில் மலரும்/

/ta:marai taṇṇe:ril malarum/ - /ta:marai taṇṇe:ril malarum /

The child has to place red bead in red bowl,

eg 2 : clinician says /முத்துவுக்கு தமிழ் தெரியாது/ /கனகா கடற்கரை சென்றாள்/

/muttuvukku tamil teriyadu/ - /kanaka kadar karai senral!/
The child has to place the red bead inside blue bowl.

SCORING AND REINFORCEMENT

Everytime the child responds correctly keep one shell inside the bowl. Do not keep the shell inside the bowl, when the response is incorrect. At the end, count the number of shells in the bowl which will be equal to the number of correct responses. Give those many stickers to the child. Maximum score which can be obtained is 30. (ie) the child can collect a maximum of 30 stickers.

Section III: Identification Task

Aim of this activity is to make the child identify the spoken verbal stimuli.

LESSON-9

IDENTIFICATION OF SINGLE WORDS

Practice Items

1. யானை
2. கண்
3. நான்கு
4. கார்
5. வெள்ளை

1. பூனை
2. நாய்
3. எலி
4. குரங்கு .S
5. சிங்கம்

1. பல்
2. கால்
3. கை
4. வாய்
5. மூக்கு

Body Parts

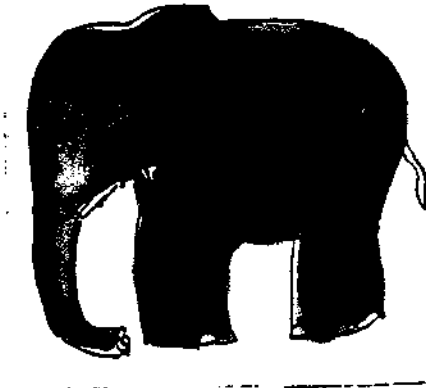
List 3 - Numbers

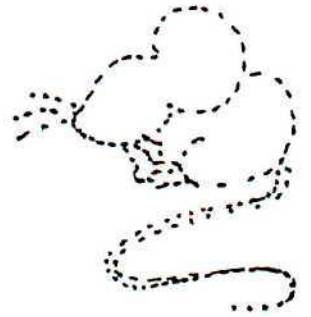
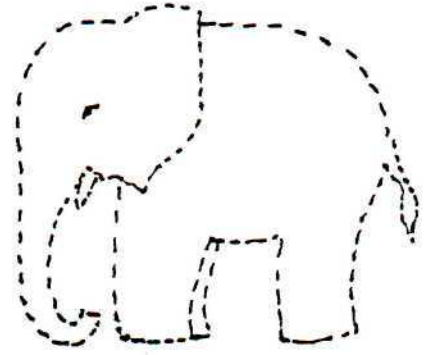
1. ஒன்று
2. ஐந்து
3. மூன்று
4. இரண்டு
5. பத்து

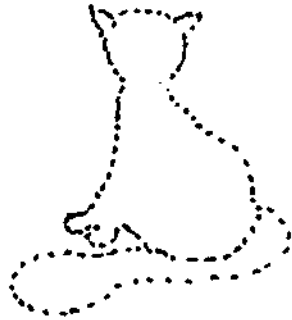
1. சைக்கிள்
2. கார்
3. ஆட்டோ
4. லாரி
5. பேருந்து

1. சிகப்பு
2. கருப்பு
3. மஞ்சள்
4. பச்சை
5. நீலம்

PROCEDURE TO CARRY OUT THE ACTIVITY







INSTRUCTION TO THE CLINICIAN

Have pictures of the animals mentioned in the list along with its dot-dot pictures as shown above. Keep all the pictures in front of the child.

Say the first word from the list. The child has to respond by placing the full picture of the animal names, on the dot-dot picture.

INSTRUCTION TO THE CHILD

I will name a particular animal you have to identify the animal and then place the full picture on the dot-dot picture of the animal, named,

eg. 1 Clinician says /*ya:nai*/.
 /ya:nai/

The child has to place the full picture of the elephant on dot-dot picture.

2. List 2: MATERIAL REQUIRED

- for carrying out the activity
- out-line sketch of the doll
- cut pieces of different body parts.



INSTRUCTION TO THE CLINICIAN

Keep the out-line sketch and also cut pieces of different body parts on the table.

Say the 1st word. The child has to pick up the body-part named by the clinician and paste it on the out-line sketch. Once the child responds, present the next word.

INSTRUCTION TO THE CHILD

Listen to me carefully, once I name a particular body part you have to pick up that part and stick it to the out-line sketch with gum.

eg 1 : clinician says / கண் // kan /

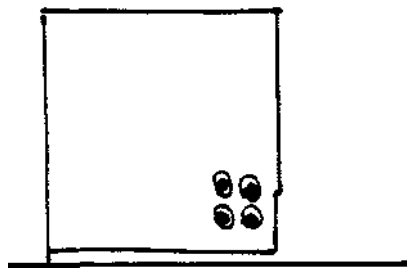
The child has to pick up the sketch of eyes and stick it to the out-line sketch.

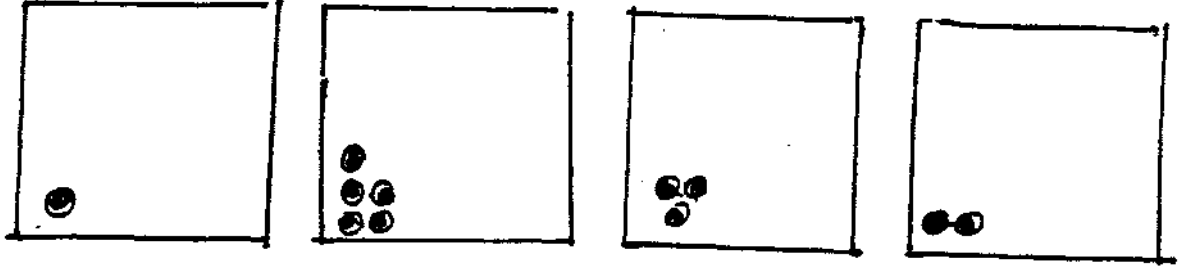
iii) For LIST 3

MATERIALS REQUIRED : i) for carrying out the activity
Marbles.

INSTRUCTION TO THE CLINICIAN

Make four boxes on the floor. Keep marbles inside the box as shown in the picture given below. Number of marbles in the box represents the number of the box.





Say the first number. The child has to respond by jumping into that box which has those many marbles. Once the child responds say the next word/number. Don't give visual cues while saying the number.

INSTRUCTION TO THE CHILD

There are 4 boxes drawn on the floor. Count the number of marbles in each box which will represent the number of the box. Listen to the number which I say. Based on the number said, jump into that box which has those many marbles.

eg : clinician says / நான்கு / /na:ngu /

The child has to jump into the box which has 4 marbles.

iv) For LIST 4

MATERIALS REQUIRED :

- Toy vehicles
Car, scooter, cycle, auto.
- Small toy dolls.

INSTRUCTION TO THE CLINICIAN

Keep all the toy vehicles and the dolls on the table. Name one vehicle. The child has to respond by making the doll sit and ride the vehicle, named by the clinician. Once the child responds, name the next vehicle. While presenting this, do not give visual cues to the child.

INSTRUCTION TO THE CHILD

Listen to me carefully. I will name a vehicle. You have to make the doll sit on the particular vehicle which I name and make her ride the vehicle,

eg: clinician says / कार / /ka:r/

The child has to pick up the doll and make the doll ride the toy car.

(v) LIST 5

MATERIALS REQUIRED : i) for carrying out the activity. Match sticks painted with different colours.

INSTRUCTION TO THE CLINICIAN

Place all the coloured match sticks on the table. Also draw different shapes like square, rectangle, triangle on a sheet of paper.

