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Efficacy of intervention programme to improve phonological sensitivity skills in Tamil speaking children who are below average scholastic performers

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Abstract

Phonological awareness or phonological sensitivity refers to "the knowledge that spoken words are composed of individual sounds and the ability to manipulate them". Phonological awareness skills are significant predictors of children's later success in reading skills and therefore everything possible must be done to give young children the opportunity to develop these skills. Aim: The aim of this study is to develop and check the efficacy of an intervention programme for improving the phonological sensitivity skills in below average scholastic performers. Method: The study has been divided into 4 different phases: Development of Intervention manual (T-PASIP); Administration of T-PAST; Implementation of the intervention programme and re-administration of T-PAST to check the prognosis. Tamil speaking children between the age ranges of 5 to 12 years were included in the study. Result: This study have documented that the intervention programme developed has been more effective on intervening children with poor phonological sensitivity skills. Significant improvement was observed post therapeutically in the children who have been receiving adequate and efficient intervention in phonological awareness subskills.

Keywords: phonological awareness, reading skills, phonological sensitivity intervention programme, T-PAST, T-PASIP

1. Introduction

Reading is one of the most important skills that young children need to develop. Children who are good compendiums enjoy reading and read more,

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further perfecting their reading chops and vocabulary knowledge. Children who have difficulty reading generally read lower than their peers do. Without repeated reading, these children's vocabulary knowledge and overall literacy capability frequently fall behind those of their reading- complete peers, which can negatively affect their academic success and their tone- regard (Sanders, 2001). Difficulty literacy to read generally doesn't come apparent until first grade, by which time these children are at threat for continuing reading difficulties (Snow, Burns & Griffin, 1998). Thus, it's important to identify early predictors of reading success. Former exploration has set up phonological mindfulness to be one of the strongest predictors of latterly reading capability (Badian, 2001 Hulme etal., 2002; MacDonald & Cornwall, 1995, etc). Phonological mindfulness or phonological perceptivity refers to "the knowledge that spoken words are composed of individual sounds and the capability to manipulate them" (Roth, Troia, Worthington, & Handy, 2006). According to Denton et al in 2000, phonological awareness is the mindfulness of words as realities separate from the meanings attached to them. It's a multi-level skill and reflects how words can be broken down into lower units in varying ways. Spoken language can be broken down in numerous different ways, including rulings broken into words and words segmented into syllables (e.g., in the word simple, /sim/ and /ple/), onset and frost (e.g., in the word broom, /br/ and /oom/), and individual phonemes (e.g., in the word hinder, /h/, /a/, /m/, /p/, /er/). Manipulating sounds includes deleting, adding, or substituting syllables or phonemes (e.g., say can; say it without the/ k/; say can with/ m/ rather of/ k/). Being phonologically apprehensive means having a general understanding at all of these situations. The capability to member and distinguish phonemes from incoming speech, as well as acquire knowledge of sound patterns of a language, is important for developing word knowledge which can be only achieved if the child has mindfulness in phonology (Adams, Foorman, Lundberg and Beeler, 1998). Goswami and Bryant in 1990 argued that during the preschool and during early academy times, the children progress through three situations of phonological mindfulness from mindfulness of syllables to mindfulness of onsets and hoars and eventually to phoneme mindfulness. For a child who has developed this mindfulness, he or she's suitable to divide words into lower units (i.e., by syllable), identify sounds in words, or produce rhymes for a given word. Chops in all of these areas may contribute to successful reading or spelling performance, but phonological mindfulness chops at the phoneme position are the most critical for knowledge development. A generally developing child should have normal phonological mindfulness which plays a vital part in normal language and speech development. Some children don't develop phonological mindfulness chops or are delayed in doing so. In particular, children with speech and/ or language detainments frequently also display phonological mindfulness poverties (Laing & Espeland, 2004). This finding is particularly salient, given that early phonological mindfulness chops have been explosively linked to early reading chops (van Kleeck, Gillam, & McFadden, 1998). As a result, for children who struggle to acquire phonological mindfulness chops, learning to read can also be delicate. A significant quantum of exploration has indicated that early intervention can ameliorate both phonological perceptivity chops

and posterior reading capability in generally developing children. Regarding the age at which phonological mindfulness training should begin, maturity of studies have targeted children between 4 to 6 times of age (Majsterek et al., 2000; Mitchell & Fox, 2001 van Kleeck et al., 1998; Walton et al., 2001). Still, Chaney(1992) showed that the periods between 2 and 4 are active ages of metalinguistic literacy, including the accession of phonological perceptivity chops, and the findings of a study done by Lonigan, Burgess, and Anthony(2000) indicated that children's phonological mindfulness chops develop significantly between the periods of 3 and 4 times. Likewise, utmost children enter preschool programs by age 3. Thus, it is suggested that it might be judicious to begin phonological mindfulness training before the age of 4. Regarding which phonological mindfulness chops should be tutored first, Stahl and Murray (1994) and Treiman and Zukowski (1991) suggested that children gain control over larger units of sound, similar as onset (the part of a syllable that includes all consonants that antecede the vowel) and frost (the part of a syllable that includes the vowel and consonants that follow the vowel), before lower units similar as individual phonemes. Given the ample quantum of being exploration indicating the lifelong significance of knowledge, as well as the benefits of early intervention (Roth, Troia, Worthington, & Dow, 2002), the notion of beginning treatment for phonological mindfulness for children who warrant these chops as soon as possible is accordingly intuitive. One of the longest surviving classical languages in the world is the language 'Tamil '. It has been described by Kamil Zvelebil in 1973 as "the only language of contemporary India which is recognizably nonstop with a classical history". Tamil is the first language of the maturity of the people abiding in Tamil Nadu in India and Sri Lanka. The language is also spoken among small groups in other countries of India. Tamil script consists of 12 vowels and 18 consonants. There is also one special character, the āytam. These vowels and consonants combine to form 216 composite characters, making a aggregate of 247 characters. All consonants have an essential vowel /a/. This inherency is removed by adding a title called a puḷḷi, to the consonantal sign.

The Tamil script is somewhat different from other scripts in that it nearly always uses a visible puḷḷi to indicate a dead consonant (a consonant without a vowel). Tamil does not distinguish phonologically between voiced and voiceless consonants. Phonetically, voice is assigned depending on a position of consonants in a word. Tamil phonology allows few of the consonant clusters, which can never be word initial. The native grammarians classify Tamil phonemes into vowels, consonants, and an additional character, the āytam. Tamil's Alpha - syllabic writing presents a special case as it shares the properties of alphabetic and writing systems. Hence, the grapheme in an alpha -syllabary (known as akshara) can map onto either a phoneme or a syllable. A striking feature of alpha – syllabic script is that the vowel sounds are represented in primary form when used in word initial position else is represented using a secondary form called as diacritic marker attached to the base consonant. This in turn requires the children to learn several ligaturing rules in order to decode the script. Therefore, the acquisition of the phonological sensitivity skills in Tamil speaking children varies from

other population. This can be contributed to the difference in the rules and the complexity of the language. A study done by Tychicus and Amirtha Varshini (2012) explored the phonological awareness developmental pattern in typically developing Tamil speaking children. They concluded that children between 4- 7.11 years achieve only early phonological awareness skills. 6-7.11 years showed emergence of syllabic skills and phonemic awareness skills, whereas 10-11.11 years had mastered all the skills. The rate and speed of acquisition in typically developing Tamil speaking children varied from phonological awareness development seen in other languages.

Because phonological awareness skills are significant predictors of children's later success in reading skills, everything possible must be done to give young children the opportunity to develop these skills. And, due to the uniqueness of the Tamil language, there is a serious need for developing an intervention programme for developing the phonological sensitivity skills in Tamil speaking children.

Due to the amount of research documenting the significance of phonological awareness in learning to read, there has been a numerous standardized phonological awareness programs established for use with young children over the past several decades (NRP, 2000; Santi et al., 2004). It appears that most programs target young children in preschool through first- or second-grade. This is consistent with phonological awareness research stating that the development of these skills at an early age is critical due to their connection with learning to read and future reading success (Gillon, 2004; NRC, 1999; Snow et al., 1998). Stepping Stones to Literacy is a phonological awareness program that was developed for preschool and kindergarten children (Nelson, Cooper, & Gonzales, 2004). As part of this program, children receive individualized instruction in a variety of phonological awareness skills through 25 lessons that progress from such basic skills as rhyming to the more complex skill of blending and segmenting individual phonemes. This program also incorporates listening activities and instruction in letter naming and can be administered by classroom teachers or other school personnel. Nelson, Benner, & Gonzales in 2005 studied the effectiveness of the Stepping Stones to Literacy program with kindergarten children identified as being at risk for both an emotional disturbance and future reading difficulties. Results indicated that the children showed significant gains on measures of word reading, rapid naming skill, and phonological awareness than those at-risk children in the control group.

Ladders to Literacy is a program designed to develop and increase the phonological awareness, oral language, and print awareness skills of preschool and kindergarten children (O'Connor, Notari-Syverson, & Vadasy, 1998). As part of the program, teachers are trained to offer direct instruction at the classroom level using specially developed games and activities, such as using songs to isolate phonemes, representing phonemes with finger cues, and guessing games, that facilitate the development of each skill.

O'Connor, 2000 studied the effectiveness of providing professional development to teachers throughout their implementation of the Ladders to Literacy program in the kindergarten classroom. He reported the training resulted in larger performance gains for their students on measures of phoneme blending, phoneme segmentation, rapid letter naming, reading,

and spelling than for those children whose teachers did not participate in professional development.

The Lindamood Phoneme Sequencing Program (Lindamood & Lindamood, [LiPS], 1984) was developed to provide direct instruction in phonemic awareness to elementary school children identified as having poor phonemic awareness skills (Listening Ears, 2008). This program helps students become aware of the movement of their mouth while producing various phonemes. This training is done first through the use of pictures, with corresponding letters being gradually incorporated as children become more proficient with their oral movements.

Torgesen et al., 2001 compared the effectiveness of the LiPS program with an Embedded Phonics program with primary school children identified as Learning Disabled (LD) over an 8 to 9 week period. Results indicated both groups of children made significant gains on measures of phonological awareness, rapid letter naming, word recognition, pseudoword decoding, and comprehension, both immediately following completion of this program and two years later.

Pokorni, Worthington & Jamison (2004) studied the effectiveness of three phonological awareness programs; Fast ForWord, Earobics and LiPS were explored. These programs were chosen for their focus on phonemic awareness and because of their developer's claims regarding drastic improvements in language and reading. The authors concluded that the LiPS program was the most appropriate program for providing instruction in these areas compared to the other two. Torgesen, Wagner, Rashotte, Herron and Lindamood (2009) investigated the effectiveness of two computer assisted phonological awareness programs. The programs included were Read Write and Type (RWT) and The Lindamood Phoneme Sequencing Program for Reading, Spelling, and Speech (LiPS). The results of this investigation determined that reading outcomes for students who received the LiPS intervention were slightly stronger than for students receiving the RWT intervention.

Road to the Code is a structured, phonological awareness program that was designed to provide assistance to kindergarten and first grade children having difficulty learning and mastering important early literacy skills (Blachman et al., 2000). As part of this program, young children are provided with direct instruction in such skills as phoneme segmentation and phoneme blending, letter-sound correspondence, and other phonological awareness skills such as rhyming and alliteration either individually or in a small group format.

