

Phonological and phonemic thinking and its links with early reading

John Munro

1. Developmental trends in learning to be literate: Whole children' learning.

In education generally we need to go with the direction' of a child's natural development in learning. Learning to be literate involves the integration of several areas of human capacity. An effective literacy programme is based on how children develop naturally in these areas. They develop in an interactive way. Children use their existing knowledge of the world and language to learn a new communication code. Key areas of knowledge development include

- knowledge of how words are said; phonological and phonemic awareness.
- increasing knowledge of how to link written words and spoken words so that children can recognise rapidly and accurately the greatest number of written words and can use what they know about the letter clusters in some words to read others. The two strands are linked.
- being able to write and spell words, understanding the values and purpose of writing, learning its conventions, the structures of different types of texts and spelling. The stages of invented spelling. Early writing contributes more to the gradual development of orthographic knowledge than reading words for some children.
- knowledge of what words mean, how their meanings are linked together. As children develop, these change.
- knowledge of grammar and linking words in ways that match how we speak is essential for comprehension processes.
- existing conceptual knowledge. Reading and writing involve matching one's existing knowledge with the text. Existing knowledge can be organised in different ways; in verbal networks of concepts, in experiences and episodes, as action sequences, etc. Readers use these different forms to help word recognition and broader comprehension processes.
- ability to use a range of reading strategies and management and control strategies. These develop from egocentric speech. Children first learn to use in reading the strategies they already use in oral communication. They use them first when cued.
- their ability to learn how to use and to allocate their attention at any time.
- learning how to read and to see themselves as readers
- These capacities assume intact visual, auditory or tactile-kinaesthetic sensory processes.

The capacities develop in parallel. This synthesis permits the fluent reader to use an integrated cuing system that can utilise graphophonic, syntactic, semantic and pragmatic cues in the print.

2. What is phonological knowledge ?

Phonological knowledge is what we know about the sound patterns in our speech. It includes being able to learn how to say an unfamiliar word, being aware that "house", "crowd" and

"bough" share the same sound, that "sl" and "ed" can be integrated into a longer sound sequence and that pronouncing 'conservation' as "conversation" involves a switching of sounds.

2.1 Clarifying what we mean To clarify exactly what it is we are assessing, it is necessary the outset to distinguish between various terms. At least four areas of ability need to be discriminated:

phonological knowledge what we know about the sound properties (or phonology) of our language. Phonological processes are the ways we use this knowledge.

phonemic knowledge our knowledge of individual speech sounds or phonemes, for example, the distinction between the sounds linked with m and n.

phonemic awareness one aspect of phonemic knowledge; our awareness of individual sound patterns in speech, for example, our ability to detect the sound associated with 'ai' in the spoken word 'pain'.

phonetic knowledge what we know about pronouncing individual sounds; the same phoneme can be said in slightly different ways, for example, "p" in "pin" and "spin".

phonic knowledge letter-sound patterns; linking sounds with letters and other forms of the alphabetic principle, for example, the use of letter-sound knowledge.

phonological recoding process by which we convert a written string of letters to a matching sequence of sounds.

orthographic knowledge refers to patterns of letters used in written English to write words.

We use our phonological knowledge in a range of ways

- when we learn how to say new words.
- to help us to remember information for a short time
- when we read and spell.

2.2 Why teach phonological knowledge ? Repeatedly over the last two decades, investigations have shown a relationship between children's awareness of sound patterns in their speech and later reading and spelling ability.

In particular, children's level of phonemic knowledge has a significant influence on their ability to learn to recognise written words automatically. The individual sounds and sound patterns that they can recognise in spoken words determines in large measure the written letter groups they can learn to recognise automatically. The maximum number of sounds that the child can process at once provides an upper limit to the complexity of written words the child can learn to read orthographically.

Many readers display reading disabilities because their phonological knowledge restricts their ability to learn written word patterns. For these students, a necessary area of teaching is phonological knowledge. This teaching provides the foundations necessary for increasing their written word knowledge.

2.3 How does phonological knowledge impact on reading and spelling ?

Our phonological knowledge helps us to learn to read and spell by giving us with a foundation for

- (1) understanding the sound composition of words; it allows us to
 - (1) segmenting a spoken word into sounds , for example, going from "bed" to "b", "e" , "d") and
 - (2) combining or blending sound segments into a whole word.
- (2) retrieving the names of written words from our oral language word bank and for
- (3) holding ideas in short term memory when we read or spell.

3. Developmental trends in phonological knowledge

Phonological abilities are acquired over several years, from the preschool years to the third-fourth grade levels. Some are prerequisite to learning to reading and others are learnt in parallel with reading. As children move through this sequence, they learn to

- (1) handle increasing amounts of sound information automatically
- (2) perform increasingly complex tasks automatically.

The developmental sequence is as follows. You need to be familiar with this if you intend to assess, diagnose or implement teaching in this area.

- Phonological knowledge begins when children learn to speak. Examples include
 - learning how to pronounce words
 - remembering how words are pronounced
 - remembering brief statements such as "Eat fruit" or "Put doll in car".
 - remembering the names of familiar objects and events
 - remembering a sequence of names, for example, the numbers names in order
- Children learn to recognise sound patterns in words; implicit or 'unconscious' awareness of the sound properties. They show this in how they play with rhymes and nonsense words, often spontaneously, for example, they
 - recognise sound patterns and produce rhyming words
 - recognise alliteration patterns
 - learn songs and nursery rhymes
 - detect syllables in words by clapping for each syllable.
- Children learn to blend sounds.
- Children begin to recognise syllables and individual sounds in words. They learn to:
 - segment words into onset and rime, breaking the word at the vowel, for example, segment "flip" into "fl" and "ip", or "cat" into "c" and "at".
 - strip the first sound away from words, for example, segment 'stop' into 's-top'¹.
 - isolate a sound within a word², for example, "What is the last sound in cat?"
 - verbalise the syllables in 2-, 3- and 4- syllable words for example, segment 'adventure' into "ad-ven-ture" .

¹ Words differ in the ease with which the initial sound can be identified; this depends in part on the sounds that follow it.

² Words differ in the ease with which individual sounds can be identified; this depends in part on the sounds around it.

- segment 1-syllable words into individual phonemes, for example, segment "cat" into "c-a-t" and "stop" into "s-t-o-p".
- blend a string of sounds into a 1-syllable word, for example, "c-l-o-t" to "clot".
- They link sound and letter information, that is, they recode letters and strings of letters to sounds and vice versa. This is referred to as phonological or phonic recoding.
- They manipulate individual sound patterns in more complex ways. This is referred to as compound phonemic awareness. They learn to
 - match sounds in two or more words eg., "Do pat and pin start with the same sound?"
 - delete sounds from a word, eg., "What would be left if you take /m/ out of camp?"
 - recognise a specified sound, eg., "What sound do you hear in camp but not in cap?"
 - substitute for consonant or vowel, eg., "Say 'mate' but instead of m say l".
 - categorize groups of sounds, eg., vowels into long versus short categories,

When we assess a child's phonological and phonemic knowledge, we are attempting to locate the child on this developmental sequence. In the next section we show how these areas of ability form a base for developing a knowledge of written word structures.

4. Incorporating phonemic awareness knowledge into a literacy program .

Developmental trends in phonemic awareness span grades Prep to 4, although older students who have reading difficulty may not know it. The program needs to include

- strategies for assessing it,
 - how well children use language to convey meaning and
 - their accuracy of pronunciation of sounds
- activities for teaching it to an automatized level and
- helping students learn how to use it.

Prep

1. Recalling the pronunciation of words through :
 - (1) spontaneous pronunciation in conversation; talking about pictures they see, describing a sequence of experiences they have had.
 - (2) learning how to pronounce, imitate words of increasing complexity
 - (3) recalling the names of familiar objects and events, pictures of objects, practise recalling names faster.
 - (4) recalling a sequence of names, for example, numbers one to ten, versions of "I went window shopping", "I went to beach and saw a seagull", "I went to beach and saw a seagull and a fish ",
- 2 children recognising and producing rhyming words and words that alliterate.
3. children listening for and remembering a shared sound.

Grade 1 Include segmenting words into sounds and sound blending; children

- (1) segment words into onset and rime
- (2) identify the first sound and the last sound in words
- (3) segment a word into component sounds, tap for each sound in a word and count the number of sounds in a word
- (4) blend onset and rime to make a word
- (5) blend a sequence of sounds to make a word

- (6) segment 2- 3- or 4- syllable words into syllables by syllabic clapping and by vocalising each syllable and
- (7) segment 2- 3- or 4- syllable words into syllables and then into sounds

Grade 2 Manipulating sounds within words; this includes

- (1) deleting a sound from a word and saying the word left.
- (2) substituting one sound for another

Grade 3 - 4 More complex phonemic awareness knowledge; pronouncing more sophisticated words, discussing stress patterns in polysyllabic words.