Name one particular colour. The child has to pick up match sticks of that colour and stick it to one of the shapes. The shape has to be filled with the coloured match ~~sticks~~ named.

Once the child fixes the match sticks, name the next colour.

INSTRUCTION TO THE CHILD

Listen to me carefully. Once I name the colour, you have to pick up a match stick of the particular colour which I name and paste it on one of the figures.

eg : clinician says / வெள்ளை /• / vellai /

The child has to pick up one white coloured match stick and stick it to one of the figures.

SCORING SYSTEM AND REINFORCEMENTS

MATERIALS REQUIRED : i) for scoring and reinforcement

Toffees

Doll



Everytime the child responds correctly, the doll can be made to climb up the tree by one step and if the answer is incorrect move the doll downwards by one step. The child can collect the toffees which are stuck on the trunk and the branches while climbing the tree. Maximum score which can be obtained is 25.

Section III Part (2) : Identification of paired words based on their frequency characteristics.

LESSON-10

IDENTIFICATION OF PAIRED WORDS WHICH DIFFERS IN TERMS OF FREQUENCY CHARACTERISTICS OF BOTH VOWELS AND CONSONANTS

1. பெட்டி - தொட்டி
2. சிலர் - பலர்

1. படி - செடி
2. மீசை - தோசை
3. தேர் - பார்
4. தேன் - நான்
5. பசு - கொசு
6. சேலை - மலை
7. பசு - கொசு
8. குயில் - மயில்
9. வடை - கூடை
10. கோலம் - பலம்
11. குதிரை - மாத்திரை
12. நடை - குடை

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED:** i) for carrying out the activity.
Picturized forms of the words given in the list.
- ii) for scoring and reinforcement
Toy train
Stickers

INSTRUCTION TO THE CLINICIAN

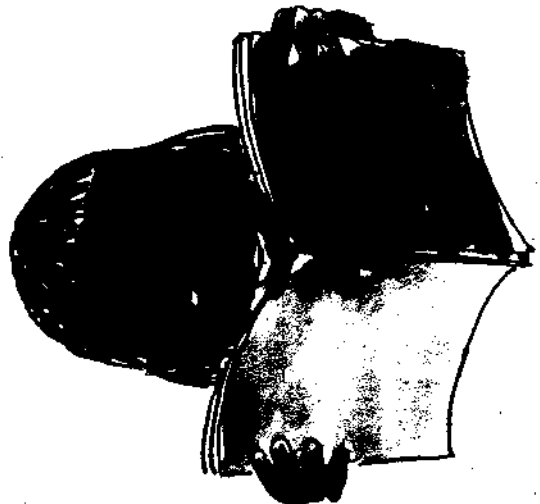
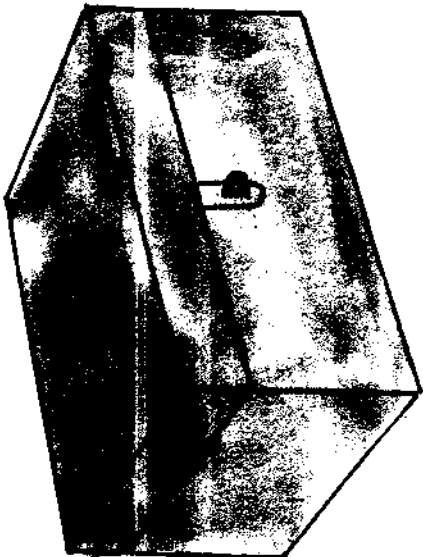
Keep all the pictures on the table in a random manner. Say the first word of the pair, give a gap of around 2.3 seconds and then say the next word. The child has to respond by pointing to the pictures. Once the child responds, say the next word. Do not give visual cues while saying the words. Present the word pairs in the order given in the list.

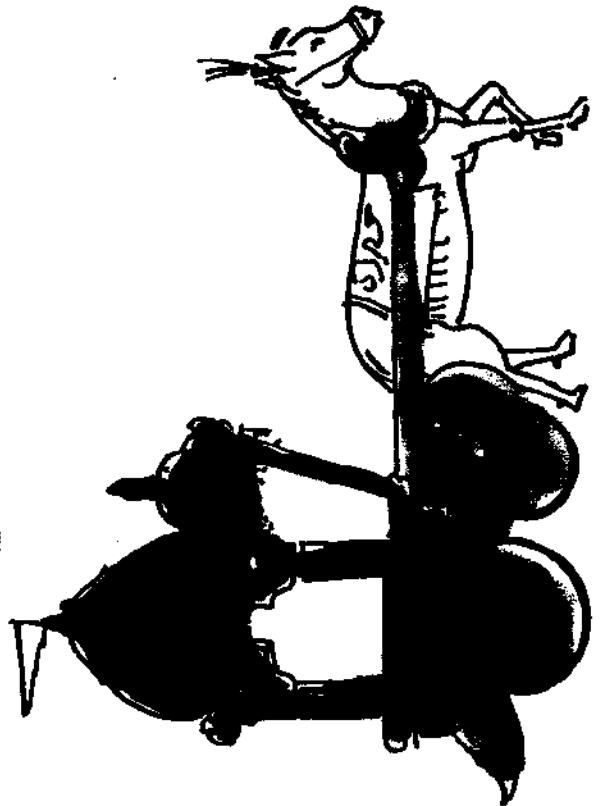
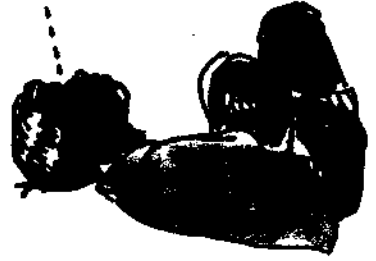
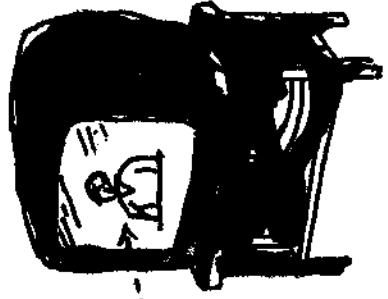
INSTRUCTION TO THE CHILD

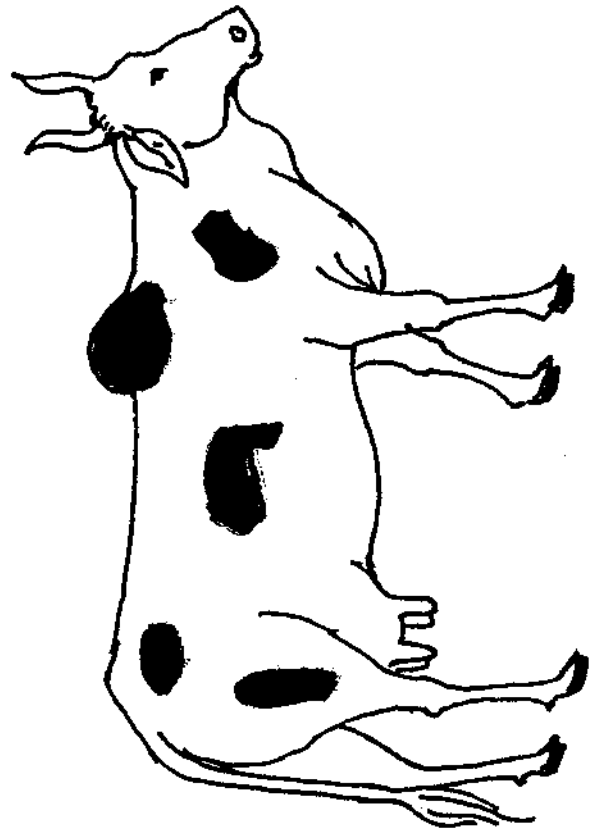
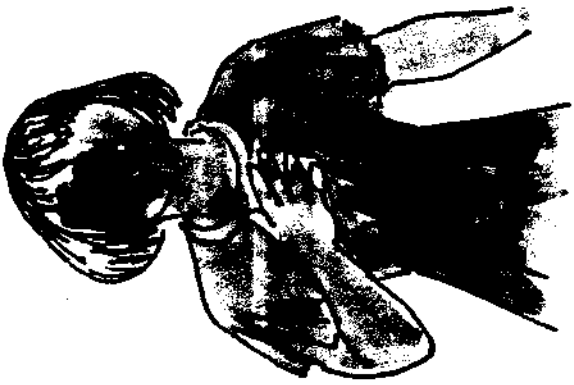
Listen. to me carefully. I will say two words. You have to identify the words and point to the pictures which represents the words.