It incorporates modeling, the sequencing of tasks from easy to difficult, generalization to print, inclusion of a pronunciation guide, provision of sufficient practice and review, and recommendations for instruction adaptation (Santi et al, 2004).

Ball & Blachman in 1991investigated the effect of training in phoneme segmentation, phoneme blending, and letter-sound correspondence with a small group of general education kindergarten children over a 7-week period in a small group presentation format. Results indicated that those children in the training group performed significantly better than the control group.

However, there are no differences between the three groups on a measure of letter- sound correspondence, which the authors concluded indicates that instruction in letter-sound correspondence without associated instruction in phonological awareness is not sufficient to improve higher level phonological or reading skills.

Discoveries about the relationship between phonological awareness and reading ability are extremely important when it comes to the prevention and intervention of reading disabilities (Torgesen, Wagner, Rashoutte, Lindamood, Rose, Conway & Garvan, 1999).

The importance of phonological sensitivity and its effect on reading ability has proven to be an important area for both Speech-Language Pathologists and educators alike. It is a critical area that should continue to be researched and studied by Speech Language Pathologists, educators and reading specialist in order for the content to evolve and improve.

This is important so that the effectiveness of reading interventions can be enhanced and reading achievement can be obtained by all children regardless of their phonological sensitivity ability (Morton, 2011).

Mourad Ali Eissa (2014) explored the efficacy of a phonological awareness intervention program on phonological memory, phonological sensitivity, and metaphonological abilities of preschool children vulnerable for reading difficulties. The results indicate that the phonological awareness intervention program was effective in enlightening phonological memory, phonological sensitivity, and metaphonological abilities of preschool children vulnerable for reading disabilities in experimental group, compared to the control group who were left to be taught in a conventional way.

Werfel and Schuele (2014) investigated whether phonological awareness training would result in increased initial sound segmentation skills in two preschool children with severe to profound hearing loss. A single subject multiple baseline design was used across three behaviors (initial phoneme /m/, /d/, /b/ identification). The authors established that initial phoneme awareness training led to an increase in initial sound segmentation skill, though steady performance was not observed during the maintenance period. This study however examined only a small number of children (i.e., two children).

The aim of this study is to develop and check the efficacy of phonological awareness intervention for improving the phonological sensitivity skills in below average scholastic performers.

2. Methodology

2.1. Participants

Normal School going Tamil speaking children between the Age range of 5 to 12 years who had under performance in academics with no speech-language and hearing issues and no major ENT or visual concerns were included in the study.

2.2. Data collection and processing

The study was carried out in four phases: Development of the intervention programme, Administration of T-PASST, Implementation of the

Phonological Awareness Intervention programme and re-administration of T-PASST

2.2.1. Phase I (Development of Intervention programme)

A booklet providing guidelines and activities were prepared. The booklet was prepared in a way that it serves as a guide for Speech-language Pathologist, Teachers and Caregivers for working on improving the child's phonological sensitivity skills. The test tool "Tamil Phonological Awareness Skills Screening Test" developed by Tychicus and Amirtha Varshini (2012) served as a guide to decide on the hierarchy of subskills those need to be trained as per in the order of acquisition.

The phonological sensitivity subskills are: Concept of spoken words, Rhyming task, Syllable segmentation, Syllable deletion, Syllable substitution, Phoneme blending, Phoneme deletion, Phoneme substitution

The activities were structured in a way such that the complexity of the tasks varied from easy to difficult. Age appropriate activities were prepared for each subdivision. Initial activities involved tasks for which visual cues can be provided and as the level progresses the task has to be performed with only auditory instructions. Thus, the child gets a chance of generalizing the learnt skill.

Visual cues included the orthographic cues which were used for children who have been introduced with the Tamil alphabets (read and write appropriately). Children who were not able to read or write the alphabets were made to comprehend the task using different innovative play activities as described in the intervention booklet. Each subdivision also contains practice stimulus list which is to be used by the therapist / trainer for those activities mentioned in that particular subskill section.

2.2.2. Phase II (Administration of TPASST)

Tychicus and Amirtha Varshini in 2012 prepared and standardized TPASST to screen children for phonological sensitivity skill development. This tool has high sensitivity and validity. It contains 8 subtests that assesses shallower to the deep level of phonological awareness from rhyming to phoneme level. It can be used to screen children as young as 4 years till 12 years for their baseline phonological awareness level.

This test tool was administered on the school going children. The children were screened for the following before test was administered: Age range: 5 – 12 years; Normal school going Tamil speaking children; History of under achievement in academic performance; No speech-language and hearing issues; No major ENT or visual concerns. Test administration time was about 20 to 25 minutes. The test was administered in a quiet, distraction free environment. The children was given sufficient examples before administering the items given in the test tool. Scoring was based on pass or fail criteria in each subtest.

The test was administered by two different Speech-Language Pathologists in order to have a reliable baseline measure. The candidate was selected for therapy based on the scores of both the examiners.

2.2.3. Phase III (Implementation)

The children who failed in the 'TPASST' will be included in the study and was grouped into 5 each containing 5 subjects. The groups are based on their baseline performance level. The children were intervened for the successive two subdivisions from the level they have failed. For e.g. if a child had failed at the level of concept of spoken words, the child was provided intervention for improving the concept of spoken words and the next consecutive level, rhyming words also. The intervention for the first three groups was planned for three one hour sessions/week for one month. A total of 12 hours of training was given for each group. Augmenting this, they were also given home training after each session. For the last two groups (Group IV and Group V) intervention are planned for 10 hours as this particular subsections utilized more of intensive home training programme. The intervention was given in a quiet and distraction free room. Attendance was maintained for each child. The activities were selected for each group according to their level of performance. The higher grade children were trained in a more formal way, whereas the lower grade children were trained using more of innovative play activities (See Appendix 1 for example).

2.2.4. Phase IV (Re-administration of TPASST)

After 1 month of intervention, 'TPASST' was re-administered. The post therapy evaluation was also carried out by two SLPs in order to avoid data bias and for more reliable measure. The test results was tabulated as that of pre-therapy scores.

2.3. Data analysis

The raw scores obtained for each group was computed and is subjected to statistical analysis. SPSS 15.0 is used for the same. Mean and Standard deviation was obtained. Paired 't' test is used for obtaining the significant difference between the pre- and post -therapeutic scores.

3. Findings

The phonological sensitivity skill focused for each group is tabulated as follows:

Table 1
Phonological awareness sublevels focused for each group

S.No	Groups	Sub-level targeted	Stages of phonological awareness
1.	Group I	Concept of spoken (CSW); Rhyming and non-rhyming	Shallow
2.	Group II	Syllable segmentation; syllable deletion	Intermediate (low)
3.	Group III	Syllable deletion; syllable substitution	Intermediate (high)
4.	Group IV	Syllable deletion; syllable substitution; phoneme blending	Intermediate (high)
5.	Group V	Phoneme deletion; phoneme substitution	Deep

The figures 1 - 11 indicate the percentage of improvement on the target levels for each subject in the group. The tables 2 - 6 include the mean, the standard deviations and significant values of the scores of the pre and post therapy for each group as a whole for all sublevels of TPASST.

3.1. Group I

Shallower level of phonological awareness continuum (i.e.,) concept of spoken words and rhyming were taken for intervention for this group. These levels were focused because the children in this group failed at the level of CSW. Therefore, the level at which the children have failed and the consecutive level was targeted. The percentage of pre- and post-therapy scores are depicted in the figure 1 and 2 below for each sublevel and for each subject in the group.

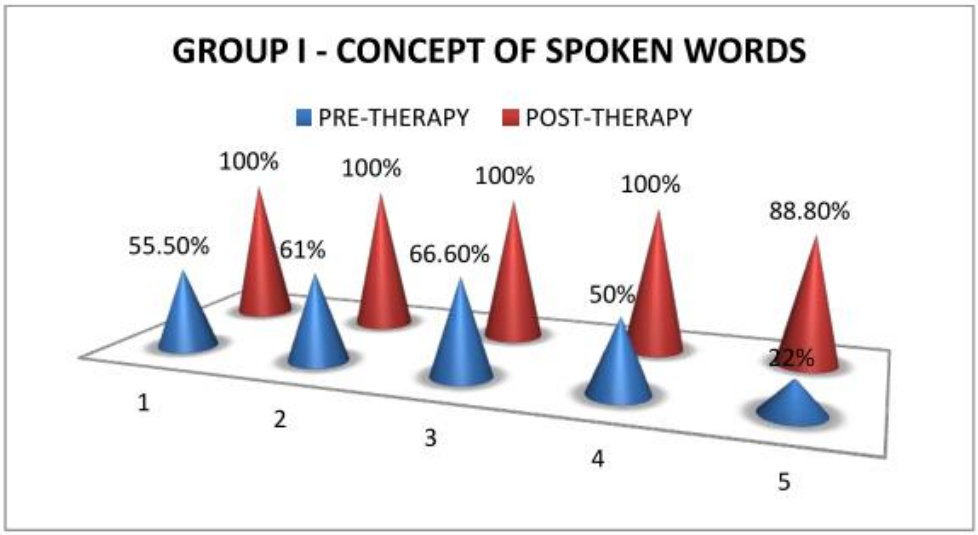

Figure 1. Percentage of pre- and post-therapy scores of Group I for the Concept of Spoken Words

The children in Group I performed with high motivation and involvement during the sessions. Total of 12 one hour sessions were carried out for the group. The children were able to perform the activities on CSW in approximately second week of intervention. By the end of third week of intervention, the children had achieved the skill and were able to perform the tasks spontaneously without any prompts from the clinician. Subject 5 comparatively took a long time to perform the activities. The overall percentage of improvement obtained after the intervention programme for CSW in group I is 46.74% from a baseline score of 51%.

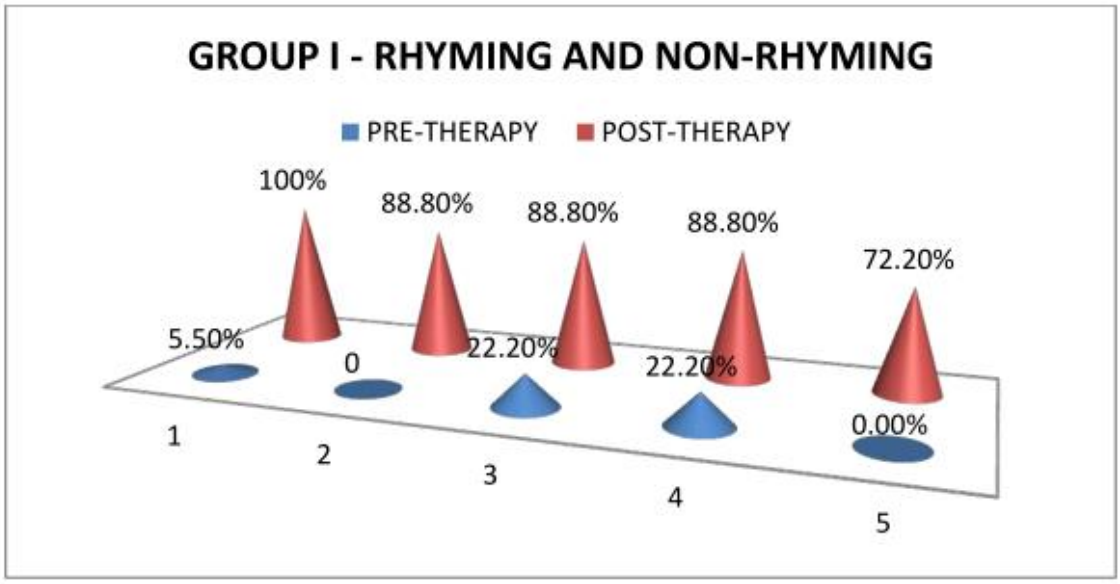

Figure 2. Percentage of pre - and post-therapy scores of Group I for the Rhyming and Non-Rhyming

For rhyming and non-rhyming skills, approximately by the third week of intervention the children were able to perform the activity. By the mid of fourth week of intervention, the children had achieved the skill and were able to perform the tasks independently. From the baseline score of 9.98%, 77.74% of improvement was obtained.