Phonological knowledge : How it is learnt and teaching activities

John Munro

1. Learning to read and the development of phonological knowledge.

Pre-literate developments Children's journey towards learning to read words begins in early communication. Prior to learning to read, they build and store meanings, how words and groups of words are said and how they are used. They express their intentions in 'mini-sentences' that are contextually anchored so that a particular event cues or reminds the children to use them.

From using these word phrases, they develop an awareness of the concept of a word. They learn to recognise individual words in speech and begin to build up a bank of words. Each word is represented by how it is said and what it means. We can draw the knowledge that the children store about words simplistically in Fig 1

the sound (or phonological) form of the word, that is, how it is said	the semantic form of the word what it means
"cat"	drinks milk, purrs chases mice, soft

Fig 1 : The sound and meaning forms of the word 'cat'.

Difficulty learning to recognise separate words in speech may restrict building a word-meaning bank. Children also begin to learn how to sequence words in sentences, that is, they develop an awareness of grammar or syntax. By listening to stories they learn the conventions used to communicate ideas, for example, "once upon a time" signals a fairy tale.

Phonological knowledge at this time allows children to learn how words are said. Most children do this relatively easily and with little practice. Those who have difficulty doing this may later have difficulties both in pronouncing words accurately and in recognising words. Inaccurate representations of spoken words may cause later word recognition difficulties, because the written word would not match the reader's spoken form. Many disabled readers have difficulty pronouncing accurately multi syllabic words; they may juxtapose, omit or substitute individual sounds or syllables, for example, say "crinimal" for 'criminal' or "torrelant" for 'tolerant'.

Early letter-sound links Children's increasing awareness of sound patterns within words, shown through rhyming and alliteration type activities, allows them to use a repeated sound pattern to predict words in stories that use rhyming. Their ability to segment short spoken words into smaller sound groups, for example, into onset and rime (such as "flip" into "fl" and "ip") leads to an awareness of single sounds that will be used later as a base for the corresponding letters and letter clusters. An awareness of individual letters, particularly upper case, begin to appear in children's attempts at writing at this stage.

The concept of a word, rhyming and onset-rime segmentation are all powerful predictors of later reading ability. Not only does it improve word recognition but also reading comprehension. As well, structured explicit teaching in these areas leads to improvement in reading.

Learning to read words : The use of alternative word recognition strategies To read written words, children need to link written words with how they are said. It is important to look at the differences between the written and spoken forms. The written form is in individual letters. The spoken form is in a sound sequence, not in individual sounds. To link them, to match the letters and the sounds, children need to break the spoken word into individual sounds. This ability is critical in the early stages of learning to read written words. Learning to make read written words requires early phonemic awareness.

When first learning to read words, young readers use a range of different strategies, some of which are more useful than others. These include:

- selecting and memorising distinctive visual features of words and the context in which they are used and linking these with how they hear the word said
- converting systematically each letter in a word to a sound and then blending the sounds.
- using part of the letter-sound information rather than complete sounding out, for example, converting the first few letters of a word to sounds and synthesising this with contextual information.
- using a combination of these strategies.

Of these strategies, using distinctive visual features is least effective in the long term. While recoding written words into sounds is slower than using distinctive visual features and demands more attention, its use can lead young readers to deal with increasingly complex letter information gradually at an automatic level.

Phonemic or individual sound knowledge is important here. Children who use distinctive visual features excessively have difficulty segmenting spoken words into separate sounds. To convert the letter and the letter-cluster information to sounds, they need to learn this. They need to use, relatively automatically, a range of sound-based skills and to handle increasingly more letter information.

Older children who continue to use attention-demanding letter by letter recoding strategies need to learn to deal with more complex sound patterns at once. They can learn to process more letter information at once by improving their sound cluster knowledge. Older children who can read three or four letter words much more accurately than longer words may have difficulty segmenting the spoken forms of longer words into sounds.

Ineffective word reading strategies at this level may suggest that young readers need to improve their ability to:

- (1) segment words into onset and rime, for example, segment "cat" into "c" and "at". This provides them with a knowledge of individual consonants and 'sub-word' sound blends.
- (2) segment one syllable words into individual sounds, for example, segment "stop" into "s-t-o-p". This provides them with a knowledge of vowels to which they can add the matching written letters and letter clusters, for example, 'ar' or 'ou'. It helps them to understand that clusters of more than one letter can match one sound, 'ai' or 'eigh'.
- (3) blend a string of sounds into a 1-syllable word, for example, blend "c-l-o-t" to "clot".
- (4) select a word that begins with a sound, for example, "Tell me a word that starts with b."

They learn to use this knowledge in words of increasing sound length; first to three sound words, then to four sound words and so on.

Children who have adequate sound knowledge can discover the links for themselves and. They may suspect a systematic mapping between letters and sounds and look for it. Their ability to abstract individual sounds in spoken words supports them in this.

Teaching letter-sound matches directly does not guarantee that children can use the matches to read words, particularly if they can't abstract the separate individual sounds in a word by taking apart its spoken form.

Reading letter-groups and words. As children continue to read, build up their knowledge of sound patterns in spoken words and recode systematically written words, they learn to recognise letter clusters rather than individual letters. This increases their word recognition efficiency. As an example of what is meant here, consider two children A and B reading the word 'spent' by recoding. Child A has built the "sp" and "ent" letter cluster units while B has the separate "s", "p", "e", "n" and "t" units. To read 'spent', Child A needs to handle two pieces of information, while B needs to handle 5. Child A can also recognise the clusters "sp" and "ent" in other words.

Readers learn these letter clusters by linking their written and sound forms. The clusters learnt first are those for which children already have the sound patterns, for example, onset and rime units .

Children who don't develop these sound patterns are less likely to learn the letter clusters.

Phonemic segmentation span is a measure of the longest spoken words children can segment accurately into separate sounds. For any child this span provides an estimate of the longest words (particularly for regular short-vowel words that have a 1:1 letter-sound mapping) that children can learn to read automatically.

Readers develop a 'self-teaching mechanism' by which they learn, independently, orthographic information . This mechanism is based on phonological recoding and draws, in part, on phonemic awareness. It is applied progressively to more complex words and may begin in the earliest reading experiences .

Orthographic knowledge doesn't all develop at once. A child may recognise a range of words and letter strings automatically and accurately (that is, consistent with orthographic processing) and at the same time use word segmentation and letter or letter-group sound conversion strategies for identifying other words.

In summary then,

- children build up a knowledge of letter clusters that they use to read words more efficiently than by using individual letters.
- they learn these letter clusters by linking their written and sound forms. Without the matching sound pattern they will have difficulty learning a letter cluster.
- they develop a 'self-teaching mechanism' by which they use known letter clusters to read unfamiliar words.
- orthographic knowledge doesn't all develop at once; a child may read some words automatically and others by segmentation and letter or letter-group sound recoding.

Learning to read words automatically Readers can read written words and letter groups automatically, without needing to convert the letter string to a sound pattern as an intermediate step, when they have stored information about how the words or letter groups are written. Two processes are involved in learning this knowledge;

- phonemic recoding; readers convert a written word to sounds by processing both letter and sound information simultaneously. Rather than converting each letter group to sounds and then blending, they blend the sounds as they go.
- making analogies between words; readers note letter group similarities between two or more words and use the sounds that match the letter cluster in one word to read the others, for example, the child read 'can' correctly and uses this to read 'plan' or 'man'. The analogy process involves moving or transporting the shared sound pattern between words. Some readers will be at a point where their processing of sounds will allow them to do this for simpler but not more complex words. A level of phonemic decoding seems to be necessary for making these analogies .

Readers develop gradually their orthographic learning capacity, so that previously unseen words can be recognised by rapid visual processes without needing to recode groups of letters to sounds prior to word reading.

Skilled readers use their knowledge of letter clusters to segment automatically multi syllabic words into syllables when they initially scan the words. They segment unfamiliar words into functional sub-word parts and combine these. They also modify their existing orthographic representations and learn new ones. Those with reading and spelling difficulties frequently have more difficulty with multi syllabic words made up of familiar letter clusters (eg in-for-ma-ion) than with single syllable words of the same length .

Phonological knowledge required for learning to read words automatically include being able to

- detect syllables in speech and to count syllables in words
- segment multi-syllabic words into syllables, recognising the same syllables in different words, transferring syllables to unfamiliar multi-syllabic words,
- manipulate individual sound patterns in more complex ways and changing a sequence of sounds, such as matching sounds in two or more words , deleting sounds from multi syllabic words, substituting sounds for other sounds, altering the stress patterns in spoken words to match known words and
- categorize groups of sound, for example categorising the vowels in words into long versus short categories

Difficulties manipulating more complex sound patterns in words may lead to readers being able to convert a letter sequence to a sound pattern but not able to modify the sound pattern by altering stress patterns, to match known spoken words.

This review indicates the extent to which sound knowledge provides a foundation for learning to read. One key aspect of the assessment process is to identify the level of development of an individual child's knowledge in these areas.