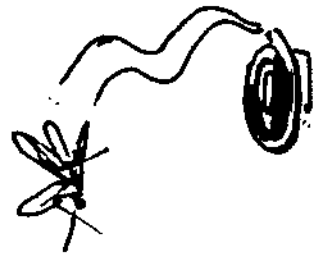
eg : clinician says பெட்டி - தொட்டி /petti/ - /totti/

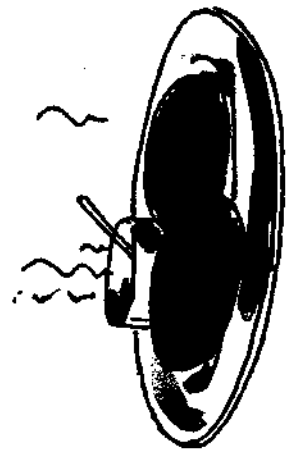
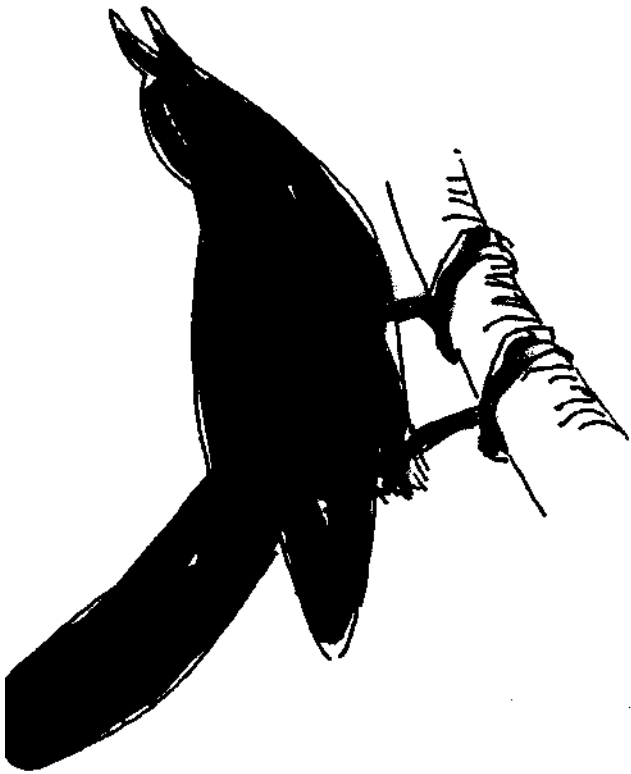
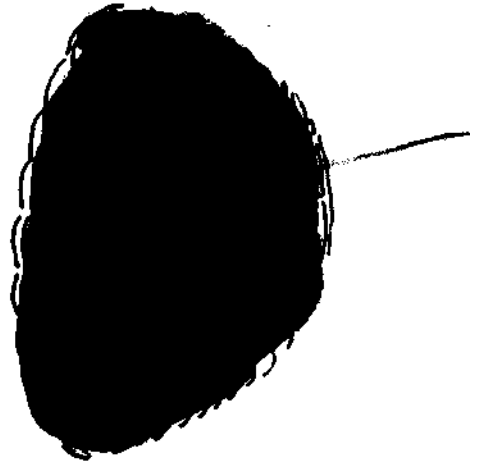
The child has to first point to the picture of the box and then to the picture of the tank.

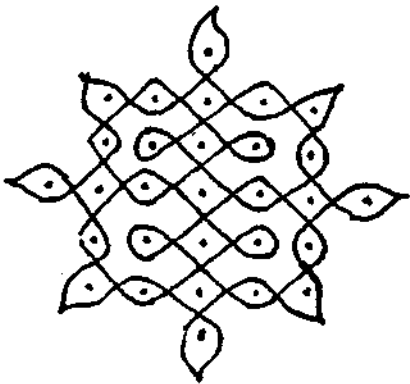
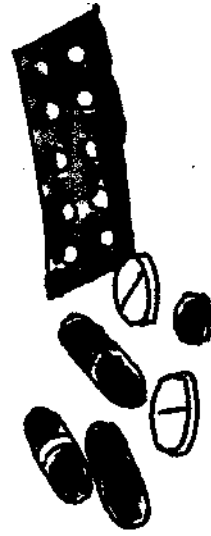


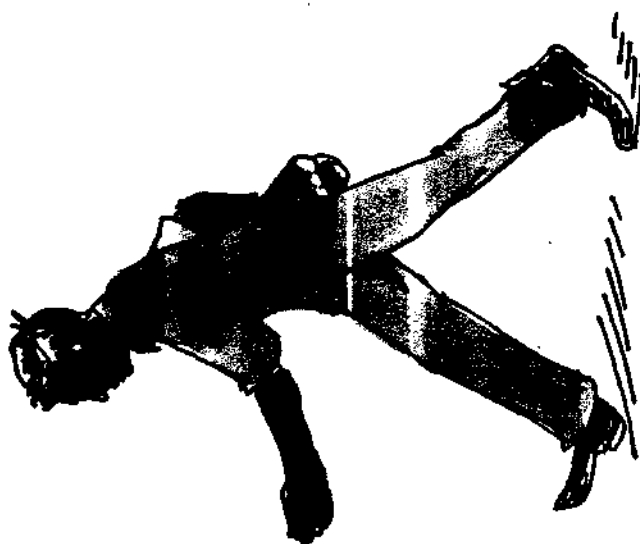
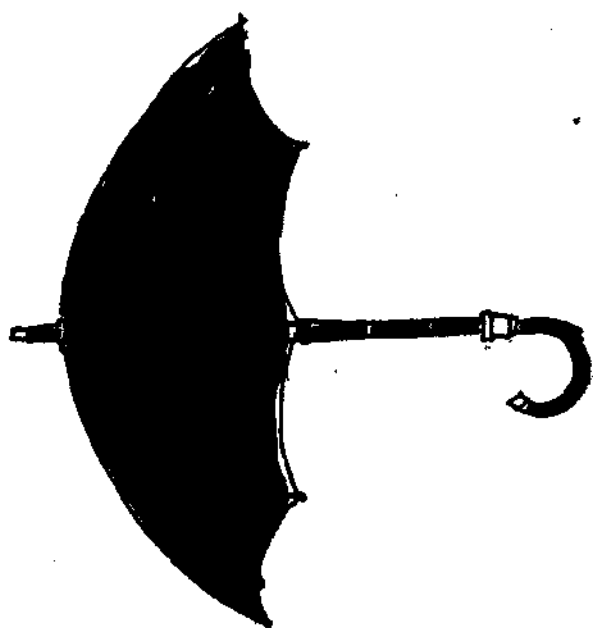












SCORING AND REINFORCEMENT

Keep the train on the table. Make 13 stations along the trains' route. Everytime the child responds, move the train to the station. If the response is correct give one sticker in each station and if the response is wrong do not give sticker in the station. Finally, once the train reaches the last station, count the number of stickers collected by the child. Maximum score which can be obtained is 12 (ie) the child can collect a maximum of 12 stickers.