Table 2
Mean, Standard deviation (SD) and significant 't' value for CSW, rhyming, syllable segmentation, and syllable deletion for Group I as scored by Judge 1 and Judge 2

SUBTEST	JUDGE 1			JUDGE 2		
	MEAN	SD	Sig. (2-tailed)	MEAN	SD	Sig. (2-tailed)
CSW	4.000	1.225	.002	4.400	1.140	.001
Rhyming and non-rhyming	7.000	1.414	.000	7.000	1.000	.000
Syllable segmentation	3.4000	1.517	.007	3.000	1.581	.013
Syllable deletion	.600	.548	.070	.400	.548	.178

Significant difference was observed in both the levels post therapeutically. The mean score for the concept of spoken words obtained by Judge 1 and 2 are (4.000 and 4.400) respectively. The mean score for rhyming task was 7.000 and 7.000. There was an observable improvement in pre- and post-therapy scores as indicated by using the values of 'paired t test'. The significance value obtained for CSW and rhyming as scored by judge 1 and judge 2 are .002 and .000 and .001 and .000 respectively. Therefore, showing a significant difference in improvement pre- and post-therapeutically.

All children were co-operative for the intervention programme. The children showed motivation towards the tasks given. Sufficient home-training was provided. This can be accounted for the observable improvement in the children post therapeutically. Subject 5 under performed than the other subjects. This can be accounted to the lack of home-training due to poor family support.

Morris (1993) demonstrated that developing concept of word precedes and may facilitate the development of phonemic awareness. Gately in 2004 quotes that attention to the rudiments of literacy development is essential if teachers are to help students with disabilities progress in this area. Concept of word is a key early literacy skill, or concept, that matches the spoken and written word, and most students reach it without specialized attention or programming. Concept of word has been demonstrated as a pivotal event in learning to read.

Results of Lundberg et al., 1988 and Schneider et al., 1999 studies that implemented phonological awareness training with young children including tasks that progressed from the more basic skills of rhyming and alliteration to the more complex skill of phonemic awareness found that both typically developing and at-risk students made significant gains on outcome measures of phonological awareness and early reading skills that maintained over several occasions of follow-up testing.

3.2. Grup II

Intermediate levels of phonological awareness continuum (i.e.,) syllable segmentation and syllable deletion was taken for intervention for this group. The children were trained in these levels as they failed at the level of syllable segmentation. Therefore, consecutive level – syllable deletion was also targeted. The percentage of pre- and post-therapy scores are depicted in the figures 4 and 5 below for each sublevel and for each subject in the group.

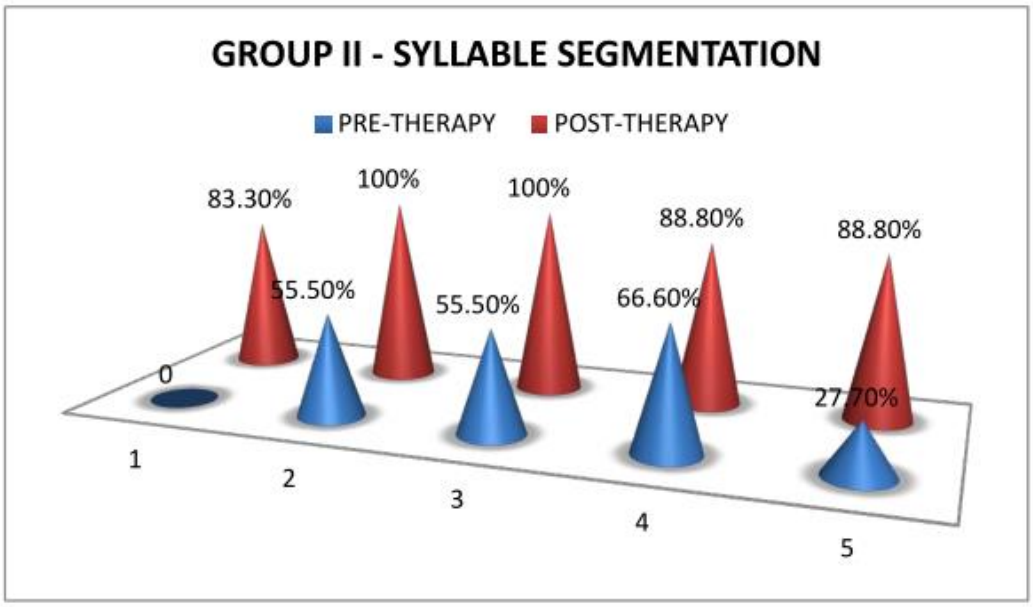

Figure 3. Percentage of pre - and post-therapy scores of Group II for the Syllable segmentation

Total of 12 one hour sessions were carried out for the group. By the end of third week of intervention, the skill was achieved with consistency in performance. Subject 1 and 4 comparatively took a longer time to perform the activities and showed under performance post therapeutically.

The overall percentage of improvement obtained for the group from the baseline score of 41.06% after the intervention programme for syllable segmentation in group II is 51.12%.

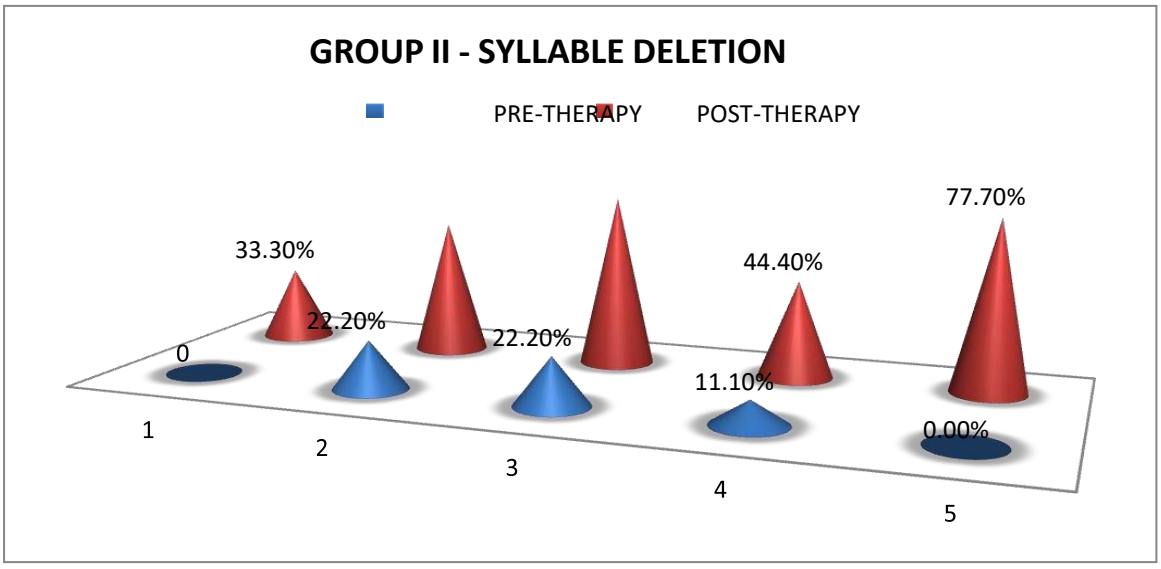

Figure 4. Percentage of pre- and post-therapy scores of Group II in syllable deletion

On syllable deletion task, there was a significant improvement seen post two weeks of therapy.

The overall percentage of improvement obtained after the intervention programme for syllable deletion in group II is 47.74% from the baseline score of 11.1%.

Table 3
Mean, Standard deviation (SD) and significant 't' value for CSW, rhyming, syllable segmentation, syllable deletion and syllable substitution for Group II as scored by Judge 1 and Judge 2

SUBTEST	JUDGE 1			JUDGE 2		
	MEAN	SD	Sig. (2 tailed)	MEAN	SD	Sig. (2-tailed)
CSW	.600	.548	.070	.400	.548	.178
Rhyming and non-rhyming	.400	.548	.178	.200	.447	.374
Syllable segmentation	4.600	1.949	.006	4.600	2.191	.009
Syllable deletion	3.800	2.168	.017	4.800	1.304	.001
Syllable substitution	.600	.894	.208	.600	.894	.208

Significant difference was observed in both the subskills post therapeutically. The mean score for the syllable segmentation evaluated by Judge 1 and judge 2 are 4.600 and 4.600 respectively. The mean score for syllable deletion was 3.800 and 4.600 respectively. There was observed to be significant improvement in pre and post therapy scores as indicated by using the values of 'paired t test'. The significance value obtained by judge 1 and judge 2 for syllable segmentation and syllable deletion are .006 and .017 and .009 and .001 respectively. Hence, there exists a significant difference post therapeutically.

Performance of the subjects 1 and 4 were observed to be poorer compared to the other subjects. For subject 1, this can be accounted for the fact that the child did not attend to the therapy sessions regularly. For subject 4, the performance was found to be poor because of poor family motivation and inadequate training at home.

Studies done by Good et al., (1998) have indicated that phonological tasks and activities should progress from the basic skills to the more advanced skills. Akila in 2000 and Tychicus and Amirtha Varshini (2012) reported that the order of acquisition in Tamil speaking children follows rhyming, syllable level and phoneme level. Therefore, it is always beneficial to work on improving the intermediate level phonological awareness skills which includes the manipulation of syllables before working on the deep levels of phonological awareness skills such as phoneme blending, phoneme deletion and phoneme substitution. In general, any intervention is successful when moved on from the basic level skills to the higher level skills.

3.3. Group III

The baseline is fixed at syllable deletion and syllable substitution – the two sublevels of intermediate level of phonological awareness for this group. The percentage of pre- and post-therapy scores are depicted in the figure below for each sublevel and for each subject in the group.