Evidence that a level of phonemic awareness is necessary for learning to read comes from two sources; (1) longitudinal prediction studies and (2) training studies in which the influence of phonemic instruction on reading is monitored.

2. Phonemic knowledge predicts later reading

It is not surprising then, that phonemic ability prior to learning to read predicts later reading and spelling achievement, both for word recognition skills and for comprehension.

- ***Rhyming and alliteration abilities*** predict later word reading ability. Difficulties in these areas may suggest difficulty recognising and using frequently occurring sound patterns (both individual phonemes and multi-phonemic units) and lead to difficulty
 - (1) seeing what spoken words such as "fat", "man" and "pad" have in common,
 - (2) integrating sequences of sounds
 - (3) using orthographic analogy processes to name words, for example, a reader may recognise "fat" but not use this knowledge to read "hat" or "pat".
 - (4) forming sound clusters for letter clusters such as 'str' or 'ave'.
- ***Phonemic segmentation skill***, both segmenting words completely into sounds and stripping off the first sound is one of the best predictors of later reading achievement. As well, blending sounds into words also predicts later reading ability. Difficulties forming particular sound clusters may lead to difficulty
 - (1) reading written words efficiently; both letter by letter converting to sounds, or the use of distinctive visual features non systematically can be attributed to inappropriate sound cluster knowledge.
 - (2) using the first sound or first few letters of a word, perhaps again with contextual information, to recognise it.
 - (3) using orthographic similarity between familiar and unfamiliar ones in order to read the unfamiliar ones, for example, to use 'mate' to read 'slate' and 'crate'.
- ***The ability to detect syllables in speech*** and to count syllables in words predicts later reading ability and differentiates readers identified as dyslexic from younger able readers. Deleting or reversing syllables does not predict reading to the same extent.
- ***Phonemic awareness also influences the quality of prose reading***. This issue has received little attention. Phonemically aware first grade students can detect changes in the letter structure of isolated words and make greater use of letter cues and fewer "nonsense" errors (that is, they say fewer words that had no relevance to the text read). Although they use similar word analysis strategies to less phonemically aware students, they can link letters with letter-sound knowledge better.

Teaching phonemic awareness and segmentation improves reading

Teaching letter-sound correspondences with phonemic awareness is more useful for reading than teaching either phonemic awareness only or phonics teaching only. The extent to which the teaching activities help reading depends on the entry phonemic and reading knowledge of students and the time when the influence is measured, either immediately after the teaching or later.

Teaching activities shown to be effective include

- training in blending and letter-sound correspondence knowledge
- phonemic segmentation (counting the number of sounds in a word, tapping out the sounds as they are heard, progressively segmenting sentences, words and syllables, segmenting two- or three-phoneme words and letter-sound correspondences.
- listening games,
- categorising words according to shared rhyming or alliteration patterns in parallel with letter-sound knowledge .
- phonemic discrimination training (deciding whether two consonant-vowel units, heard one after the other were the same) was linked with improved phonemic deletion for third to fifth grade reading underachievers.

Of the various areas of skill, teaching blending or phonemic synthesis combined with letter-sound correspondence has been shown to be most influential in improving reading ability.

Early detection of reading disabilities

Reading difficulties and phonemic awareness co-occur Students who have reading difficulty are more likely to display a lower level of phonemic awareness. They can to some extent improvise for this by using distinctive visual features. However, without analytic strategies that permit them to generalise and transfer this knowledge, their word recognition ability remains impaired. They have more difficulty than their more fluent reading peers:

- (1) segmenting spoken words into sounds or into syllables although they can segment non-linguistic sounds such as musical sequences .
- (2) deleting phonemes from words,
- (3) detecting and using rhyme and alliteration ,
- (4) deciding the number of sounds and syllables in words.

They rely more on what a word looks like rather than on its sound pattern that is, they use distinctive visual features. The phonemic difficulties can continue into adulthood.

Phonemic awareness difficulties and errors in word reading aloud. Older children who are less aware of sound patterns show characteristic difficulties in their oral word reading. They recognise comparatively few words automatically and are more likely to

- use word analysis and segmentation strategies, sounding out letter by letter or attempt to combine the first letters of a word with its context to identify it
- need to invest attention in using these procedures
- show a poor knowledge of letter cluster - sound patterns and digraphs.
- substitute words that are consistent with the meaning of the text but not with the letter information
- rely on trying to remember words, rather than using word-analysis problem-solving strategies for unfamiliar regular words.
- have difficulty distinguishing between similar sounding words, dealing with distinctions between long versus short sounds, etc.

- read shorter more accurately than longer words with a similar letter structure.
- have difficulty modifying sound patterns to match known spoken words.

3. **Phonological knowledge developmental task sequence**

Task 1. Implicit awareness of sound patterns in words.

- 1.1 Recognise rhyming words
- 1.2 Produce rhyming words
- 1.3 Recognise rhyming words in prose
- 1.4 Recognise rhyming words in prose
- 1.5 Recognise words that alliterate.

Task 2. Segmenting words into sounds

- 2.1 Segment words into onset and rime
- 2.2 Identify the first sound
- 2.3 Identify the last sound
- 2.4 Segment words into syllables
 - 2.4.1 saying each syllable in order
 - 2.4.2 syllabic clapping
- 2.5 Segment words into individual sounds
 - 2.5.1 Say each sound in order
 - 2.5.2 Tap for each sound
 - 2.5.3 Count the sounds

Task 3. Sound blending

- 3.1 Onset-rime blending to make a word
- 3.2 Blend a sequence of sounds

Task 4. Manipulating sounds within words.

- 4.1 Delete sound from a word
- 4.2 Substitute one sound for another
- 4.3 Segment words into sounds

To determine a child's phonological readiness. Here you are most likely interested in examining the phonological readiness of children in the first three years of school for aspects of literacy learning. By locating each child's level of phonological knowledge in the developmental sequence, you can infer the child's level of readiness for learning to read and write words. Those whose highest level of development doesn't exceed

- rhyming or segmenting spoken words into onset and rime may be expected to have difficulty using early word reading strategies.
- complete sound segmentation or sound manipulation within words may be expected to have difficulty using letter-sound recoding strategies systematically.
- integrating sequences of sounds into words may have difficulty using word-analysis strategies.
- have difficulty recognising particular sound patterns, for example, the distinction between the long and short a vowel sounds may have difficulty learning the matching letter cluster patterns.

1. Show the child pictures of items that rhyme, for example, pictures of a cub, a sub and a tub. Say to the child "*Listen to these words. Rub, sub, tub. You say other words that rhyme with these.*" If the child has difficulty with this task, have the child repeat the rhyming unit in sequence, for example, "ub, ub, ub" and then model putting a consonant in front of two of these units, for example, *Rub, sub* and have the child continue.

Repeat this activity with other sets of pictures. For the first few occasions, allow the child sufficient time to recall words that have the pattern.

Repeat this for longer word sequences such as

"*slip, clip...*" (drip, strip, blip, flip, skip, hip, ship, lip, pip, sip, whip, trip, zip, tip)

"*Ball, tall*" (stall, crawl, fall, haul, Paul, brawl, call)

"*lunch, crunch*" (munch, hunch, scrunch, brunch, bunch, punch)

2. Play a game in which children have to take turns to think of rhyming words, for example

	Jan	Peter	Chloe
" <i>slip, clip...</i> "	<i>drip,</i>	<i>strip,</i>	<i>flip,</i>
	<i>skip, hip,</i>	<i>ship,</i>	
	<i>lip,</i>	<i>pip,</i>	<i>sip,</i>
	-	<i>whip, trip,</i>	
	-	<i>zip,</i>	-
		<i>tip</i>	

The winner is the child who can still think of words.

3. Brain storm words that have a particular rime. Children work in small groups to see how many words they can remember that rhyme, for example

ake

Jan's group

cake
flake
bake
sake

Ian's group

make
take
lake
cake
snake

Gaell's group

take
steak
fake
make
blake
snake
ache
ear ache

1.3 Recognise rhyming words in prose

As well as having children recognise and produce rhyming words in isolation, it is often necessary to assist them to recognise and produce rhyming words in the context of non-rhyming words in prose. These abilities are developed in 1.3 and 1.4.

Begin with the rhyme word recognition tasks you used in teaching activity 1.1. Show the child the pictures of three familiar objects, two of whose names share a rime, for example, a picture of a mop, top and bag. Ask the child to pick the pictures that rhyme. When they can do this adequately, ask them to make up a story using the words. Then you make up a sentence using a

similar set of two rhyming words and ask them to select the rhyming words, for example, "The thief stole the bowl from the mole". Repeat this with other sets of two rhyming words in sentences and gradually increase to three rhyming words, for example "The thief stole the bowl from the mole". This can be developed in small group activities in which children take turns to recognise the words that rhyme.