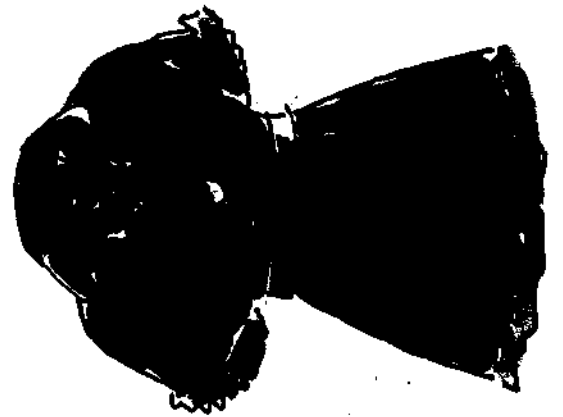
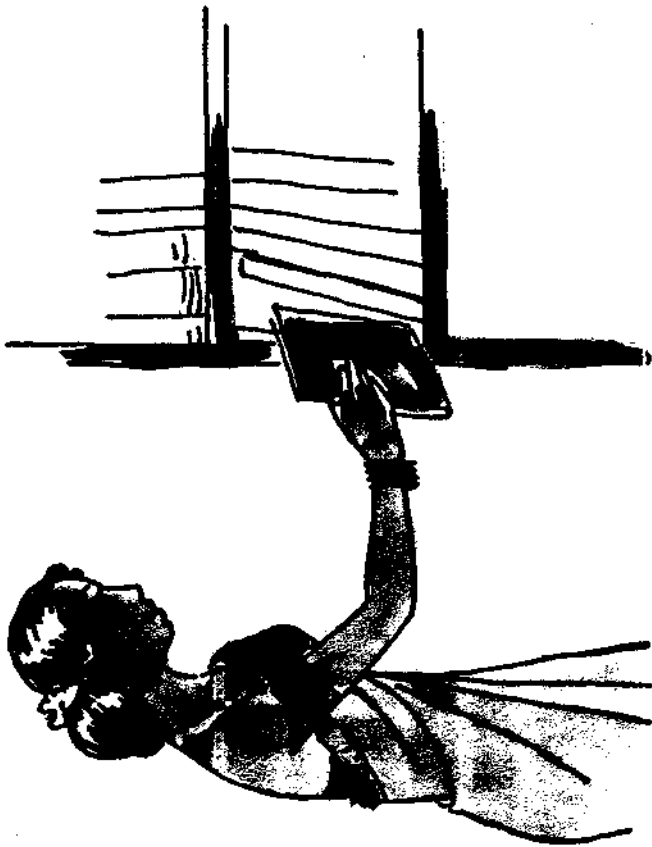
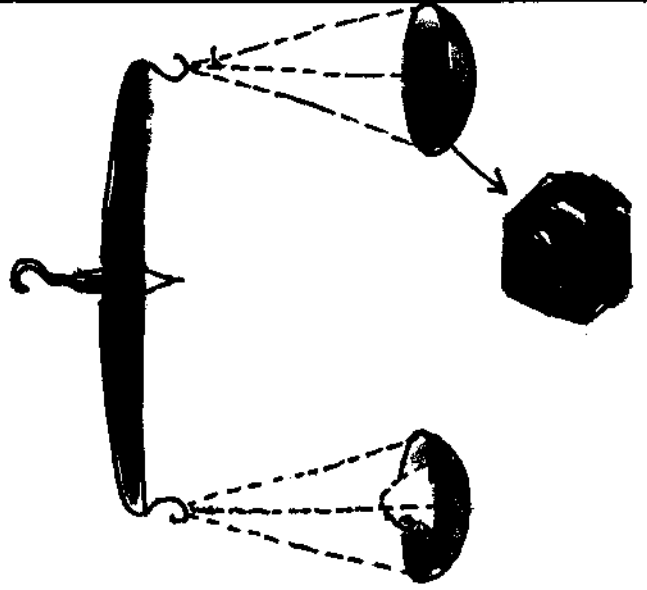
Section III: Part 2

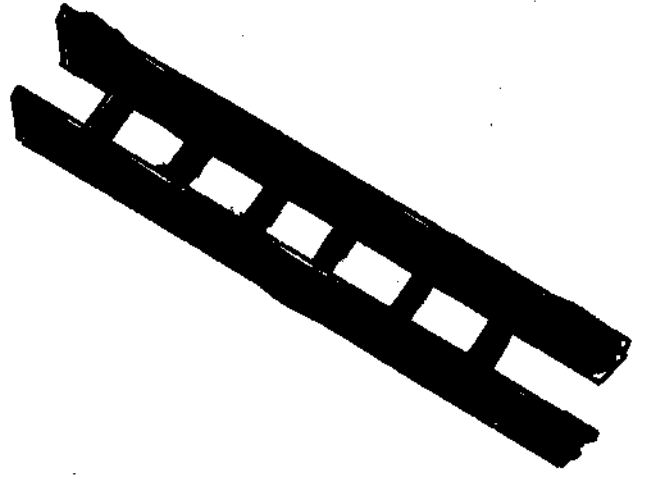
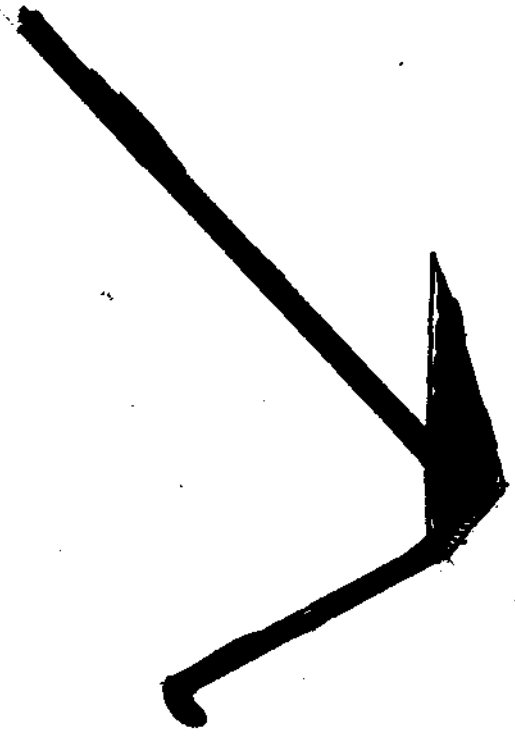
LESSON-11

**IDENTIFICATION OF MINIMAL PAIRS WHICH DIFFERS
RESPECT TO VOWELS IN TERMS OF THEIR FREQUENCY
CHARACTERISTICS**

1. பார் - போர்
2. கீரை - கீரை

1. ஆடு - எடு
2. ஆடை - எடை
3. ஆறு - ஏறு
4. ஆணி - ஏணி
5. பசு - பேசு
6. தா - தீ
7. மான் - மீன்
8. கூடை - கடை
9. குடை - கடை
10. கொடி - குடி
11. ராஜா - ரோஜா
12. கால் - கோல்