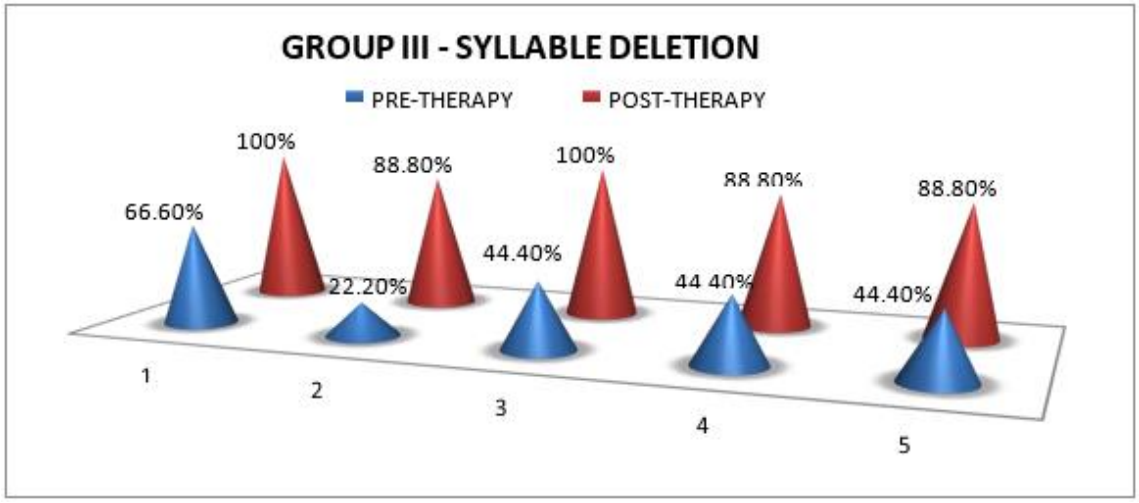

Figure 5. Percentage of pre - and post-therapy scores of Group III for the Syllable Deletion

The children had achieved the skill and were able to perform the tasks spontaneously without any prompts from the clinician by the end of third week. All the subjects in this group were able to perform with similar potential during the sessions. The overall percentage of improvement obtained after the intervention programme for syllable deletion in group III is 48.88% from the baseline score of 44.4%.

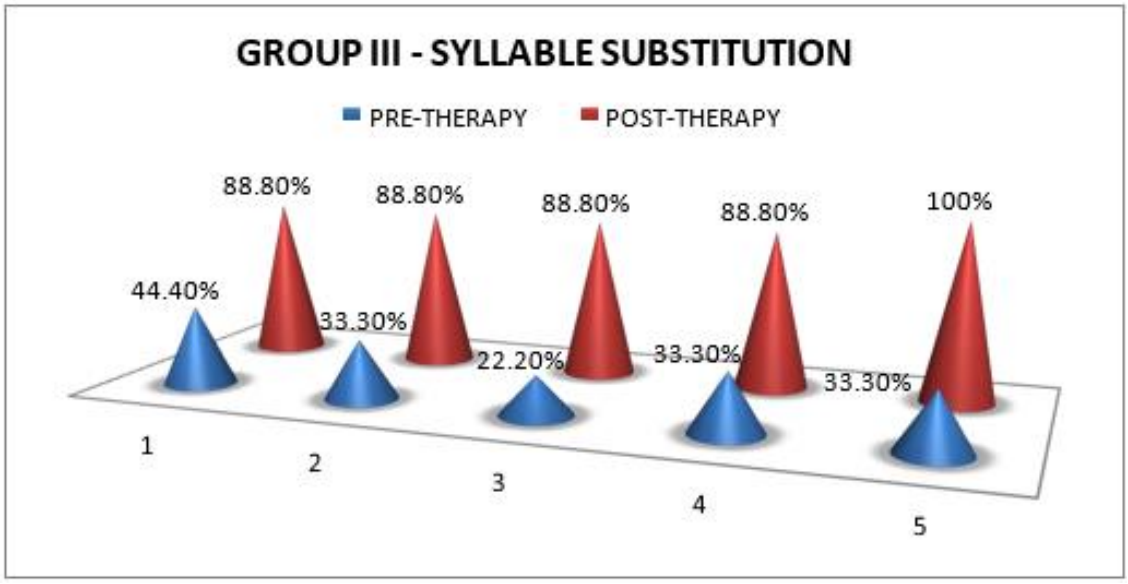

Figure 6. Percentage of pre- and post-therapy scores of Group III in syllable substitution

For syllable substitution, the children in group III performed were able to perform the activities in approximately third week of intervention. By the end of fourth week of intervention, the children had achieved the skill and were able to perform the tasks spontaneously without any cues from the clinician. From the baseline score of 33.3%, the overall percentage of improvement obtained after the intervention programme for syllable substitution in group III is 57.74%.

Table 4

Mean, Standard deviation (SD) and significant 't' value for CSW, rhyming, syllable segmentation, syllable deletion, syllable substitution, phoneme blending, phoneme deletion and phoneme substitution for Group III as scored by Judge 1 and Judge 2

	JUDGE 1			JUDGE 2		
SUBTEST	**MEAN**	**SD**	**Sig. (2-tailed)**	**MEAN**	**SD**	**Sig. (2-tailed)**
CSW	.200	.447	.374	.200	.447	.374
Rhyming and non-rhyming	.400	.894	.374	.200	.837	.621
Syllable segmentation	.600	.548	.070	.800	.447	.016
Syllable deletion	4.400	1.140	.001	4.400	1.140	.001
Syllable substitution	5.200	.837	.000	5.200	.837	.000
Phoneme blending	2.200	.837	.004	2.400	1.140	.009
Phoneme deletion	2.800	1.095	.005	3.000	1.225	.005
Phoneme substitution	3.000	1.581	.013	3.000	1.581	.013

The mean score for the syllable deletion given by Judge 1 and 2 are 4.400 and 4.400 respectively. The mean score for syllable substitution was 5.200 and 5.200. There was observed to be significant improvement in pre and post therapy scores as indicated by using the values of 'paired t test'. The significance value obtained for syllable deletion and syllable substitution as scored by judge 1 and Judge 2 are .001 and .000 and .001 and .000 respectively. Thus, showing a significant improvement after therapy.

3.4. Group IV

Three sublevels (syllable deletion, syllable substitution and phoneme deletion) were focused for intervention in this group. This is because the children in this group were of 10 to 11.11 years of age and they are expected to achieve the phoneme level tasks (Tychicus and Amirtha Varshini, 2012). They also showed significant improvement in the syllable level intervention sooner in two weeks and was planned for a phoneme level intervention. The percentage of pre- and post-therapy scores are depicted in the figures 7, 8 and 9 below for each sublevel and for each subject in the group.

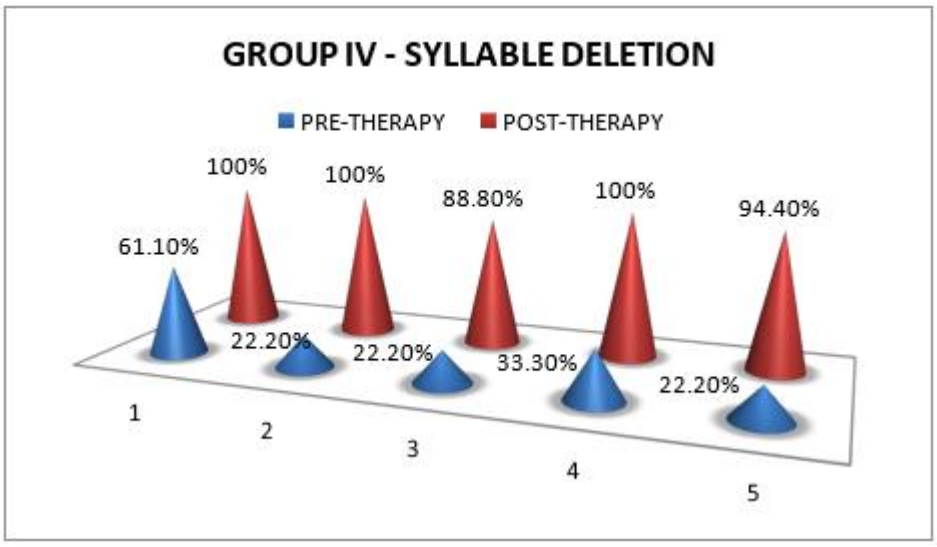

Figure 7. Percentage of pre- and post-therapy scores of Group IV in syllable deletion

Total of 10 one hour sessions were carried out for the group. The children had achieved the skill and were able to perform the tasks spontaneously without any prompts from the clinician when they attended the fourth session. Equal scores were achieved for all subjects. The overall percentage of improvement obtained after the intervention programme for syllable deletion in group IV is 64.44% from the baseline value of 32.2%.

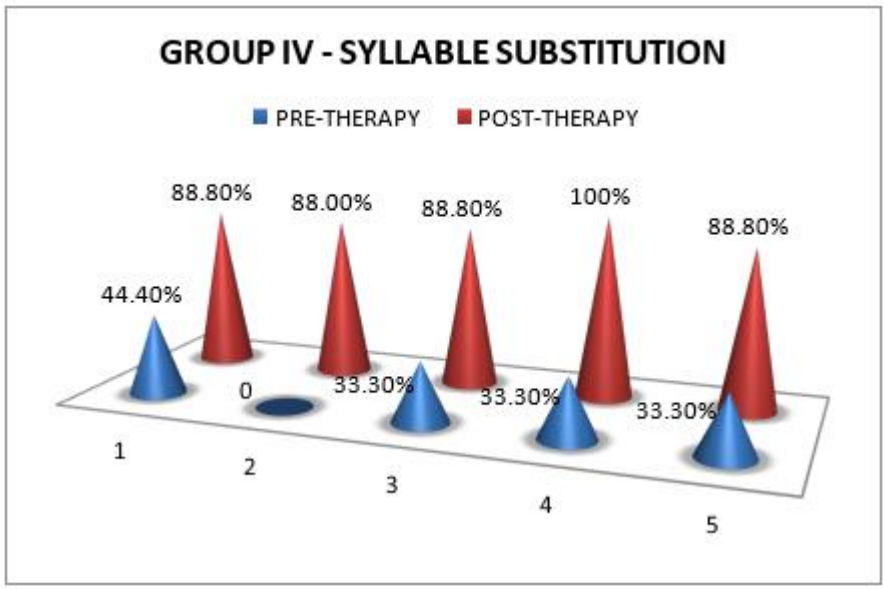

Figure 8. Percentage of pre- and post-therapy scores of Group IV in syllable substitution

For syllable substitution, the children in group IV required very minimal support to perform the task when entered the fifth session. For syllable substitution the children in this group showed an improvement of 62.18% from the baseline score of 28.8%.

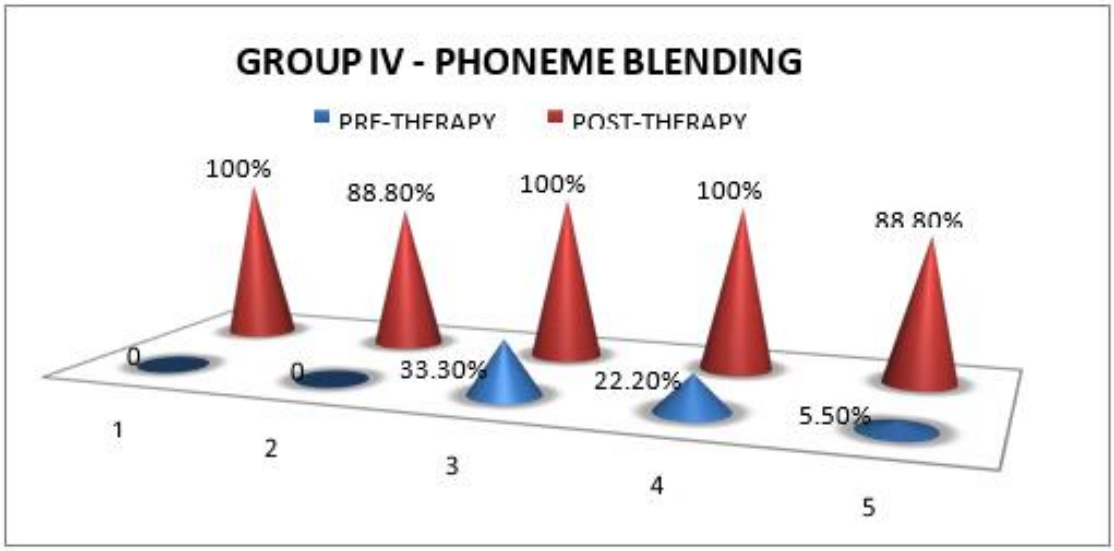

Figure 9. Percentage of pre- and post-therapy scores of Group IV in phoneme blending

Towards the completion of 10 hours of intervention, the children were able to perform the activities independently. The overall percentage of improvement obtained after the intervention programme for phoneme blending in group IV is 83.32% from the baseline of 12.2%.