In a small group, begin to read a story that uses rhyme. Have students take turns to predict words by using the rhyme. Big books in which all students can see the pictures and print, are useful here. Examples include Where Have you Been, the Wizard series and My Wonderful Aunt series .

Say to the child *"Listen to these three words. Few, stew, blue. These words all have the 'ew' sound. I'm going to tell you a story that has other words that have this sound. Every time you hear the 'ew' sound I want you to clap (or stamp, etc) . Read the passage at a slightly slower than usual rate. The crew of the ship were eating their stew. A few of them liked it. It was awful, too hard to chew. Over the ship a seagull flew. A sailor threw his stew at it. He knew she couldn't eat it. The seagull flew through it. It turned blue.*

Repeat for

The seal was lying on the boat. Suddenly the tide rose and swept it off. "It's slipped over the side" a sailor cried. "I tried to stop it but it was too wide." The other sailors rushed to the side to look . They saw the seal slide off the rocks and swim away.

1.4 Produce rhyming words in prose

As well as having the child recognise rhyming words in sentences, it is often necessary to assist the child to produce rhyming words in the context of non-rhyming words in prose. These abilities are developed in 1.3 and 1.4.

1. Say to the child *" We are going to make up some rhyming stories Listen to what I say. The black cat chased the bat. "* As you say it, stress the two words that rhyme. *"Now you finish of this sentence. Have the child go through the assessment exercises again. For each one say Now you finish off this story. As you say each one, stress the target word for the rhyme:*

Tom rolled off his bed and hurt his _____.
My friend Paul is very _____ "
My mother can bake a _____ "
The little boy played with his _____ "
My friend Kate swung on her _____ "

2. When the child has completed these, ask her / him to make up rhyming sentences for pairs of words, for example

- (1) *pin, tin* (for example, she put the pin in the tin)
- (2) *pest, nest* (for example, there is a pest, in the nest)
- (3) *tramp, stamp .*

You can also show the child pairs of pictures of rhyming words and ask her / him to make up sentences containing the two words, for example,

picture of plate
gate

picture of plane
crane

3. Read a story that includes a rhyming pattern such as a Dr Seuss or a Jelly Bean book and have the children take turns to predict the rhyming word/s that fit the context of the sentence. Use the pictures in rhyming Big Books. After children have used the rhyming pattern in a story to suggest rhyming words for a story, ask them to tell you how they decided which words to select.

4. Transfer this to unfamiliar nursery rhymes. Begin reciting a nursery rhyme or jingle and have them predict the rhyming words.

5. Have the children make up rhyming sentences that match their characteristics, for example,

I am called Jack and my hair is _____
I am eight and Jill is my _____
I am short and I like playing _____

6. Children make up their own verse, for example, nursery rhymes and television jingles.

1.5 Recognising and producing words that alliterate.

The ability to recognise and produce alliterative patterns is prerequisite to recognising and using the first sounds in words. If the child has had difficulty recognising words that alliterate, you may need to work on both recognising and expressing alliteration activities.

1. Imitating an alliterative pattern. Repeat saying a two-sound pattern such as "p, p, p, p" or "dr, dr, dr, dr". Have the child repeat the pattern on several occasions. When the child can repeat each sequence efficiently, add a different rime each unit to produce an alliterating pattern, for example, "pin, pet, pop, push" or "cop, cup, come" and again have the child repeat the sequence. Work on single consonant patterns before two consonant patterns such as "drop, drip, drug, drum".

2. Continuing an alliterative pattern among words. Begin with single consonant sound patterns. Say two of the words such as "pin, pet" and have the child continue each sequence by saying other words that have the same alliterative pattern (the words don't have to be the ones already said). Move gradually to two consonant patterns such as "drop, drum"

Develop similar alliterative patterns for sequences of longer words such as

"*cramp, crisp.....*" (crew, crop, crust, creep, crept, crab, crib, crime, crumb, cross).

"*spoon, special,*" (spat, spine, spot, sprung, spread, spring, speck, span).

"*broom, bracelet,*" (bread, bright, bring, brought, break, brim, brown, brick).

3. Recognising an alliterative pattern. Show the child the pictures of three familiar objects, two of whose names alliterate (that is, whose names start with the same sound), for example, a picture of a cat, a cot and a pig. Say the name of each item and ask the child to repeat each name. Ask the child to listen carefully to how you say them and then pick the pictures that sound the same. Avoid changing your stress, tone or speed when you say the four words.

Repeat the exercise for sets of four pictures at once, and for longer words, for example :

(1) *bus, sun, buck, bun* (2) *skip, sniff, swing, drip*
(3) *tramp, drink, trench, trunk*

4. Play card games such as Snap or Memory in which children match pictures of names that start with the same sound, for example, Snap and Memory
5. Producing an alliterative pattern among words. Play a game in which children have to take turns to think of words that begin with the same sounds, for example

	Tom	Alec	Fiona
"tram, treasure...	<i>trip,</i>	<i>trot</i>	<i>track</i>
	trumpet	tractor trap	
	tread	trick	Trevor
	-	truck	travel
	-	train	-
	-	trouble-	

6. Producing an alliterative pattern in prose. Say a sentence that the child understands that contains alliteration, for example

The green goblin grabbed the grapes
I saw a snake slithering silently.

Say incomplete sentences and have the children finish them by using the alliterative pattern to produce the final word by , for example,

Sam saw seven straight _____ (sticks, signs,)
Sue softly sang the _____
Bill banged the big _____

The children can work in small groups to see how many possible words they can find that fit a particular alliterative pattern in incomplete sentences

Children can see how many alliterative sentences they can make up based on personal characteristics, for example, for their names for the school magazine

Tina tries to teach us to trick others.
Sam is a sound speller.

7. Producing alliterative patterns in songs and verse, for example

Sam is skipping with Suzie
Hazel is hopping past Henry.

5. Task 2. Segment words into sounds

In several of the exercises here, you need to say individual sounds. You need to take careful to say individual sounds and not syllables. Often when we want to stress an individual sound, we add an unstressed sound to it, for example, when we intend to say "p" we actually say "puh" and when we intend to say "f" we actually say "fu" or "fe". We add these sounds when we stretch it out.

Try to avoid adding these sounds in this task. Attempt to say the sound as closely as possible to how it is said in words. This will often involve you 'cutting the sound off short'. You may need to practise vocalising sounds in this way before you administer the items.

Segment words into syllables

Why is segmenting spoken words into syllables important ? Skilled readers recognise long, unfamiliar words by breaking them automatically into syllables. Those who have reading and spelling difficulties frequently have difficulty doing this.

What is a syllable ? To assess how well children can recognise syllables, we need first to establish what constitutes a syllable. This is not clear cut . You can try it out for yourself by syllabifying the following words and saying how many syllables each one has.

button, several, compete, amuse, similar, customer deliver, remember.

You probably found it easier to count the syllables in each word had than to decide the boundary of each syllable. This is because the words can be syllabified in different ways, for example, button can be segmented either as butt-on or as bu-tton. You would segment it as but-ton only if you can see it written or know that it has a tt unit. The spoken word "several" can be segmented either as "sev-er-al" , as "se-ve-ral" or as "se-ver-al".

The notion of a syllable is not well defined. In the linguistic sense, it is usually agreed that a syllable consists of a vowel or vowel cluster and the preceding consonant or consonant cluster. The vowel can be stressed or unstressed (see below). It sometimes can also include at least one of the consonants following the vowel unit. Whether these consonants do form part of the syllable depends on the larger sound context in which it is, for example, "partial" would be syllabified as "par-tial" while "partly" would be syllabified as "part-ly".

Stressed and unstressed syllables In most multi-syllabic words in English, one syllable has more stress than the other/s. To get an idea of how this operates, listen to how you say each of the following words and identify the stressed and unstressed syllables:

attract, flannel , happen, kennel, kitten, standard, sever, customer, permanent.

As you can see, the syllable that is stressed can be first, second or third.

The vowel in the unstressed syllable is softened and blurred. It is referred to as the 'schwa'. In the word "sever", the e in the 'ver' contains the schwa, in the word "similar" the i in 'mi' and the a in the 'lar' have the schwa sound while in the word "customer" the o in the 'to' and the e in 'mer' have the schwa sound. The sound of the schwa is sometimes like a very short "er" sound as in "term", sometimes a very short "uh" and sometimes little more than a grunt.

One awareness you need to examine here is the child's understanding of syllables in English words and their awareness that there is a vowel in the unstressed syllable/s. When the child is mentioning the unstressed syllable, she / she is required to show this. When segmenting "flannel", for example, the child is expected to say "fla" - "nl".

What is a syllable-like unit ? Being able to detect syllables in speech and to count the number of syllables in words does not mean that a person can explain what a syllable is or how they detect them.

Because of the difficulty specifying precisely what constitutes a syllable and our interest in how children analyse spoken words into useful segments, we do not recommend assessing children's attempts using the precise, dictionary-defined locations of the syllable boundaries in written words.