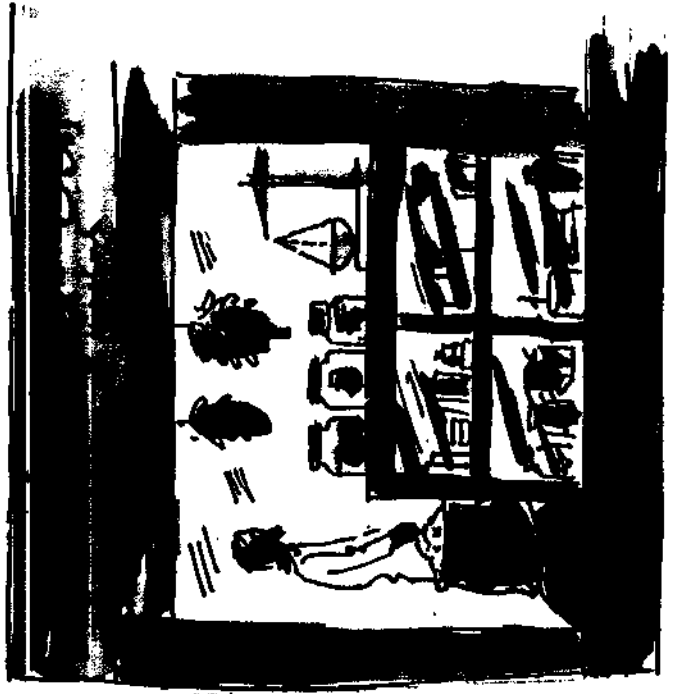


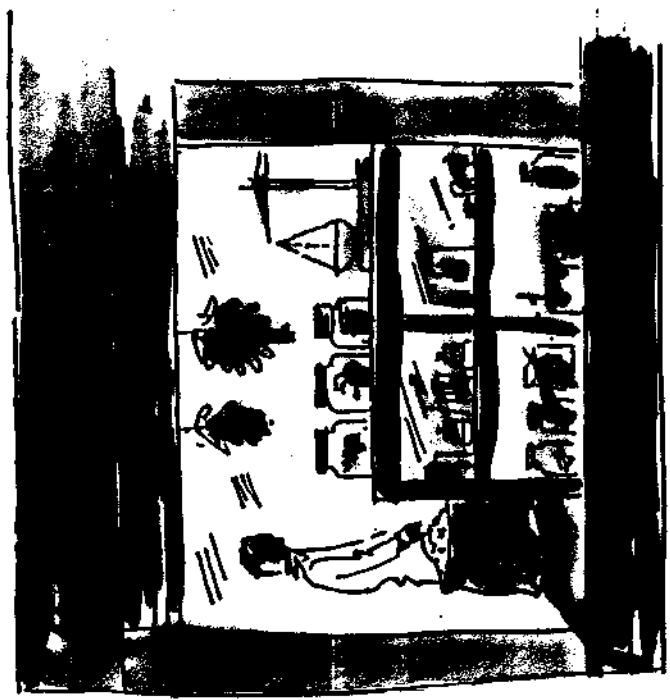


9









PROCEDURE TO CARRY OUT THE ACTIVITY

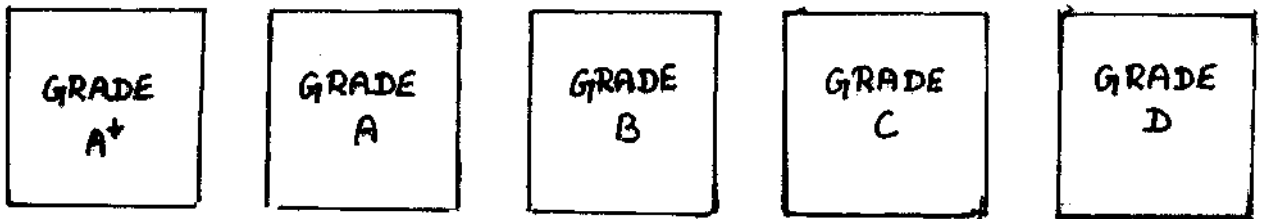
MATERIALS REQUIRED :

i) for carrying out the activity.

The pictures of the words given in the list.

ii) for scoring and reinforcement.

Have cards as shown below.



INSTRUCTION TO THE CLINICIAN

Keep all the pictures on the table. Present the word pairs in the order as given in the list. Say the first word of the pair. Give a gap of around 3-4 seconds and they say the second word of the pair. The child has to respond by pointing to the pictures which represents the words named. Once the child responds say the next pair.

INSTRUCTION TO THE CHILD

Listen to me carefully. I will say two words. You have to identify the words by pointing to the picture which represents the words said.

eg: clinician says लुकि - वार / pa:r/ - /po:r/

The child has to point to the picture representing 'look' first and then to the word which represents to word'war.'

SCORING SYSTEM AND REINFORCEMENT

Everytime the child responds correctly by pointing to the correct picture, make a note of it. At the end, give grades to the child based on the number of correct responses. Maximum score which can be obtained is 24.

Grade A ⁺	:	Excellent	:	If the score is 24
Grade A	:	Superior	:	If the score is between 20-23
Grade B	:	Very good	:	Score is 15-19
Grade C	:	Good	:	Score is 10-15
Grade D	:	Poor	:	if score is less than 10.

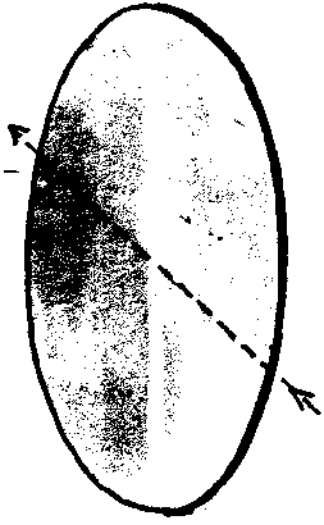
LESSON-12

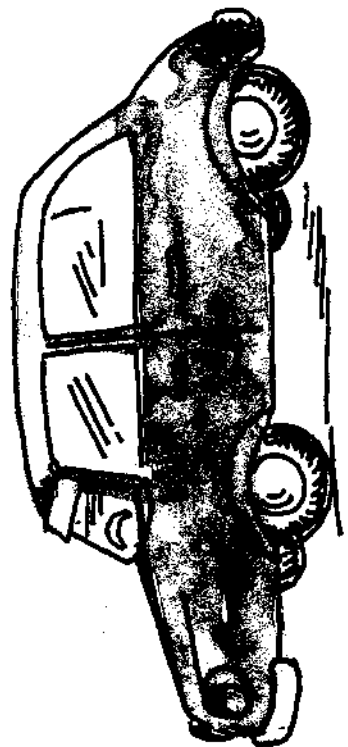
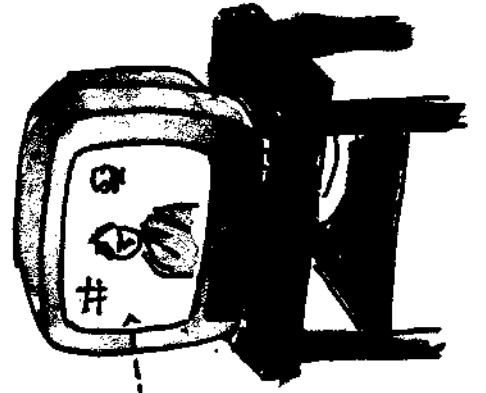
IDENTIFICATION OF MINIMAL PAIRS WHICH DIFFER WITH RESPECT TO THE CONSONANTS IN TERMS OF THEIR FREQUENCY CHARACTERISTICS

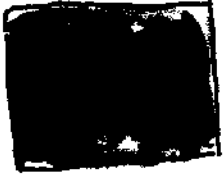
- | | | |
|-----|--------|----------|
| 1. | கோல் | - தோல் |
| 2. | கம்பி | - தம்பி |
| 1. | சிரி | - பிரி |
| 2. | தலை | - மலை |
| 3. | குட்டி | - முட்டி |
| 4. | கால் | - பால் |
| 5. | காரு | - பாரு |
| 6. | குடி | - முடி |
| 7. | கடை | - சண்டை |
| 8. | கட்டு | - தட்டு |
| 9. | நாக்கு | - பாக்கு |
| 10. | வால் | - பால் |

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED :
- i) for carrying out the activity.
Pictures of the words given in the list,
 - ii) for scoring and reinforcement
Abacus
Balloons







INSTRUCTION TO THE CLINICIAN

Keep all the pictures on the table in front of the child.

While presenting the paired words, say the first word. Give a gap of around 3-4 seconds and then say the second word of the pair. The child has to respond by pointing to the pictures which represents the words said. Once the child responds say the next paired word. Do not give visual cues while presenting the paired words.