Table 5

Mean, Standard deviation (SD) and significant 't' value for CSW, rhyming, syllable segmentation, syllable deletion, syllable substitution, phoneme blending, phoneme deletion and phoneme substitution for Group IV as scored by Judge 1and Judge 2

SUBTEST	JUDGE 1			JUDGE 2		
	MEAN	SD	Sig. (2 tailed)	MEAN	SD	Sig. (2 tailed)
CSW	.400	.548	.178	.600	.548	.070
Rhyming and non-rhyming	-	-	-	.800	.447	.016
Syllable segmentation	.800	.837	.099	.800	.837	.099
Syllable deletion	5.600	1.517	.001	6.000	1.225	.000
Syllable substitution	5.600	1.517	.001	5.600	1.517	.001
Phoneme blending	7.600	1.140	.000	7.400	1.140	.000
Phoneme deletion	4.400	.548	.000	4.400	.548	.000
Phoneme substitution	4.200	1.924	.000	4.200	1.924	.008

A significant difference was observed in on the three levels post therapeutically. The significance value obtained for syllable deletion, syllable substitution and phoneme blending as scored by judge 1 are .001, .001and .000 respectively. The significance value obtained for the scores given by judge 2 for syllable deletion, syllable substitution and phoneme blending are .000, .001 and .000 respectively.

The children were also able to generalize the intermediate (high) level of phonological awareness skills to perform the deep level of phonological awareness skills (i.e., phoneme deletion and phoneme substitution) post therapeutically.

Phoneme blending has also been shown by some researchers to contribute to the effectiveness of a phonological awareness program (NRP, 2000). Phoneme blending has been found to demonstrate a strong correlation with future reading success primarily because of its importance to the skill of decoding (Adams, 1990; NRP, 2000; Perez, 2008). When a child encounters an unfamiliar word in print, his ability to identify and blend the phonemes that correspond with each letter or letter combination assists him with successfully reading the word and increases the probability that he will recognize the word the next time it is encountered (NRP, 2000).

3.5. Group 5

The deep level of phonological awareness skills namely the phoneme deletion and the phoneme substitution subskills is the baseline level from which the therapy was planned. The percentage of pre- and post-therapy scores are depicted in the figures 10 and 11 below for each sublevel and for each subject in the group.

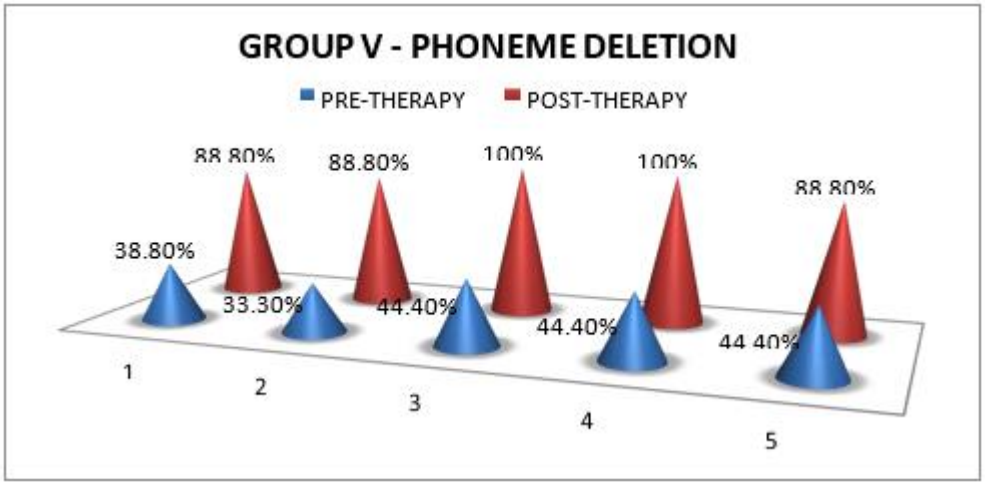

Figure 10. Percentage of pre- and post-therapy scores of Group V in phoneme deletion

As for the previous group, a total of 10 one hour sessions were carried out. The children were able to perform the activities by the mid of second week of intervention. By the end of third week of intervention, the children had achieved the skill. All the subjects performed in differentially. The overall percentage of improvement obtained after the intervention programme for phoneme deletion in Group V is 52.22% from the baseline of 41.06%.

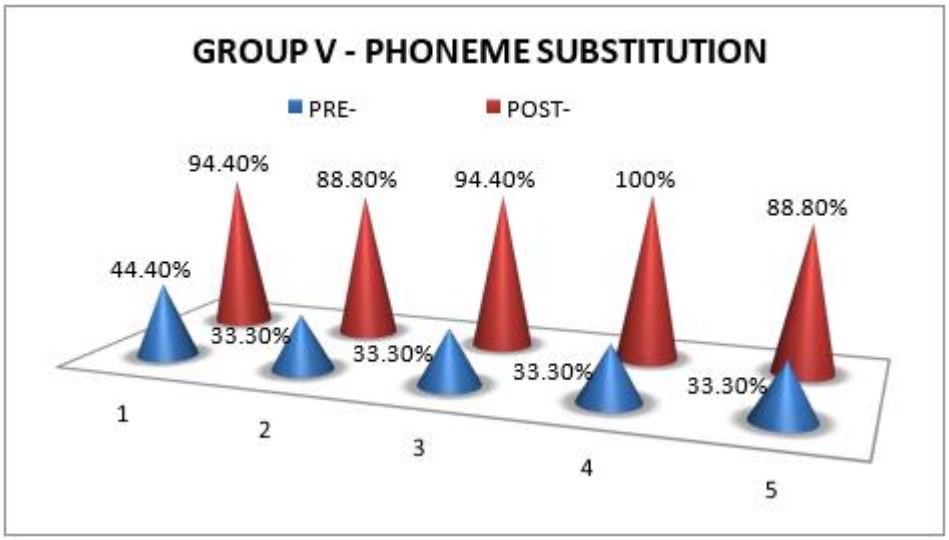

Figure 11. Percentage of pre- and post-therapy scores of Group V in phoneme substitution

The children in group V had achieved the skill by the end of third week of intervention. Similar scores were obtained for all subjects. The overall percentage of improvement obtained after the intervention programme for phoneme substitution in group V is 57.76 from the baseline percentage of 35.52%.

Table 6
Mean, Standard deviation (SD) and significant 't' value for CSW, rhyming, syllable segmentation, syllable deletion, syllable substitution, phoneme blending, phoneme deletion and phoneme substitution for Group V as scored by Judge 1and Judge 2

	JUDGE 1			JUDGE 2		
SUBTEST	**MEAN**	**SD**	**Sig. (2 tailed)**	**MEAN**	**SD**	**Sig. (2 tailed)**
CSW	.200	.447	.374	.200	.447	.374
Rhyming and non-rhyming	.200	.447	.374	-	-	-
Syllable segmentation	-	-	-	-	-	-
Syllable deletion	.400	.548	.178	.400	.548	.178
Syllable substitution	.400	.548	.178	.400	.548	.178
Phoneme blending	.800	.447	.016	.800	.447	.016
	4.600	.548	.000	4.800	.447	.000
Phoneme deletion						
Phoneme substitution	5.200	.837	.000	5.200	.447	.000

Significant difference was observed in both the levels post therapeutically. The mean score for the phoneme deletion given by Judge 1 and 2 are 4.600 and 4.800 respectively. The mean score for phoneme substitution was 5.200 and 5.200. There was observed to be significant improvement in pre and post therapy scores as indicated by using the values of 'paired t test'. The significance value obtained for phoneme deletion and phoneme substitution as scored by judge 1 and judge 2 are .000 respectively.

3.6. Performance across groups

The figure 12 shows the overall comparison of pre- and post-therapy scores for all groups from Group I to Group V. The children in all the groups participated with full involvement. Significant improvement has been observed in all the groups on the targeted subskills post intervention.

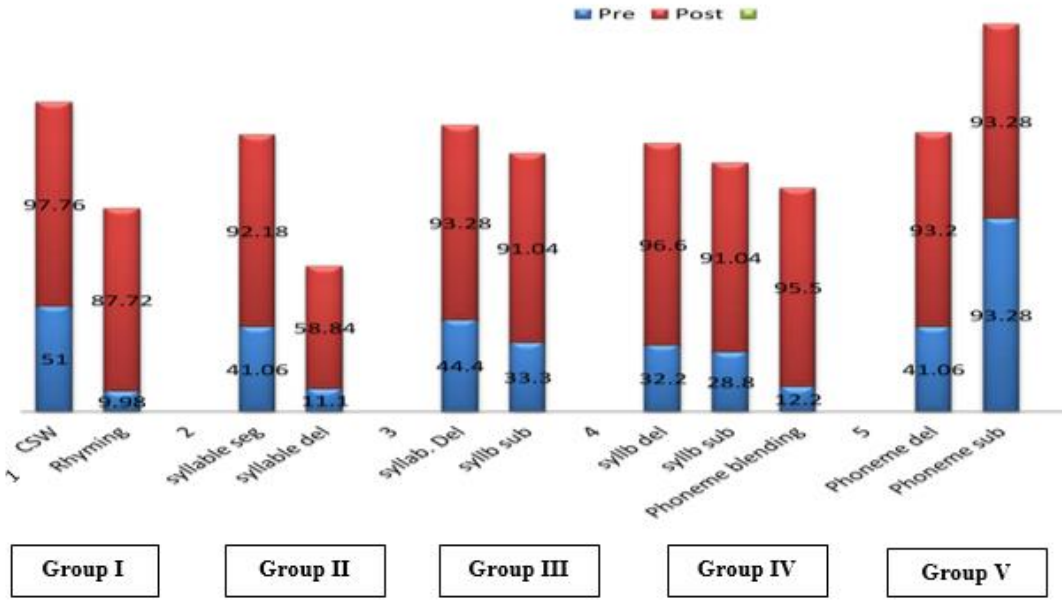

Figure 12. Pre- and post-therapeutic overall comparison across the groups

Phonological awareness tasks should be scaffolded according to their linguistic complexity (Good et al., 1998; Smith et al., 1998). Stahl & Murray in 1994 studied the importance of both the type of phonological awareness task as well as the linguistic complexity of each task. They indicated that the linguistic complexity of the task showed a stronger correlation to a kindergarten child's performance on measures of phonological awareness and early reading than the actual type of phonological awareness task.

An important observation made in this study was that there was a general trend seen in the improvement of these groups. When the intervention was focused at one level, the improvement was generalized to the next higher level post therapeutically, e.g. when the intervention was provided at the syllable level (intermediate phonological awareness level),

improvement was also seen in the phoneme level (deep level of phonological awareness).