Rather, we recommend assessing syllable-like units. Each is a pronounceable unit in a word and is based around a vowel or vowel cluster. The vowel can be stressed or unstressed. It may be by itself

or be linked with the surrounding consonants. The syllable-like units that a child recognises, when blended in the order in which they are said, need to generate the word. Correct ways of segmenting the spoken word "window" into these units produces "win-dow" or "wind-ow". Producing "wi-ndow" or "w-indow" is not producing syllable-like units because each unit is not centred around a vowel.

The number of separate (that is, usually non-adjacent) vowels or vowel clusters in the spoken form determines the number of syllable-like units. The number of vowels (both stressed and unstressed) in the following words is shown in parenthesis;

button (2) several (3) compete (2)
 amuse (2) similar (3) permanent (3).

Task 2. Teaching activities Segmenting words into sounds

<u>Assessment task not mastered adequately</u>	<u>Relevant teaching activity</u>
2.1 Segment words into onset and rime	Teaching activity 2.1
2.2 Identify the first sound	Teaching activity 2.2
2.3 Identify the last sound	Teaching activity 2.3
2.4 Segment words into syllables	
2.4.1 Say each syllable in order	Teaching activity 2.4.1
2.4.2 Syllabic clapping	Teaching activity 2.4.2
2.5 Segment words into individual sounds	
2.5.1 Say each sound in order	Teaching activity 2.5.1
2.5.2 Tap for each sound	Teaching activity 2.5.2
2.5.3 Count the sounds	Teaching activity 2.5.3

2.1 Segmenting words into onset and rime

Children display the skill of onset-rime segmentation in two ways:

- (1) by recognising and using the onset or the rime
- (2) by saying either part.

Useful activities for recognising and using the onset or rime include the following:

- 1. *Finish the word.* The children hear a meaningful sentence and the onset or rime of a word and suggest the complete word, for example,

The dog chased after the c _____	(cat, car, cart, etc)
Ann fell over and hurt her l _____	(leg)
Can you hop like a fr _____ ?	(frog)
The elephant waved his tr _____	(trunk).

Ask the children to suggest how they decided which word to say for each sentence. What helped them to make up their minds ?

- 2 *Pick the odd one out.* Show the children sets of pictures of four familiar objects where all but one begin with the same onset, for example, spoon, spin, sand and speck or that end with the same rime for example, sink, think, hand and link. Say the name of each picture and ask the child to repeat each name. Ask the child to pick the picture that sounds different from the others.

Repeat for other sets of four pictures at once and for longer words.

3. *Recognising the same onset or rime.* Play card games such as Snap or Memory in which children match pictures of names that have either the same onset or rime

Useful activities for having children express onset and rime units.

1. *Helping students to monitor and self-correct errors made.* Use the errors that students make to teach them how to monitor and to correct the errors. Typical error patterns when children are saying the onset and rime include :

(1) difficulty separating the vowel from the onset part of the word, for example, "milk" is segmented as "mi-ilk", "tent" as "te-ent" or "flag" as "fla-ag". Note the words for which these errors occur, for example, longer sound words. Repeat what the child said and point out how it can be corrected, for example, "You said the "i" twice" , *in the m part and the ilk part.* Have the child say the word again and repeat the segmentation, this time with a shorter time duration between the two parts. You can also use your hand to gesture cutting the word before the vowel.

(2) forgetting how to say the rime part. Ask the child say the complete word two or three times before attempting to segment again.

2. *Learning to say individual sounds.* Some of these errors arise because the children do not have concepts of particular sounds. They not be aware, for example, that "m" or "i" is are sounds. The Lindamood teaching materials (the Auditory Discrimination in Depth Programme (Lindamood, & Lindamood, 1975)) provide a comprehensive teaching programme for targeting this. A major aspect of the programme involves children learning to categorize speech sounds in terms of how they are physically formed in the mouth. They explore how they form each sound in their mouths and describe what they hear, see and feel. They also examine how sounds differ in these ways. Several of the consonants are learnt as unvoiced (or whispered) and voiced pairs. Others are learnt on the basis of whether they are produced through the nose (the 'nose sounds' , n, m, and ng), by expelling air (the 'windy sounds' w, h, and wh) by lifting the tongue (the 'lifters' l, r, and er) or by using the sounds that 'belong' to other letters (the 'borrowers' c, x, qu and y) . The vowels are learnt by linking them to changes in the shape of the mouth; the ee, i, e, ai, a, u are linked with the smiling mouth, the o and au with the open mouth and the oa and oo with the closed mouth. The diphthongs such as i-e, u-e, ou, ow and oi are learnt as vowels that 'slide' from one position to another.

If you don't have ready access to the Lindamood materials go through each sound in turn in the alphabet with the child and note how it is formed. What are your lips like ? Where is your tongue (front or back of your mouth) ? The 5 short vowels are made by having your mouth open and slightly changing your lips and moving your tongue forwards and then back. Some consonant sounds are made with your lips, some by changing your tongue position.

The multi-sensory teaching approach provides valuable learning opportunities for children who haven't learnt to conceptualize sounds.

3. *Segmenting words into these parts.* You begin by showing them how to segment 3-sound words into onset and rime. Show the child pictures of familiar items, such as a bed, a cat, a tram, a star. Name each item and ask the child to repeat the name. Target one of the items, for example, the bed. Say "Listen to how I say bed. B-ed." Say the two parts in bed distinctly, separate, then by about half a second. If necessary, use a puppet to say the segmented word. Have the child repeat the segmentation and then apply it to other words, for example, the sets of

words and pictures used for the assessment exercises. Have the child apply the onset-rime segmentation to one-syllable words of increasing sound length and to less familiar words.

2. *Say the shared sound pattern.* Show the children sets of 3 and then 4 pictures of three familiar objects where all but one begin with the same onset, for example, spoon, spin, hand and speck or that end with the same rime for example, sink, think, hand and link. Ask the children to say the shared sound pattern.

3. *Producing words that have the same onset or rime.* Develop activities in which the children take turns to think of words that begin with the same onset or that end with the same rime. Play a game in which you and the child take turns to say words that begin with the same onset or that end with the same rime. Encourage pairs and small groups of children to play these games. The child who can keep going suggesting matching words is the winner, for example
toys that start with "st"

Ann	Bill	Connie
stumps stamps (and pad)		starwars (figurines)
statue	Stimpie	sticks (toy golf)

2.2 Identify the first sound

Children display the skill to identify the first sound in words in two ways:

- (1) by recognising and using the first sound
- (2) by vocalising the first sound of a word.

Some children will be able to display one of these skills without the other. In the reading situation they need to be able to do both, relatively automatically.

Useful activities for recognising and using the first sound in spoken words include the following:

1. Pick the odd one out. Show the child the picture of a familiar object, for example, a picture of a boat. Say "*What is the name of this ? This is a boat*". Now show pictures of another three items, two of which begin with the same sound as the first picture, for example, a bird, a dog and a bus. Say "*These show a bird, a dog and a bus What pictures start with the same sound as boat ? What is their starting sound ?*" If this causes difficulty, say "*Listen to how you say the name.*" Have the child repeat the names slowly. "*What sound do you hear first in each word ?*" Repeat this for several sets of similar pictures.
2. Recognising the first sound. Play card games such as Snap, Memory, Bingo or Dominoes in which children match objects or pictures of names that have the same first sound.
3. Listen for the first sound. Say a four-sound word that has two sounds in its onset, such as *spans* and segment it into 'first sound and the rest', for example, "*Listen to how I change the word span. S -pan. Listen to how I do the same thing with trip. T-rip. You try doing the same thing with these words. Tram. Stop. Crash. Drip.* (..... additional four sound words if necessary).

Discuss with the child how you are splitting off the **first sound** off each word. Say *Now do it to these words. Twist. Plant. Crust. Print.* (..... additional five sound words if necessary).

4. Say the first sound. Ask the children to suggest the first sound of words, for example,

Say the first sound in these words

flat ramp slip string clamp twist

Begin with four sound words and gradually work to five, six and longer words.

5. Ask the child to suggest words that begin with a particular sound. Give the child some examples first, for example, "*Grim starts with g. What are some other words that start with g?*" Repeat for several other sounds.

Ask the child to suggest words related to a particular theme that begin with a particular sound, for example

Food words that begin with "c".

The children can work in small groups and see whose group ends up with the most, for example,

Tony's group Anna's group

cauliflower	cake
crisps	cabbage
carrots	corn
corn flakes	cordial
cream	

When you develop this activity on an individual basis, individual children can continue until all but one cannot remember any more words.

You can also develop this activity in the context of Twenty Questions and Hangman, for example, "*I'm thinking of something that you eat that starts with m.*"

Show the child or group a picture that contains several items and actions and ask "*Find all the items that begin with*". Show the child a set of toys and ask "*Find all the toys that begin with*". Ask them to find the number of items in the classroom, the kitchen or the street that begin with "t".