INSTRUCTION TO THE CHILD

Listen to me carefully. I will say two words. You have to identify the words by pointing to the pictures which represents the words,

eg: clinician says /கம்பி / - /தம்பி/

/kambi/ - /tambi/

The child first has to point to the picture of a 'rod' and then to the picture which represents 'brother'.

SCORING SYSTEM AND REINFORCEMENT

Place the abacus in front of the child. When the child responds correctly, move one of the bead to the other side. If the response is wrong, bring one of the bead back to its original place.

Give the child one balloon when all the beads in a row are moved to the other side.

Maximum score which can be obtained is 20 (ie) 20 beads have to be moved to the other side of the abacus.

Section IV: Comprehension Task

Aim of this activity is to make the child understand whatever is spoken to him.

LESSON-13

COMPREHENSION OF SIMPLE WORDS

Practice Items

List 1

1. குண்டு
2. இரவு

List 4.

1. சின்ன
2. உள்ளே
3. முன்னால்
4. சந்தோஷம்
5. குட்டை
6. கடைசி
7. புதிய
8. பெண்
9. கீழே
10. காய்

Practice Items for List 2

1. தீப்பெட்டி
2. புத்தகங்கள்

List 2

1. பேனா
2. யூக்கள்
3. சீப்பு
4. நட்சத்திரங்கள்
5. பொம்மைகள்
6. டம்லர்
7. கடிகாரம்
8. தட்டு
9. பென்சில்கள்
10. ப்ரஷ்

PROCEDURE TO CARRY OUT THE ACTIVITY

MATERIALS REQUIRED : i) for carrying out the activity.

The following pictures with the written forms which represents the opposite of the list 1.

Pictures of these words are shown in next page.

Picture for List 1



சந்திரன்



துக்கம்



சூன்



பெண்

4திய



பண்டிய



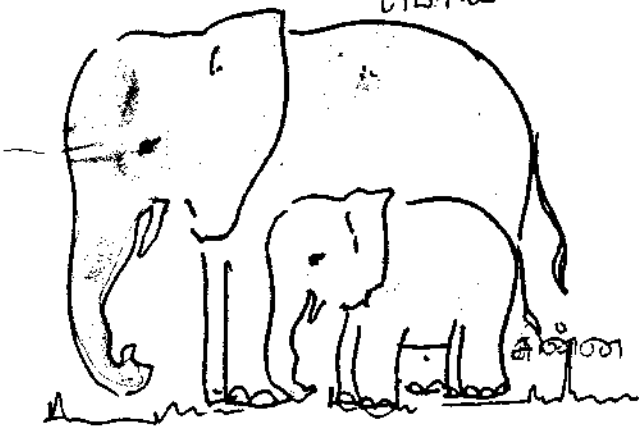
நீளம்



குடை



பெரிய



சின்ன

சூடு



கிஸ்



Picture for List 1



ചാണ



വെളിച്ചം

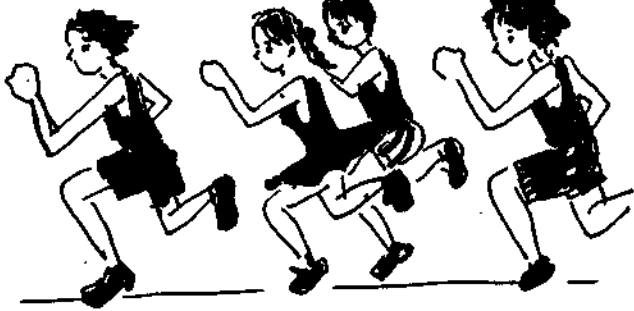


പച്ച



കായ

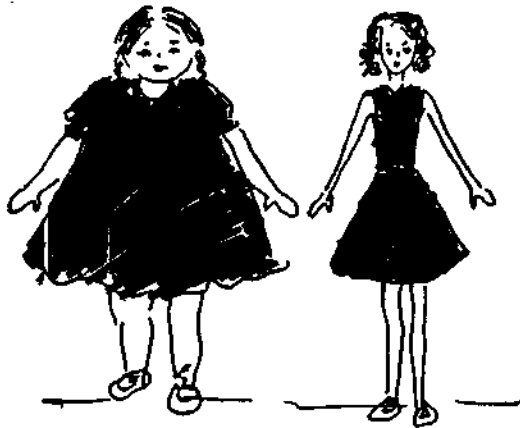
പ്രശ്ന



കാല

കോട

പൂർണ്ണ



നട



പ്ര



ചിങ്ങനാട



ചിങ്ങനാട

INSTRUCTION TO THE CLINICIAN (for list 1)

Keep all the pictures with the written forms on the table in a random manner in front of the child. Say the first word. Do not give visual cues while saying the word. Once the child responds by pointing to the picture which represents the opposite of the said word, say the next one. If the child does not know the opposite, of the said word, pictures of only the list items can be used.

INSTRUCTION TO THE CHILD

Listen to the word which I say. Think of the opposite of that word. Then point to the picture which represents the opposite of the said word,

eg: clinician says / **புரியா** / /**periya**/

The child has to point to the picture which represents the word,

சரியா

MATERIALS REQUIRED

For list 2 : i) for carrying out the activity.
Have two or three of each of the following object:
Flowers
Books
Pens
Combs
Stars cut out of card board
Dolls
Tumblers

Watches

Plates

Pencils

Brushes

- ii) for scoring and reinforcement
dot-dot pictures of stars

INSTRUCTION TO THE CLINICIAN (for list 2)

Keep all the objects mentioned above in a tray on the table in a random order. Say the first word from the list without giving any visual cues to the child. Once the child responds by picking up the object/objects named, say the next word.

INSTRUCTION TO THE CHILD

Listen to me carefully. You have to pick up the object which I name. If the object named is in singular form pick only one object. Otherwise pick two/three same objects.

eg 1 : clinician says /தீப்பெட்டி/ **teepetti/**

The child has to pick one match box.

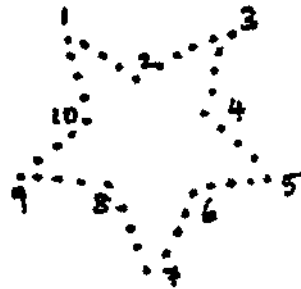
eg 2 : clinician says / புத்தகங்கள் / **puttangangal/**

The child has to pick two/three books.

SCORING SYSTEM AND REINFORCEMENT

Have dot-dot picture of stars. Everytime the child responds correctly join the dots progressively. One pair for each correct answer (ie 1-2, 2-3, 3-4 etc.).

The star is complete when the child responds to all the items in list 1 correctly. Same method can be followed to score items of list 2. When the star is complete, it can be given to the child. Maximum score which can be obtained is 20.



Section IV

LESSON-14

COMPREHENSION OF SIMPLE COMMANDS

1. பாடம் படி
2. பல் காட்டு

1. பல் துலக்கு
2. தண்ணீர் குடி
3. கை தூக்கு
4. ஓடி வா
5. தலை சீவு
6. படுத்து தூங்கு
7. பந்து வீசு
8. புத்தகம் எடு
9. முகம் கழுவு
10. புத்தகம் மூடு
11. கை தட்டி சிரி
12. புத்தகத்தில் எழுது
13. என் தலை காட்டு
14. புத்தகம் எடுத்து நில்லு
15. எழுந்து நின்று வணக்கம் கூறு

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED :**
- i) for carrying out the activity.
Real objects like ball, book, pen, tooth, brush, comb, tumbler, plate,
 - ii) for scoring and reinforcement,
car cut out of card board

INSTRUCTION TO THE CLINICIAN

Place all the objects mentioned in front of the child. Present each command, one at a time. The child has to respond to the command by carrying out the activity. If required, one of the objects placed in front of the child may be used. Once the child has responded present the next command. Follow the order given in the list.