Good et al., 1998 and Boudreau, 2008 have indicated that phonological tasks and activities should progress from the basic skills of rhyming and alliteration to the more advanced skills of phoneme identification and segmentation as skills with simpler phonological awareness tasks facilitate the development of more complex skills.

4. Conclusion

Phonological awareness skills are an important precursor for developing reading skills in children. Many studies have documented that children with good phonological sensitivity skills also have a good reading skills.

Snow et al., in 1998 have shown that those young children who have received instruction in the area of phonological awareness have learned to read more quickly than those who have not received such instruction and often maintain their early reading success over the next several years. However, some children need support above and beyond the instruction received within the classroom. Specifically, almost a quarter of young children who receive good classroom instruction continue to demonstrate a lack of phonological awareness (Schuele & Boudreau, 2008). Providing those children who demonstrate poor phonological awareness skills with early intervention during the kindergarten year can significantly improve their ability in this area and narrow or even eliminate the gap between them and their peers with typically developing phonological skills (Gillon, 2004; Schuele & Boudreau, 2008; Snow et al., 1998).

Thus, it is important to focus on intervention specific to phonological sensitivity skills to improve the child's reading ability. Focusing on the phonological awareness as early as possible would enhance the child's reading ability. Since several studies has been documented the importance of phonological sensitivity skills in reading development, future longitudinal research has to focus on studying the effectiveness of the intervention programme on improving the reading ability in children with reading difficulties.

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Appendix 1

I - Concept of Words

(வாக்கியங்களின் வார்த்தைகளின் எண்ணிக்கை)

S.NO.	SENTENCES	NO. OF WORDS
1.	உப்பு துவர்க்கும்.	
2.	காகத்தின் நிறம் கறுப்பு.	
3.	கத்திரிக்காய் ஊதா நிறம்.	
4.	பூண்டு வெள்ளை நிறம்.	
5.	வானவில்லின் வண்ணம் ஏழு.	
6.	கோவிலில் திருவிழா நடைபெறும்.	
7.	தொலைபேசியை கண்டுபிடித்தவர் அலெக்ஸாண்டர்.	
8.	மயில் நமது தேசிய பறவை.	
9.	கப்பலில் பயணிகள் பயணம் செய்வர்.	
10.	வகுப்பறையில் ஆசிரியர் நடத்தும் பாடங்களை நன்கு கவனிக்க வேண்டும்.	

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Activities

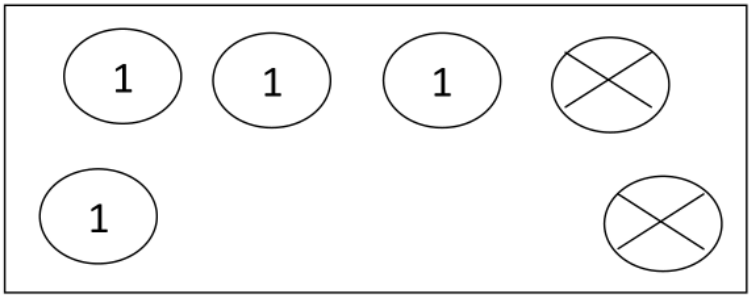
1. குழந்தையை முதலில் வாக்கியத்தை வாசிக்க செய்ய வேண்டும் (அல்லது) நீங்கள் வாக்கியத்தை வாசித்து குழந்தையை கவனிக்க சொல்ல வேண்டும். ஒவ்வொரு வார்த்தையைக் கேட்கும் பொழுதோ அல்லது வாசிக்கும் பொழுதோ, ஒவ்வொரு பொம்மையாக வரைந்து, மொத்த பொம்மைகளின் எண்ணிக்கையை எழுத வேண்டும். இதுவே வாக்கியத்தில் உள்ள மொத்த வார்த்தைகளின் எண்ணிக்கை. ஒவ்வொரு வார்த்தையையும் பொறுமையாகவும் அழுத்தத்துடனும் கூறவேண்டும்.

(எ.கா) மயில் நமது தேசிய பறவை

மொத்த வார்த்தைகளின் எண்ணிக்கை. **4**

2. குழந்தை ஒவ்வொரு வார்த்தையை வாசிக்கும் பொழுதோ, அல்லது கேட்கும் பொழுதோ கட்டத்துக்குள்ளே இருக்கும் வட்டங்கள் ஒவ்வொன்றிலும் எண் ஒன்றை (1) குறிக்க வேண்டும். மீதம் இருக்கும் வட்டங்களை அடித்து விடுமாறு கூறவும். பிறகு எண் 1 எத்தனை முறை குறிப்பிடப்பட்டுள்ளது என்று எண்ணிக் கூறவேண்டும்.

(எ.கா) மயில் நமது தேசிய பறவை



மொத்த வார்த்தைகளின் எண்ணிக்கை. **4**

3. ஒவ்வொரு வார்த்தைகளையும் வாசிக்கும் பொழுது அல்லது கேட்கும்பொழுது விரல்களைக் கொண்டு எண்ணும்படி சொல்ல வேண்டும்.

4. குழந்தை ஒவ்வொரு வார்த்தையைக் கேட்கும் பொழுதும் ஒவ்வொரு கற்களை எடுத்து ஒன்றன் மேல் ஒன்றாக அடுக்க செய்ய வேண்டும். பின்பு அதை எண்ணி மொத்த கற்களின் எண்ணிக்கையை சொல்ல செய்ய வேண்டும். சரியாக எண்ணிக்கையைக் கூறினால் தகுந்த சன்மானம் வழங்கவும்.

5. தரையில் கோடுகள் வரைந்து, குழந்தையை முதல் கோட்டில் நிற்கச் செய்யவும். பின்னர் ஏதேனும் ஒரு வாக்கியதைக் கூறி, குழந்தையை அந்த வாக்கியத்தில் உள்ள வார்த்தைகளின் எண்ணிக்கையை கொண்டு கோடுகளைத் தாண்ட செய்ய வேண்டும். குழந்தை தவறுதலாக குறைந்த கோடுகளையோ, அல்லது கூடுதல் கோடுகளையோ தாண்டி சென்றால், அவளை / அவனை முதல் கோட்டிற்கு திரும்பி செல்ல செய்ய வேண்டும். குழந்தை சரியாக செய்து விட்டால், தகுந்த சன்மானம் கொடுத்து ஊக்குவிக்கவும்.

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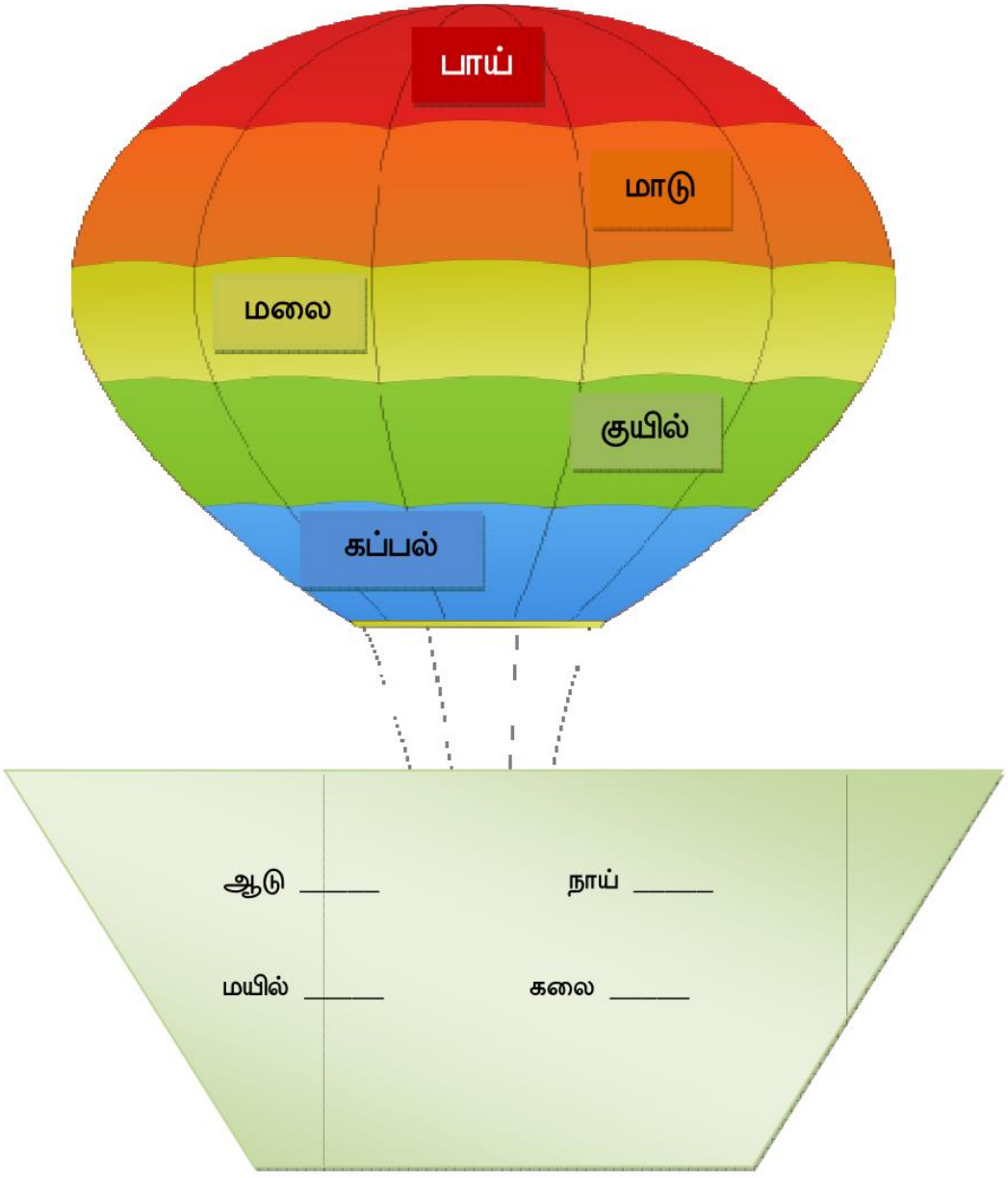
II RHYMING WORDS

(மோனைச் சொற்கள்)

1. ஆடு - மாடு
2. பட்டம் - வயிறு .
3. பல் - கல்
4. காலை - மாலை
5. கப்பல் - பழம்
6. குப்பை - கறும்பு
7. நாய் - பாய்
8. பழம் - வாகை
9. யானை - பூனை
10. கயிறு - கால்
11. உப்பு - சிறகு
12. மயில் - குயில்
13. சாம்பல் - மெத்தை
14. வட்டம் - மாலை
15. அப்பா - பாப்பா
16. எழுத்து - கழுத்து
17. வானம் - காளை
18. கம்பி - தம்பி
19. உப்பு - சிறகு
20. பால் - கால்

Activities

1. கீழ்காணும் படத்தின் கூடையில் உள்ள சொற்களுக்கு இணையான சொற்களை பலூனில் இருந்து கண்டுபிடித்து எழுதுக.



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2. மோனைச் சொற்களை கோடுகளின் மூலம் இணையுங்கள். கேட்பதற்கு ஒன்று போல் இருக்கும் சொற்களை கோடுகள் கொண்டு இணையுங்கள்.

கால்

பாப்பா

மயில்

பால்

நாய்

குயில்

அப்பா

பாய்

3. கேட்பதற்கு ஒன்று போல் ஒலிக்கும் சொற்கள் கொண்ட கட்டங்களை ஒரே வண்ணம் கொண்டு தீட்டுக.