Ask the students to see how many children's names in the class begin with each sound in the alphabet. The children may see that they need to go beyond the alphabet sounds, for example, they may have Anna and Ainsley; are these different sounds or the same sound. They may discover sounds that are not in the alphabet, for example, Irma. Can they think of other sounds that aren't in the alphabet?

6. Collect a set of objects (small toys, items of clothing, objects used around the house, etc. The child takes each object in turn, says its name and the first sound in its name. This can be developed into games, for example, children take turns to draw remove objects from a

container. Child A selects an object and says its name and first sound. Then child B withdraws an item and says its name and first sound. If this item begins with the same sound as that selected by child A and is said correctly, child B has another turn at withdrawing. The game continues until all items have been withdrawn. The winner is the child who has most items.

You can make the game harder by requiring each child to say, as well, the name of a second item beginning with the sound.

2.3 Identify the last sound

Identifying the last sound is more difficult than identifying the first sound for many children. Useful activities for recognising and using the last sound in spoken words include the following:

1. *Pick the odd one out.* Show the child the picture of a familiar object, for example, a picture of a map. Say "What is the name of this? This is a map". Now show the child pictures of another three items, two of which finish with the same sound as the first picture, for example, a cap, a cat and a mop. Say "These are a cap, a cat and a mop. What pictures end with the same sound as map? What is their last sound?" If this causes difficulty, say "Listen to how you say the name. What sound do you hear last?" Repeat this for several sets of similar pictures.
2. *Listen for the last sound.* Say a four-sound word that has two consonants in its rime such as *belt* and segment it into 'first three sounds and the last', for example, "Listen to how I change the word *belt* Bel-t. Listen to how I do the same thing with *tank* Tan-k. You try doing the same thing with these words. *Best. Lump. Pant. Damp* (..... additional four sound words if necessary).

Discuss with the child how you are splitting off the **last sound** of each word. Say *Now do it to these words. Cramp. Skunk Flank. Drink* (..... additional five sound words if necessary).

3. *Say the last sound.* Ask the child to listen for the last sound in words that you say. Begin with three sound words and gradually work to four five, six and longer words.
4. *Suggest words that begin with a particular sound.* Ask the child to suggest words that end with a particular sound. Give the child some examples first, for example, "*Drum finishes with m. What are some other words that end with m? Him Tram Come* Repeat for several other sounds. *Tin ends with n. What are some other words that end with n.?*

2.4 Segment a 2-, 3- or 4- syllable word into syllable-like units

Children can show the skill to segment a 2-, 3- or 4- syllable word into syllable-like units in two ways:

- (1) by recognising and using each syllable
- (2) by saying either part.

Useful activities for recognising and using the onset or rime include the following:

1. *What is a syllable-like unit?* Say a 2-syllable word to a child and then break it up into units in two ways; in one way that has syllable-like units and in a second way that doesn't have syllable-like units, for example, for "pretend"

Pre-tend

has syllable-like units

Pr-etend

doesn't have syllable-like units,

Ask the children to describe how they sound different, for example, *Listen to how I say the word pretend. I'm going to break up it up in two ways. Pr-etend. Pre-tend. Which way sounds better? Say the one that sounded better? Why didn't the other one sound as good?*

Repeat this for other words. Lead the child to see that the one that sounds better has a vowel in each part. Introduce the term 'syllable' for parts where each part has a vowel. Have the child experiment with the

Does it sound right? for three and four syllable words such as artistic, inefficient, camera, effective, publication, feminine and hospital. Ask children to produce their own definitions of 'syllable'.

2. **Finish the word.** The children hear a meaningful sentence and one syllable of a word and suggest the complete word, for example,

The injured man was slid carefully into the __bul__ (ambulance).

Tom was not hungry after the birthday party; she didn't have an app ____ (appetite).

The volcano was a dis_____ for the country (disaster)

Ask the children to suggest how they decided which word to say for each sentence. What helped them to make up their minds?

3 **Pick the odd one out.** Say four multi syllabic words to the child, where all but one have the same syllable for example, department, particular, parallel, partition. Have the child say repeat each word and then pick the one that sounds different from the others. Repeat for other sets of four words, for example,

invention, possible, position, action
excellent, extend, repellent, pendant

Ask the children to explain how they made their decisions.

Useful activities for having children express syllabic-like units.

1. **Breaking words into syllables.** *"Listen to how I say wander. Wan-der. Ensure that you pause briefly between the two syllables. I said each part of the word by itself. You copy how I say it. Wan-der.. If children find the imitation difficult, repeat it and remind them "I want you to break wan-der. up into its parts and say each part."*

Have the child practise first on 2-syllable words and then 3- and finally on 4. Use the errors that the children make to direct your feedback. For words that a child segments incorrectly, ask the child to say the word to be segmented before attempting to segment it again. Typical types of errors to note include

(1) the child has difficulty separating the segments, for example, segments "sprocket" as "sprock-cket". Repeat the child's response and discuss how a particular sound has been repeated. Remind the child to think about cutting the word up.

- (2) the child has difficulty retaining all of the sounds in each segment. Have the child practise saying after you each of the segments.
- (3) the child inserts or adds sounds. Repeat the child's response, put the two segments together and show how the child has added sounds.
- (4) the child has difficulty with the schwa, for example, leaves it out or doesn't know how to say it. This error is dealt with in later activities.

If the child forgets the word ask her / him to repeat it. If the child asks you to repeat the word, do so but note the request.

2. How do we say it ? Say two or three separate syllables with equal stress and ask the child to blend them to say a word in English. The children have to modify the stress pattern, for example, say

I'm going to say the two parts of a word. I want you to tell me what the word is :

hel - met
 frac - ture
 garb-age

Discuss how the sound of one of the vowels changes when the syllables are combined. Discuss the change in stress patterns and whether the word still has two syllables, although one isn't stressed.

3. Say the unstressed syllables Say several 2- and 3- syllable words and ask the students to say the unstressed syllable, for example,

attract, flannel, happen, kennel, kitten, standard, sever, customer, permanent.

Discuss whether the unstressed syllable can be first, second or third.

Discuss how you say the vowel in the unstressed syllable. Help the students to see that it is softened and blurred. It is sometimes like a very short "er" sound as in "term", sometimes a very short "uh" and sometimes little more than a grunt.

Activities for 2.4.2. (Syllabic clapping)

Say a 2-syllable word and make a gesture for each syllable in it as you say it. You can clap, tap the table, stamp, click fingers, or shake a musical instrument such as a tambourine or macaques. Ask the child to do the action with you. Apply to other 2-, 3- and 4- syllable words.

You can introduce the activity as follows : *Listen to what I do when I say each word.* Say each syllable, that is, *On-ion.* and as you say each syllable, clap or gesture once. Ensure that you pause briefly between the two syllables. *I clapped as I said each part of the word.* *You copy what I did.* *On-ion. Clap for each part of the word.* If the child imitates you correctly, apply to other words. If not, repeat the demonstration and ask the child to imitate.

Encourage the children to explain how they know when to clap. What do they listen for ? How do they know whether to clap once or twice.

2.5.1 Segment a word into component sounds

Being able to segment spoken words into sounds is a critical foundation for learning to recognise words efficiently. We talked earlier about the child's 'phonemic segmentation span'. This is the sound length of the longest words that the child can consistently segment into sounds correctly. This provides a ceiling on the length of the words the child can learn to read automatically. If child's phonemic segmentation span for a particular type of word is 3, then the child will have difficulty learning to read automatically words of this type that have five or more letters.

Which words to children find easier to segment ? Two of the main factors that determine whether a child can segment a particular type of word into individual sounds are the number of sounds in the word and the child's familiarity with the sounds. The sounds with which children are most familiar are the ones that match the letters in the alphabet. Many will find it easier to deal with the vowel sound in "chap" than the vowel in "chirp". They will find the word "pant" easier to segment than the word "point". When you assess children's segmentation ability you will see a range of performance patterns. The following types of patterns are common ones that you will often observe :

- (1) some children won't be able to segment words into individual sounds at all, for example, they will segment "dog" into "do - og". They do not seem to have functional representations of at least some of the sounds.
- (2) some children recognize some of the sounds but substitute for others, for example, for example, they will segment "dog" into "d-i - p "
- (3) some children can segment the shortest words that have the simplest sound structures, for example, they can segment "up" into "u" and "p" and "cup" into "c", "u" and "p" but they cannot segment similar, longer words. They may, for example, delete sounds and segment "jump" into "j", "u" and "p", or add sounds, for example, segments "dog" as "d"-"o"-"n"-"g".
- (4) some children can segment words that have the simpler sound patterns but not the more complex ones.

The teaching procedures that you use need to target as directly as possible each child's needs. Many children will need to practise extending this to longer words and to words that have more complex sound structures.