INSTRUCTION TO THE CHILD

Listen to the command which I give you and then carry out the command. If required, you can use the objects placed in front of you to carry out the activity.

eg 1 : clinician says / பரடம் படி // pardam padi/

The child has to pick up a book and read,

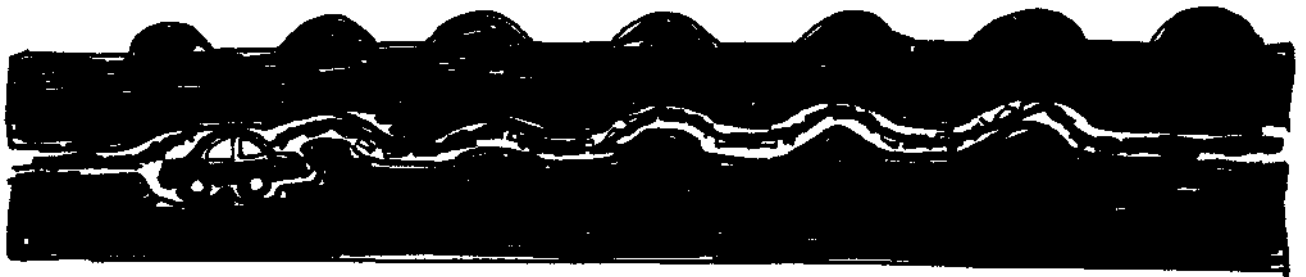
eg 2 : clinician says / பல் காட்டு // pal ka:ttu/

The child has to show his teeth.

SCORING SYSTEM AND REINFORCEMENT

Place a toy car cut-out of card-board on the table. Draw a road either on a book or on the floor with 15 speed breakers. The child should be seated near the last speed breaker.

If the child responds correctly the car crosses one speed breaker and approaches the next. If the child gives an incorrect response the car does not move. The child has to cross all the 15 speed breakers to get the car. Maximum score which can be obtained is 15.



Section TV

LESSON-15

COMPREHENSION OF RELATED QUESTIONS

List I

ஒரு ஊரில் ஒரு காகம் இருந்தது. அதற்கு ஒரு முறை தாகம் எடுத்தது. அங்கே ஒரு ஜாடியில் சிறிதே தண்ணீரை கண்டது. அதில் தன் மூக்கை விட்டது. தண்ணீர் எட்டவில்லை. பக்கத்தில் இருந்த கற்களை எடுத்து ஒவ்வொன்றாக ஜாடியில் போட்டது. தண்ணீர் மேலே வந்தது. காகம் தண்ணீரை குடித்தது. சந்தோஷமாக பறந்து சென்றது.

Practice Item

1) இந்த கதையில் குறிப்பிடப்பட்டுள்ள பறவை எது?

- 1) பறவை ஜாடியை நோக்கி ஏன் சென்றது?
- 2) ஜாடியில் பறவை எதைக் கண்டது?
- 3) ஜாடியில் பறவை எதை போட்டது?
- 4) பறவையின் தாகம் எவ்வாறு தனிந்தது?
- 5) பறவை தண்ணீரை குடித்த பின் என்ன செய்தது?

பசியுடன் வந்த நரி ஒன்று இறுதியாக ஒரு திராட்சைத் தோட்டத்தைக் கண்டது. அழகான பழங்களைப் பார்த்ததும் அதற்கு ஆசை பிறந்தது.

ஆனால் பழங்கள் அதன் வாய்க்கு எட்டவில்லை. உயரத்தில் இருந்தன.

துள்ளிக் குதித்தது, தாவியது கிடைக்கவில்லை. மீண்டும், மீண்டும் குதித்தது, முடியவில்லை.

மிகவும் களைப்புற்று ஏமாற்றத்துடன் திரும்பும் போது அது சொல்லிக் கொண்டது "இந்தப் பழம் நமக்கு வேண்டாம். சீ! சீ! இது புளிக்கும்". திருப்தியுடன் திரும்பிச் சென்றது.

Practice Item

- 1) இந்த கதையில் குறிப்பிடப்பட்டுள்ள மிருகம் எது?
- 1) பசியுடன் வந்த மிருகம் எதைக் கண்டது?
- 2) ஏன் பழங்கள் அதற்கு எட்டவில்லை?
- 3) இந்த கதையில் குறிப்பிடப்பட்டுள்ள பறவை எது?
- 4) பழங்கள் அதற்குக் கிடைத்ததா?
- 5) ஏமாற்றத்துடன் திரும்பிய மிருகம் என்ன கூறியது?

PROCEDURE TO CARRY OUT THE ACTIVITY

- MATERIALS REQUIRED :
- i) for carrying out the activity.
Picture series of representing the two stories,
 - ii) for scoring and reinforcement.
Picture of a plant as shown below.

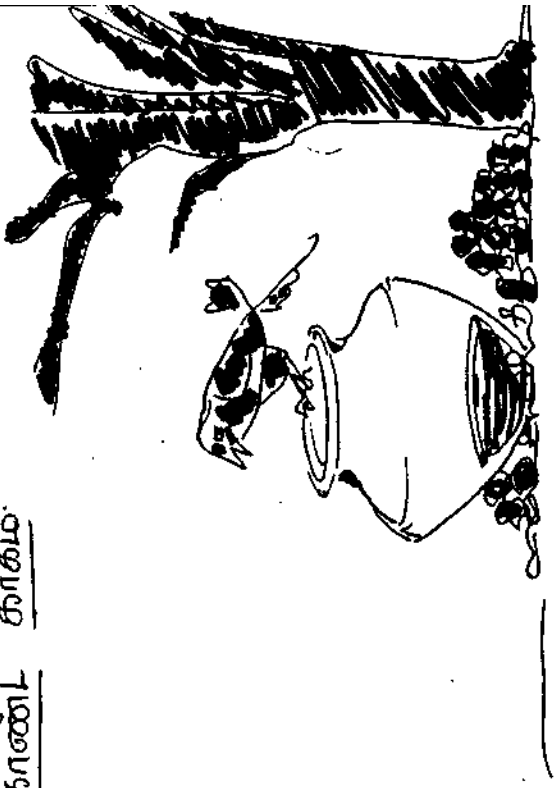


PICTURE SERIES FOR LIST - I.