ஆடு	**கல்**
பல்	**பூனை**
நாய்	**மாடு**
யானை	**கழுத்து**
எழுத்து	**பாய்**

4. நான் கூறும் இரண்டு வெவ்வேறு சொற்கள் கேட்பதற்கு ஒன்று போல் இருந்தால் **ஆம்** என்று கூறவும். கேட்பதற்கு ஒன்று போல் இல்லையானால் **இல்லை** என்று கூறவும்.

(எ.டு) **ஆடு - மாடு** (**ஆம்**)

வானம் - காளை (**இல்லை**)

5. மோனைச் சொற்களைக் கேட்டால் உட்காரவும், இல்லை என்றால் நிற்கவும். நான் கூறும் இரண்டு வெவ்வேறு சொற்கள் கேட்பதற்கு ஒன்று போல் இருந்தால் **கரங்களைத் தட்டவும்**. கேட்பதற்கு ஒன்று போல் இல்லையானால் **கரங்களை உயர்த்தவும்**.

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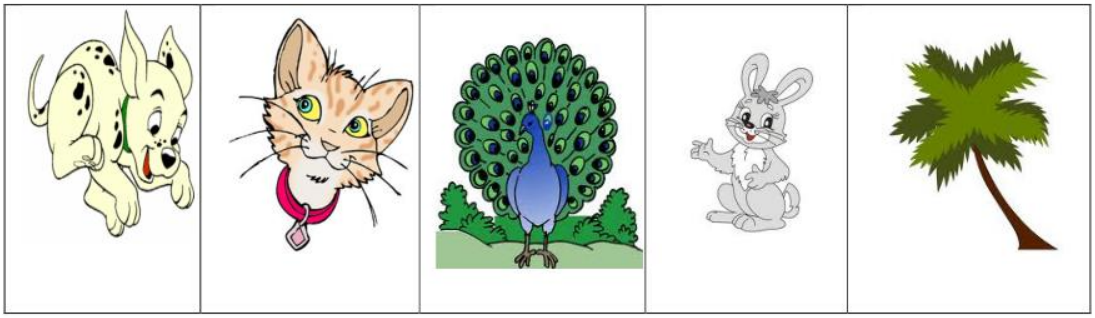
6. கோடிட்ட இடத்தினை மோனைச் சொற்கள் கொண்டு நிரப்புக. பின்னர் நீ எழுதிய சொல்லினை குறிப்பது போன்ற படத்தினை வட்டத்தினுள் வரைக.

♠ வாய், பாய், காய், _____

♠ வெயில், குயில், _____

♠ வரம், கரம், _____

(தடையங்கள்:)



7. கேட்பதற்கு ஒன்று போல் முடியும் சொற்களை ஒரே கட்டத்தினுள் எழுதுக. பின்பு குழந்தை அவற்றை வாசித்து பார்க்கச் செய்க.

கார், பாய், மயில், மாடு, நாய், ஆடு, பார், குயில்

எ.டு.

கார் பார்		

8. தனித்து நிற்கும் சொல்லை கண்டறிந்து வட்டமிடுக....

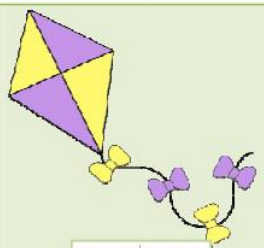
பாய்

கயிறு

நாய்

வட்ட

வால்



பட்டம்

கயிறு

பயிறு

மரம்

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SYLLABLE SEGMENTATION

(அசை பிரித்தல்)

S.NO	WORDS
1.	ஆசை
2.	மலை
3.	ஜாடி
4.	கயிறு
5.	கழுகு
6.	குருவி
7.	தாமரைப்பூ
8.	தீவுத்திடல்
9.	தேசியக்கொடி
10.	வண்ணவிளக்கு

Activities

1. ஒரு வார்த்தையை அசை அசையாக மெதுவாக உச்சரிக்கவும், பின்னர் குழந்தையை அந்த அசைகளைச் சேர்த்து வார்த்தையாகக் கூறச் சொல்ல வேண்டும்.

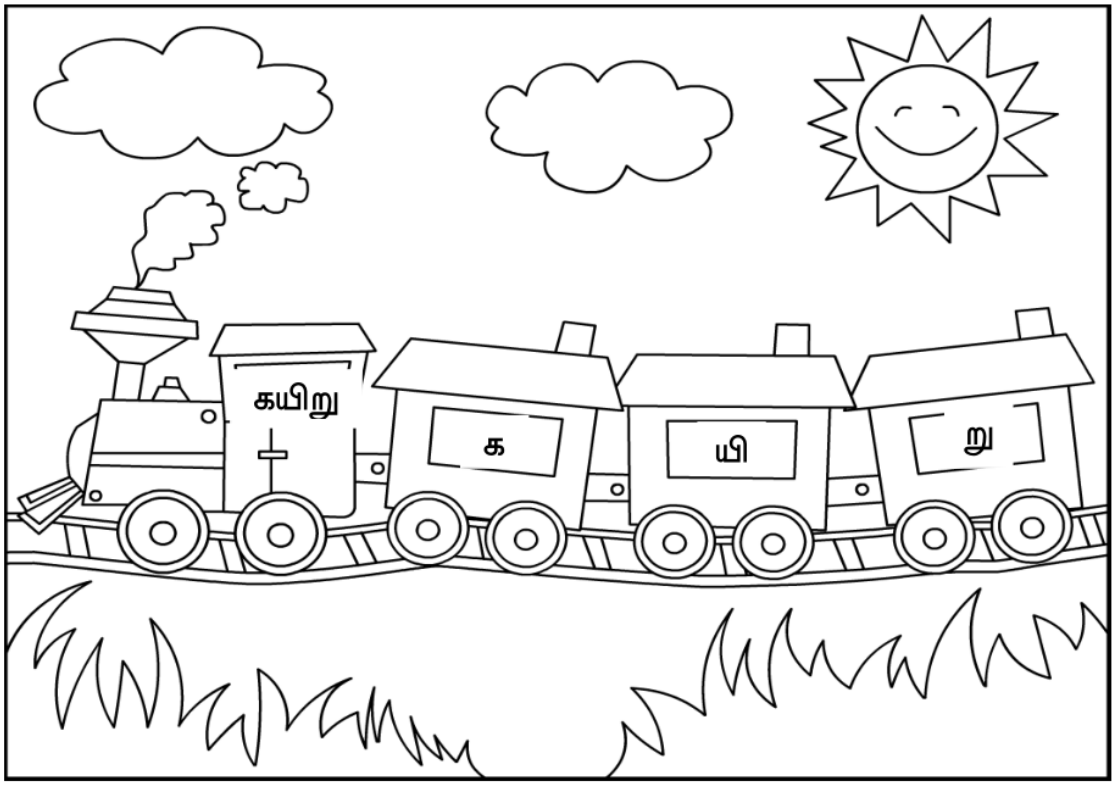
2. தரையில் கோடுகள் வரைந்து, குழந்தையை முதல் கோட்டில் நிற்கச் செய்யவும். பின்னர் ஏதேனும் ஒரு வார்த்தையைக் கூறி, குழந்தையை அந்த வார்த்தையில் உள்ள அசைகளின் எண்ணிக்கையை கொண்டு கோடுகளைத் தாண்ட செய்ய வேண்டும். குழந்தை தவறுதலாக குறைந்த கோடுகளையோ, அல்லது கூடுதல் கோடுகளையோ தாண்டி சென்றால், அவளை / அவனை முதல் கோட்டிற்கு திரும்பி செல்ல செய்ய வேண்டும். குழந்தை சரியாக செய்து விட்டால், தகுந்த சன்மானம் கொடுத்து ஊக்குவிக்கவும்.

3. ஒரு வார்த்தையை அசை அசையாக மெதுவாக உச்சரிக்கவும், ஒவ்வொரு அசையை உச்சரிக்கும் பொழுது, அந்த அசையை கட்டத்தில் எழுதவும். நீங்கள் இதை செய்யும் பொழுது, குழந்தையையும் நீங்கள் செய்வது போல் செய்ய செய்யுங்கள்.

4. வெவ்வேறு நிறங்களில் கட்டங்கள் / சதுரங்கள் எடுத்துக் கொள்க. ஒவ்வொரு அசையையும் ஒவ்வொரு நிறத்தைக் கொண்டு காட்டுக. பின்பு குழந்தையிடம் ஒரு வார்த்தையைக் கூறி எத்தனை சதுரங்கள் வேண்டும்? என்று கேளுங்கள்.

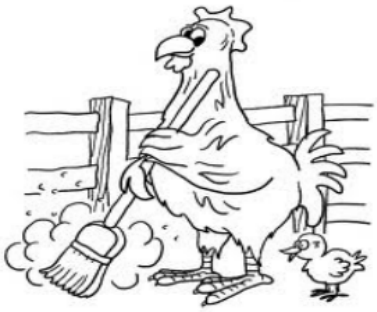
5. ஒரு பையினுள் சில பொருட்களை வைத்து குழந்தையிடம் கொடுக்கவும் சில படங்களை கொண்ட அட்டைகளை தலைகீழாக தரையின் மேல் வைக்கவும் குழந்தையை ஏதேனும் பொருளையோ அல்லது படத்தினையே தேர்வு செய்து அதை தங்களிடம் காட்டாமல், அதன் பெயரை அசைப்பிரித்து கூற சொல்லுங்கள். அதன் பின்னர் நீங்கள், குழந்தை கூறிய அசைகளை ஒன்றிணைத்து முழு வார்த்தையாக கூறுங்கள்.

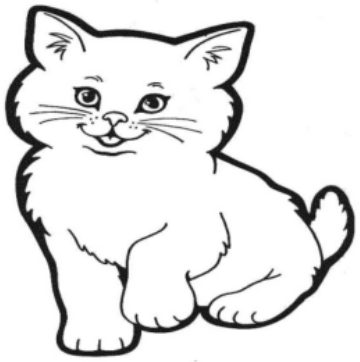
6. ரயில் இஞ்சினில் உள்ள வார்த்தையை அசைகளாகப் பிரித்து, ஒவ்வொரு அசையையும் ஒவ்வொரு பெட்டியில் எழுதுக.

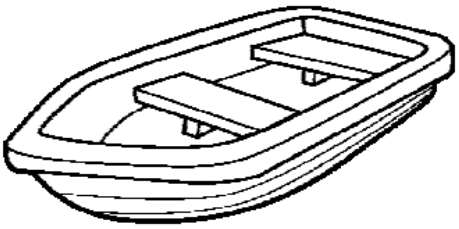


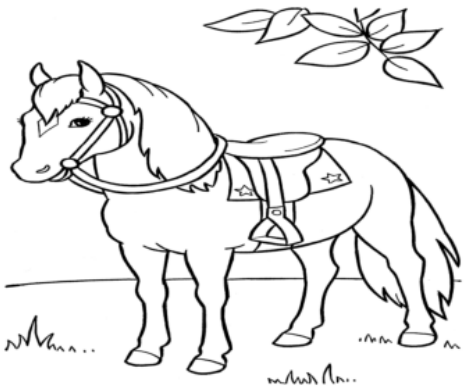
7. இடப்பக்கம் காணப்படும் அசைகளை ஒன்றிணைத்து வரும் சொல்லுக்கு உரிய படத்தை வலப்புறமிருந்து தேர்ந்தெடுத்து, கோடுகள் கொண்டு இணைத்து வண்ணம் தீட்டுக.