Why do children find some words harder to segment ? Some words have sound patterns that are less familiar to the children. We noted earlier that the sounds that do not occur in the alphabet cause greater difficulty, for example, the sounds linked with 'oi', 'au' (as in "maul") or 'are' (as in "bare"). Others that may cause difficulties are the sounds that have already been learnt as letter names and not sounds; this confuses children who have previously put letter names and sounds into different categories. The errors that children make when segmenting types of words can be used to indicate the nature of the child's confusion and where to direct the teaching.

Developing a word segmenting programme. Develop segmenting words into individual sounds from the initial and final sound stripping activities described earlier.

1. If you haven't already done so, you could work through the teaching activities 2.2 and 2.3 before proceeding further.

2. Look at the child's phonemic segmentation span, that is, the longest words the child can segment into separate sounds. This will tell you the length of words the child can segment relatively automatically. Use this as a guide for deciding the length of words to start on.
3. Look at your record of the errors the child made when segmenting. These will tell you what to direct your teaching to. If the child has difficulty
 - (1) separating the letter clusters, for example, "dog" is segmented as "do - og", the child may not have functional representations of some sounds.
 - (2) retaining all of the sounds in a word, for example, "jump" is segmented as "j", "u" and "p", the word may be exceeding the child's phonemic segmentation span. The child may be able to segment shorter words
 - (3) adds sounds, for example, segments "dog" as "d"- "o" - "n" -"g", the child may have learnt a particular link between one sound and another and have difficulty breaking this link. Your teaching needs to target this inflexibility.
 - (4) the child segments a word by spelling it for example, segments 'bike' as 'b-i-k-e', the child may either not understand the nature of the task instructions or have difficulty distinguishing between sound segmenting and spelling. Your teaching may need to remind the child that the activity is to say the sounds in the word, not the letters and repeat the example of 'cat'.

For children who found 3- and 4-sound words difficult to segment.

1. Demonstrate or model how to segment 3-sound words. Say *"Listen to how I say cat. This time I am going to say each sound in the word. C-a-t. I cut the word cat up into its sounds. C-a-t"*. Ask the child to segment a similar sounding word, for example, *Now you try it with mat. Cut it up into its sounds. Say each sound in mat "* If the child finds three sound word segmentation difficult, you may need to develop these other activities first:

- (1) the activities in 2.7, Tap for each sound, in which the child learns to tap or touch an item for each sound in the word.
- (2) activities in which the child 'stretches out' how the word is said. Say the word 'mat' much more slowly than normal, stretching out each sound. Repeat it a second time and move your hand to symbolise 'slicing' the stretched out word into separate sounds. Ask the child to listen for the separate sounds in the stretched out word. Ask the child to 'stretch out' several 3-sound words and then move to 4- and 5- sound words.
- (3) activities in which the child clarifies exactly what needs to be done. Some children may have difficulty understanding what needs to be done. When a child continues to find three sound word segmentation difficult say *"I want you to break the word mat up into its sounds and say each sound."*

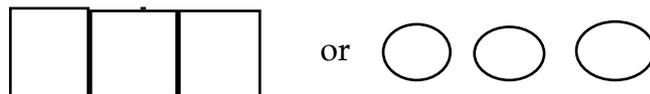
If the child found 2.5.1 difficult initially, continue with 2.5.1 only when these activities have been satisfactorily completed.

2. Have the child segment 2- and 3-sound words. Begin with words that have
 - (1) the simpler sound patterns, that is, the alphabet sounds.

- (2) similar pronunciation to each other, for example, use words that have the same rime unit, for example, "mat", "fat" and "rat". This allows the children to allocate most of their attention to the segmentation process rather than to coping with differences in sounds. As the children segment more automatically, gradually move to sets of words that differ in their rime.
- (3) the 'longer to say' consonants and digraphs such as "n", "s", "z", "sh", "v", "th", "r", "m", "f", "l". These are often referred to as the 'continuant' sounds. Move later to words that have the more 'explosive' sounds (or 'plosives') such as "k", "b", "g", "p", "d" and "t". You may begin with having them segment words such as "ran", "sip", "fun" and move to "rat", "gob" and "put".

3. Allow the children to use various intermediate supports to assist segmenting.

- (1) Some children, when first working on this skill, will need to 'stretch out' the word as an intermediate step. Allow them to do this.
- (2) Some children are assisted by having 3 counters or blocks arranged in a line in front of them and touch each one as they say the sound. Again, allow them to do this. You can gradually phase out the counters and replace them by a drawing such as



Listen to each child's response and attempt to categorize errors made. Give corrective feedback. Typical types of errors note include

- (1) difficulty separating the letter clusters, for example, "dog" is segmented as "do - og". Children who make this type of error often don't have functional representations of some sounds.
- (2) difficulty retaining all of the sounds, for example, "jump" is segmented as "j", "u" and "p". Children who make this type of error can often segment shorter words but not longer ones.
- (3) the child adds sounds, for example, segments "dog" as "d"- "o" - "n" -"g". Children who make this type of error often show an inflexibility in their use of letter-sound knowledge. They have learnt a particular link between one sound and another and have difficulty breaking this link.
- (4) the child spelling a word, for example, segments 'bike' as 'b-i-k-e'. Remind the child that the activity is to say the sounds in the word, not the letters and repeat the example of 'cat'.

Ask the child to say words that have been segmented incorrectly before re-attempting them. If the child asks you to repeat the word, do so but note the request.

4. The child segments 4-sound, 5-sound and 6-sound words. Gradually move to 4-sound, 5-sound and 6-sound words. For each sound length you can have the child use a template

drawing such as shown below and gradually withdraw it after three or four successful attempts.



This type of drawing reduces the amount of information the children have to handle at once and acts as a scaffold for learning to segment. After they have used it successfully on a few occasions, ask them to imagine the grid in their mind while segmenting the words.

You can gradually move through the types of words in the list

For children who can segment shorter, less complex words but not longer or more complex words. You would use these activities for children who have difficulty segmenting 4- to 6-sound words such as "sand" or "strand" but who can segment 2- and 3-sound words such as "an" or "ran".

1. Begin by having the children segment the shorter word and gradually build up to the longer word, for example

"ran " -----> "r" - "a" - "n"
"sand" -----> "s" - "a" - "n" - "d"
"stand" -----> "s" - "t" - "a" - "n" - "d"
"strand" -----> "s" - "t" - "r" - "a" - "n" - "d"

2. Allow the children to use the various types of intermediate supports mentioned earlier to assist segmenting;
 - (1) 'stretching out' how the word is said.
 - (2) using a set of counters or blocks arranged in a line or a drawing to represent each sound.

You can use errors in the child's responses to decide the issues to target in the teaching.

Moving through the sequence of words. As you move gradually through the types of words in the list you will observe difficulties that some children have in segmenting words into sounds:

- (1) in some types of words, the way that a sound is said in a word may not sound like how the sound is said in isolation, for example, compare "r" in isolation with its sound in "fire". Children need to become aware of these different linkages.
- (2) many multi-syllabic words have unstressed syllables, for example, the schwa in the unstressed "er" in words like "member" or "streamer".
- (3) some children will find words that have three sounds in the rime of the word more difficult than corresponding words that have only two sounds in the rime. Although the words "jump" and "drop" both have 4 sounds and a simple sound structure, the word "jump" will be harder to segment than "drop" because the "ump" unit has 3 sounds while the "op" unit has only 2.

For children who have difficulties in both areas, you may need to develop the sound segmentation abilities before the children can learn to recognise particular types of letter patterns automatically.

Activities for 2.5.2 (Tap for each sound)

Some children need to learn about the phonemic structure of words first in a physical way and then convert their knowledge to an oral form. They hear a word and then segment it into individual sounds by gesturing, tapping, pointing, etc.

1. *Tapping out a 'stretched out word'*. When teaching this ability, begin with words of three or four sounds, such as 'pick'. Lay out in a line in front of the child the number of different-coloured blocks or counters equal to the number of sounds in the word. Say the word 'stretched out', have the child repeat the word 'stretched out'. Say the stretched out word again and push or tap each counter in the row. Have the child do this. Apply this to several other short words and have the child gradually take more control of the activity. Develop the notion of 'cutting the word up' into sounds. Begin by giving the children the number of different-coloured blocks or counters equal to the number of sounds in the word arranged in a row and have them tap each counter in turn as they say each sound. Gradually give them more counters than they need, so that they cannot simply use the number of counters provided as a cue to the number of sounds.³

2. *Difficulty segmenting short words using the concrete aids*. If a child finds 3-sound words difficult to segment by using the concrete support described above, the activities prescribed in the Auditory Discrimination in Depth Programme (Lindamood & Lindamood, 1975) for the first three developmental levels are recommended here. The most appropriate activities are the Level 3 Tracking Speech Sounds activities, in which students learn to represent first individual sounds and then sound sequences and syllables using different coloured blocks or counters. Each sound is linked with a colour. Colours are used to show difference or sameness in sound. Some children will also need the prerequisite Level 1 (Setting the climate for learning) and Level 2 (Identifying and classifying speech sounds) activities before embarking on Level 3.