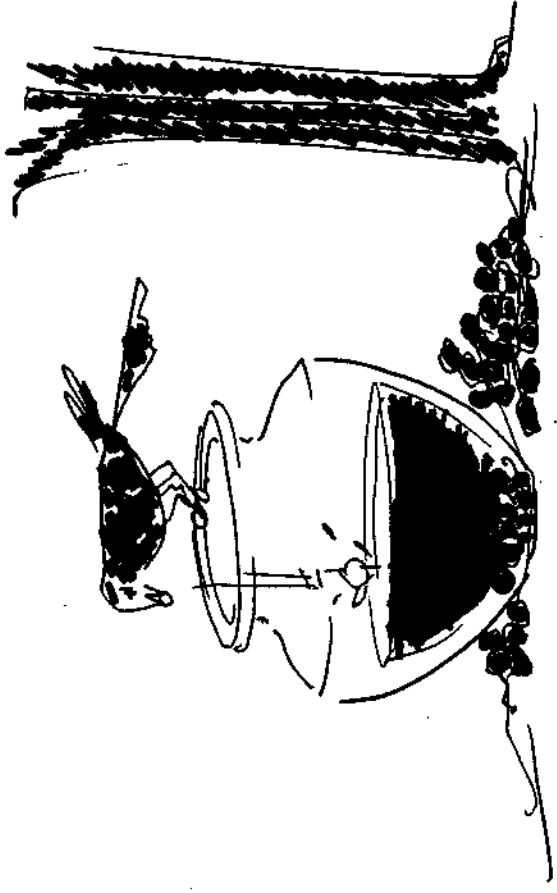
தூங்கி சுகாணி காசும்



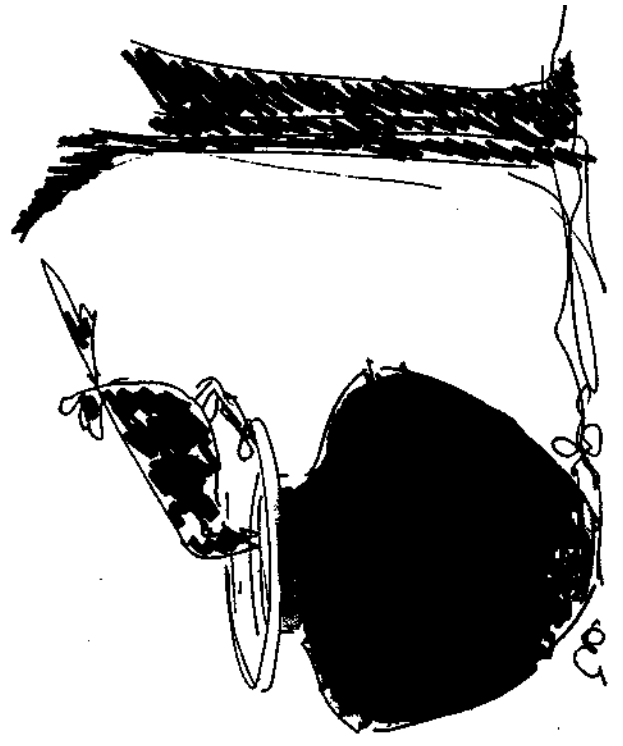
(1)



(2)



(3)



(4)

PICTURE SERIES FOR LITZ



(1)



(2)

Jonny ml



(3)



(4)

INSTRUCTION TO THE CLINICIAN

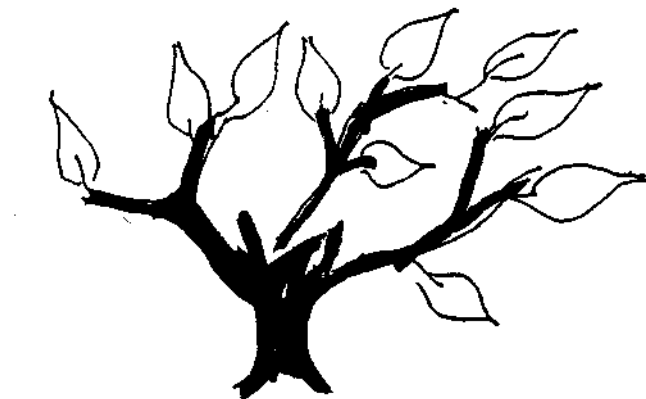
Tell the story to the child. Let him watch you if required. If the child has difficulty in comprehending the story keep the picture series in front of the child. At the end of the story, ask the questions given above in the same order. Don't give visual cues while asking the questions. If the child does not answer the question first time, repeat the question if he does not answer after the repetition rephrase the question and ask it once again. Move to the second list if the child answers to the list question in the list 1.

INSTRUCTION TO THE CHILD

Listen to the story which I say carefully. I will keep the picture series representing the story on the table. Once I finish telling the story I will ask you questions related to the story. You have answer the question. If you can't answer the question first time I will repeat the question and then rephrase it to make it easier.

SCORING SYSTEM AND REINFORCEMENT

Have a picture of a plant with 10 leaves as shown below.



If the child answers when the question is asked for the first time, allow the child to colour one leaf of the plant. If he answers, when the question is repeated or when the question is rephrased, the child can be allowed to colour only half the leaf. For this lesson maximum number of leaves which can be coloured is 10. The picture will be coloured completely only when all the leaves are coloured.

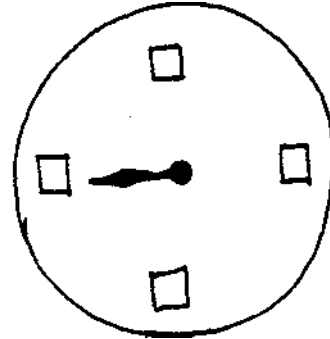
LESSON-16

COMPREHENSION OF UNRELATED QUESTIONS

- 1) யானை எந்த நிறமுடையது? (வெள்ளை, கருப்பு, சிகப்பு, பச்சை)
- 2) மிருகங்கள் வசிக்கும் இடம் எது? (வீடு, காடு, ஆகாயம், தண்ணீர்)
- 1) எந்த பூ தண்ணீரில் மலரும்? (தாமரை, ரோஜா, மல்லிகை, சாமந்தி)
- 2) பால் எந்த நிறமுடையது? (கருப்பு, வெள்ளை, சிகப்பு, பச்சை)
- 3) நம் ஒரு கையில் எத்தனை விரல்கள் உள்ளன? (நான்கு, ஐந்து, ஒன்று, மூன்று)
- 4) எந்த மிருகம் குலைக்கும்? (யானை, நாய், பூனை, சிங்கம்)
- 5) எந்த பிராணி நீரில் வசிக்கும்? (மீன், மான், நாய், எலி)
- 6) மிருகங்களுக்கு எத்தனை கால்கள் உள்ளன? (இரண்டு, மூன்று, நான்கு, ஒன்று)
- 7) எது வானத்தில் பறக்கும்? (மிருகம், பூச்சி, பறவை, மனிதன்)
- 8) எந்த காய் சிகப்பு நிறமுடையது? (தக்காளி, மாங்காய், பூசணிக்காய், கத்திரிக்காய்)
- 9) பார்ப்பதற்கு நாம் எதை உபயோகிக்கிறோம்? (காது, மூக்கு, கண், கால்)
- 10) இலைகள் எந்த நிறமுடையது? (பச்சை, சிகப்பு, வெள்ளை, கருப்பு)

PROCEDURE TO CARRY OUT THE ACTIVITY

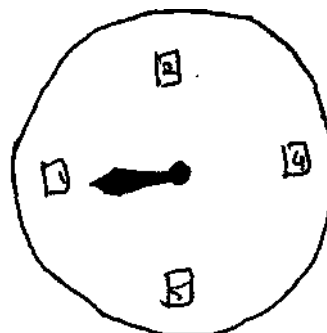
- MATERIALS REQUIRED :
- i) for carrying out the activity.
 - a) Round cut card board sheet with a movable arrow as shown below.



- b) Pictures of the words written within brackets.
- ii) for scoring and reinforcement
- Ten 50 paise coins
 - Ten 25 paise coins

INSTRUCTION TO THE CLINICIAN

Collect around ten 50 paise and 25 paise coins from the child's¹ parent. Say the first question without giving the multiple choices. If the child responds correctly by saying the correct answer move to the next question. Otherwise say the question once again along with four multiple choices. Stick the four pictures representing these words on the card board sheet as shown below.



Once the child answers the question by moving the arrow to the correct picture which represents the answer, say the next word. While asking questions do not give any visual cues. The questions have to be asked in the order given in the list.

INSTRUCTION TO THE CHILD

Listen to the question which I ask carefully and then you have to answer the question. If you cannot, I will give you four choices. You have to select the right answer from the four choices and point to the picture which represents the right answer by moving the arrow towards the picture,

eg 1 : clinician says யானை எந்த நிறமுடையது

/ya:nai enda niramudayadu

The child has to say கருப்பு / point to the picture of black on the card board by moving the arrow.

SCORING SYSTEM AND REINFORCEMENT

Have around ten 50 paise and ten 25 paise coins. If the child responds correctly when the 4 choices are not given give one 50 paise coin to the child. If the child answers correctly only when the four 4 choices are given give one 25 paise coin. Maximum number of coins which the child can collect is 10 for this lesson.