ப	ட	கு
கு	தி	ரை
கோ	ழி	
பூ	னை	









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SYLLABLE SUBSTITUTION

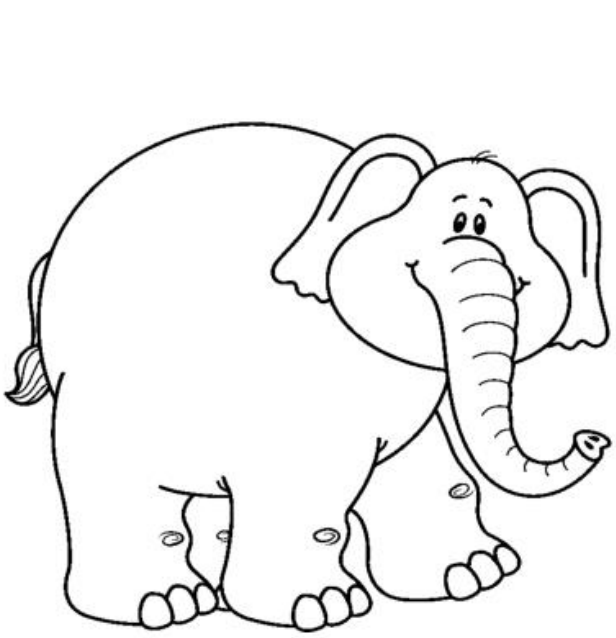
(அசை சொற்களை ஒன்றுக்கு பதிலாக இன்னொற்றை பொருத்தவும்)

1. மயில் (கு)
2. வட்டம் (க) (ப)
3. கயிறு (வ)
4. வடை (கு) (ஓ) (மே) (க)
5. பூனை (யா) (பா)
6. ஆடு (மா)
7. விலை (சி) (க) (ஓ)
8. பாறை (னை)
9. குடம் (ஓ)
10. பட்டு (த) (க) (மொ)

Activities

1. **மயில்** என்னும் வார்த்தையில் உள்ள **ம** எனும் எழுத்தினை **கு** என மாற்றி வரும் புதிய சொல்லை எழுதி, பின்னர் புதிய சொல்லினை குறிப்பது போன்ற படத்தினை வரைக.

2. **பூனை** என்னும் வார்த்தையில் உள்ள **பூ** எனும் எழுத்தினை **யா** என மாற்றி வரும் புதிய சொல்லினை கண்டறிந்து சரியான படத்திற்கு வண்ணம் தீட்டுக.



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SYLLABLE DELETION

(அசை சொற்களை கழித்தல்)

S.NO.	WORDS
1.	பூனை
2.	வறுமை
3.	பானம்
4.	பறவை
5.	குளம்
6.	பள்ளி
7.	படுக்கை
8.	எருது
9.	வண்ணம்
10.	தேரடி

Activities

1. நான் ஒரு வார்த்தையை முதலில் கூறுவேன். பின்பு அந்த வார்த்தையின் ஒரு பகுதியினை கூறுவேன். நீ அந்த பகுதியை நான் முதலில் கூறிய வார்த்தையிலிருந்து கழித்துவிட்டு, மீதம் இருக்கும் பகுதியினை கூறவேண்டும்.

2. நான் முதலில் ஒரு வார்த்தையைக் கூறி, பின்னர் அந்த வார்த்தையின் ஒரு பகுதியினைக் கூறுவேன். நீ அந்த பகுதியினை நான் கூறிய வார்த்தையிலிருந்து கழித்துவிட்டு, மீதம் இருக்கும் வார்த்தையைக் கண்டறிந்து, அதைக்குறிக்கும் பொருளை கீழ்க்காணும் படத்திலிருந்து கண்டறிந்து அதன் பெயரை எழுத வேண்டும்.

(பூனை, கல்வி, பல்லி, தலைவி, கத்திரி)

3. கீழ்காணும் பெட்டிகள் ஒவ்வொன்றிலும் வார்த்தையின் ஒவ்வொரு எழுத்துக்கள் எழுதப்பட்டுள்ளன. அதில் கடைசி பெட்டியினுள் எழுதியிருக்கும் எழுத்தினை கழித்துவிட்டு, மீதம் உள்ள பகுதியினை வட்டத்தினுள் எழுதுக.

4. முதல் பெட்டியினுள் இருக்கும் எழுத்தினை கழித்துவிட்டு மீதம் இருக்கும் வார்த்தையை வட்டத்தினுள் எழுதுக.

5. நடுவில் இருக்கும் பெட்டியில் உள்ள எழுத்தினை கழித்துவிட்டு மீதம் இருக்கும் வார்த்தையை வட்டத்தினுள் எழுதுக.

PHONEME BLENDING

(இன சொற்களை சேர்த்தல்)

S.NO.	WORDS
1.	ப்+ஊ+ட்+உ
2.	க்+அ+ட்+ உ
3.	வ்+அ+ட்+அ+ம்
4.	ப்+எ+ண்
5.	க்+அ+ண்
6.	த்+அ+ன்
7.	ப்+உ+ற்+ஆ
8.	க்+அ+ம்+ப்+உ
9.	ப்+அ+ட்+உ
10.	ம்+உ+ட்+இ

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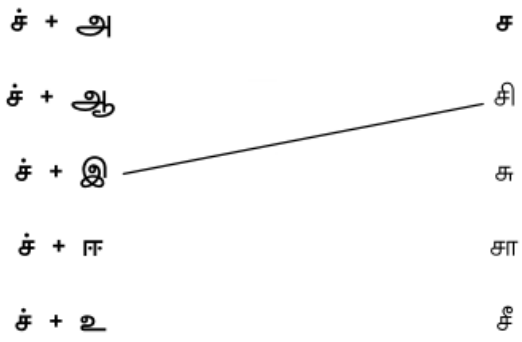
Activities

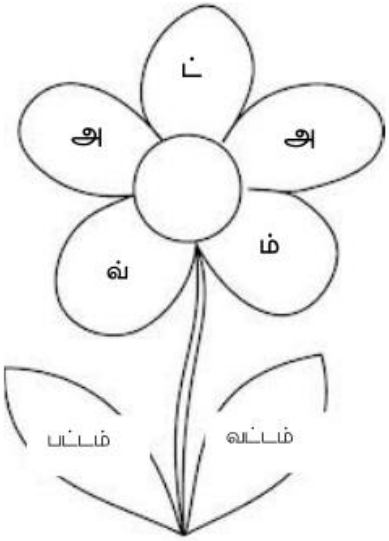
1. உயிர் எழுத்துகளையும் மெய் எழுத்துகளையும் சேர்த்தல்

க் + அ	க
க் + ஆ	கா
க் + இ	கி
க் + ஈ	கீ
க் + உ	கு
க் + ஊ	கூ
க் + எ	கெ
க் + ஏ	கே
க் + ஐ	கை
க் + ஒ	கொ
க் + ஓ	கோ
க் + ஔ	கௌ

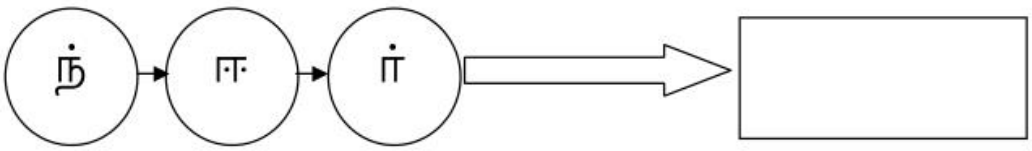
உயிர் எழுத்துகளையும் மெய் எழுத்துகளையும் சேர்த்து வரும் சொல்லினை கோடுகள் கொண்டு இணையுங்கள்.



2. மலர் இதழ்களில் காணப்படும் எழுத்துக்களை ஒன்றிணைத்து வரும் சொல்லை கண்டறிக. சரியான வார்த்தையைக் கொண்ட இலையை வண்ணம் தீட்டுக.



3. வட்டங்களில் உள்ள எழுத்துக்களை ஒன்றிணைத்து உருவாகும் வார்த்தையை கட்டத்தினுள் எழுதுக.



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PHONEME DELETION

(இனச் சொற்களை கழித்தல்)

S.NO.	WORDS
1.	கல்வி
2.	லட்டு
3.	மக்கள்
4.	குன்று
5.	விரல்
6.	வட்டம்
7.	வயல்
8.	விளக்கு
9.	கம்பி
10.	சாதம்

Activities

1. நான் ஒரு வார்த்தையை முதலில் கூறுவேன். பின்பு அந்த வார்த்தையின் ஒரு பகுதியினை கூறுவேன். நீ அந்த பகுதியை நான் முதல் கூறிய வார்த்தையிருந்து கழித்துவிட்டு, மீதம் இருக்கும் பகுதியினை கூறவேண்டும்.

2. நான் முதலில் ஒரு வார்த்தையை கூறி, பின்னர் அந்த வார்த்தையின் ஒரு பகுதியினை கூறுவேன். நீ அந்த பகுதியினை நான் கூறிய வார்த்தையிருந்து கழித்துவிட்டு, மீதம் இருக்கும் வார்தையை கண்டறிந்து எழுதுக

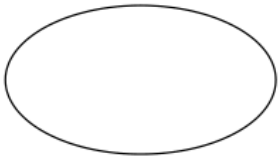
கல்வி ----------

பல்லி, ----------

கத்திரி ----------

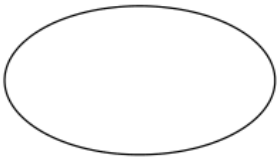
3. கீழ்காணும் பெட்டிகள் ஒவ்வொன்றிலும் வார்த்தையின் ஒவ்வொரு எழுத்துக்கள் எழுதப்பட்டுள்ளன. அதில் கடைசி பெட்டியினுள் எழுதியிருக்கும் எழுத்தினை கழித்துவிட்டு, மீதம் உள்ள பகுதியினை வட்டத்தினுள் எழுதுக.

உ	ர	ம்



4. நடுவில் இருக்கும் பெட்டியில் உள்ள எழுத்தினை கழித்துவிட்டு மீதம் இருக்கும் வார்த்தையுன் வட்டத்தினுள் எழுதுக.

க	ல்	வி



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PHONEME SUBSTITUTION

(அசை சொற்களை ஒன்றுக்கு பதிலாக இன்னொற்றை பொருத்தவும்)

1. தன் (ம்)
2. சீடர் (ன்)
3. கால் (ர்)
4. வண்டு (ட்)
5. பூண்டு (ட்)
6. நான் (ர்)
7. வில் (ன்)
8. பட்டு (ன்)
9. குடம் (ல்)
10. காப்பு (ம்)

Activities

1. **கார்** என்னும் வார்த்தையில் உள்ள **ர்** எனும் எழுத்தினை **ல்** என மாற்றி வரும் புதிய சொல்லை எழுதி, பின்னர் புதிய சொல்லினை குறிப்பது போன்ற படத்தினை வரைக.

2. **வட்டு** என்னும் வார்த்தையில் உள்ள **ட்** எனும் எழுத்தினை **ண்** என மாற்றி வரும் புதிய சொல்லினை கண்டறிந்து சரியான படத்திற்கு வண்ணம் தீட்டுக.