3. *Tap or clap for each sound*. Say 3- and 4-sound words and have the children tap once on a table top or on counters for each sound they hear in the word. You can spread out a row of four counters in front of the child and another row for you. Say "*Look what I do with the word 'camp'.*" Say "c", "a", "m" and "p" and push up a counter as you say each sound. Say "*For each sound in the word I push one of the counters. Now you do this for the word 'hit' with your counters.*"

Ask the child to "*Clap for each sound you hear in 'camp'.*"

Children need to apply this first to three and four sound words and, as proficiency develops, to five and six sound words. Avoid initially multi-syllabic words that have unstressed syllables, for example, with the schwa.

Activities for 2.5.3 (Phonemic counting)

1. *Where to begin?* Use the child's score on phonemic counting assessment task to identify the length of words for which a child can count the sounds. If the highest word length that the child could

³ It should be noted that the approach recommended here differs from that of the Auditory Discrimination in Depth Programme (Lindamood & Lindamood, 1975). Although we are recommending similar types of materials to the A.D.D. program, we are using them in different ways. Whereas the A.D.D. program, begins with individual sounds and gradually builds them into nonsense words, we are beginning with sound sequences and moving in the opposite direction. If a child finds our initial approach difficult, we would recommend the Lindamood and Lindamood activities.

count was 4 sounds, begin here. If the child cannot count accurately the number of sounds in 2- or three sound words, work through 2.7 and ask the child to count the number of taps of claps the child needs to give for any word.

2. Suppose you are beginning with 3-sound words. Ask "*How many sounds do we hear in the word 'cat'?*" As you say each sound, hold up a finger. "There are three sounds in cat". Repeat this for other 3- and 4- sound words such as keep, fry, skip, map, send, boat. If the child counts the number of letters in the words rather than the sounds, say "*I don't want you to count the number of letters in each word. Listen to the sounds*".

Some children may have difficulty counting or tagging the individual sounds. To check that they can count, ask the child to give you the palm of her / his hand and say "*I'm going to touch the palm of your hand like this a few times. You tell me how many times I touch your hand*". Tap gently on the child's palm four times, twice and then six times.

Other children will say the sounds aloud as they count them, while others will do this silently. Noting how they do this will indicate what can be done automatically and with an investment of attention.

3. *First one out.* Give each child in a group 20 (and then later 30) counters. Each child in turn hears a word and gets rid of the number of counters equal to the number of sounds in the word. The winner is the child who gets rid of all their counters first.

4. *Words that have four sounds.* Children, in small groups, take turns to say words that have 4 sounds or 5 sounds, etc. The winning child is the one who can continue to suggest words that have the target number of sounds.

Task 3. Teaching activities Sound blending

3.1 Onset-rime blending to make a word

Say to the child "*Listen to how I put these sounds together to make a word. P-ot These make pot. You do this with c-an.*" Say each part of the word with a very brief pause between them. Repeat this with other examples and then ask the child to blend sound groups that four sound, five sound and six sound words. Discuss with the child how you are 'running the sounds together'

Have children work in pairs with one child saying an onset, the other saying the rime and then the first child blending them to make a word.

Say the onset or rime of the name of an object in the room, in the playground, etc., and have the child decide what the object is, for example, "*What am I thinking of in this room? It starts with sp.*" This activity can be developed into Twenty questions, Hangman, etc.

The children can play Bingo. Each bingo board has the pictures of up to 20 familiar objects. Say a set of onsets or rimes, one at a time and have the children see if they can find items on their bingo boards that begin with those sounds.

3.2 Blend a sequence of sounds to make a word; phonemic blending

1. Begin with the longest sequence of sounds the child blended correctly. Suppose for a particular child this is three sounds. Say to the child "*Listen to these sounds. They go together to make a word. P-i-g. What word do they make?*" Encourage the child to 'run the sounds together'. Repeat this with other 3-sound strings and then gradually build up to four, five and then six sounds.

2. **Say us.** Give a sound to each of four children, for example,

d *f* *m* *u*

Each child says their sound. Ask them to stand in a line. Each child says her or his sound again. Other children take turns to blend the sounds into a word (or non word). Variations of this activity include

- asking the children to change positions and repeat the activity.
- seeing how many real words they can make out of the sounds.
- having one sound sit down and the children blend the remaining sounds.
- swapping some of the sounds (children) for other sounds (children).
- extending to sets of five and six sounds (that is, with five or six children).

3. **What am I thinking of?** Ask a child to select an object in the room. Without saying what it is, the child says the first two sounds in its name, for example, "s-k". If it isn't named correctly after two attempts, a third sound is added, for example, "s-k-e" and again two guesses are allowed see if it can be named. If it isn't, more sounds are added, one at a time. The child who guesses the word is the winner.

4. **Blending Bingo** Play Bingo. Each bingo board has the pictures of up to 20 familiar objects. Say a string of sounds for an object that is shown on some of the bingo boards, for example, *d-o-g*. The children see if they can find the item on their bingo boards whose name is sounded out. As a warm-up activity, have them say the names of items on their boards and then segment the names into sounds.

5. **Sausage word games** Play games in which the child has to guess the word you are thinking of when you say it in a segmented way. As an example, say "t-a-n-k". The child needs to decide what the object is.

Task 4 Teaching activities Manipulating sounds within words

4.1 Delete a sound from a word and says the word left.

Children can learn to delete a sound from a word in two ways:

- (1) by recognizing the sound deleted from a spoken word
- (2) by deleting a specified sound and vocalizing the part left.

1. *How are the two words different?* Say two words such as "drag" and "rag" and ask "These two words sound slightly different. How are they different?" Encourage the children to see that the "d" has been removed from the "drag". Repeat this for other words such as "flit" and "fit", "crop" and "cop".

2. *Word matching activities in which children match two words that differ in one sound.* Set up pairs of picture cards, where the name of the object or event in one has one more sound than the other, for example, a picture of a slide and a picture of a side. Have the children name each picture to ensure that all agree on what it shows. Use the set of cards to play Snap, Memory and Bingo. A player can match two cards (say Snap or make a pair in Memory) when one name has one more sound than the other, for example, car and cart, snap and nap, brat and bat.

3. *Word pairs where one word is missing a sound.* Encourage the children to work in small groups to think of word pairs where one is missing a sound that the other one has, for example, clap and cap, tram and ram, lost and lot, spit and pit.

3. *What word has been dropped ?* Say "I'm going to say a word and then drop a sound from it. See if you can tell the sound I've dropped out". Say a word such as "prim" and then "rim" Can you tell which sound has gone ? Repeat this for several words, 'dropping off' the first sound. Then drop of the last sound. Gradually move into dropping out medial sounds.

4. *Dropping sounds from words* Ask the child to delete sounds from words of three or four sounds. The skill can be developed in play activities such as doll play or drama in which the child hears a word and deletes a sound from a word and say the word left, for example, "What would be left if you take /m/ out of camp ?" Introduce the activity as "I am going to say a word to you and then a sound in the word. I want you to take the sound out of the word and say the word that's left. Listen to how the puppets do it."

Puppet Anna says " Trap, r "

Puppet Bert says (after hesitation) " Tap "

Initially have the child delete the same letter from words, for example, delete "r" from "bread", "trim" and . Gradually vary the sound to be deleted and its position in the word.

4.2 Substitute one sound for another, for example "Say ' mate' but instead of m say l"

Children can learn to substitute one sound in a word for another, making a new word in two ways:

(1) by recognizing the sound that has been substituted in the first spoken word

(2) by substituting a specified sound and vocalizing the new word.

1. *What sound have I changed ?* Say "I'm going to say a word. Then I'm going to change one sound in it. and say the new word See if you can tell the sound I've changed". Begin by changing the first sound in words and then the last sound, for example, say the word "brag" and then "crag" Can you tell which sound I changed ? If necessary, have the child repeat the two words after you. Repeat this for several pairs of words, such as trim and brim, sack and back, till and pill, etc. Gradually move to changing medial sounds such as slim and skim or bust and best .

2. *Changing sounds in words* Encourage the child to change sounds in words of three or four sounds. The child hears a word and a sound in the word and another sound and is told, "Swap the m with a d in skim . What word would you get ?" Repeat this in several words, for example,

hat (r for h) bin (u for i)

sent (b for s) stun (p for t)

lamp (d for l) held (o for e)

glint (f for g) slink (t for l)

3. *Word matching activities in which children match two words that differ in one sound.* Set up pairs of picture cards, where the name of the object or event in one has one sound different from the other, for example, a picture of a slide and a picture of slime. Have the children name each picture to ensure that all agree on what it shows. Use the set of cards to play Snap, Memory and Bingo. A

player can match two cards (say Snap or make a pair in Memory) when one name differs from the other by one sound, for example, car and cart, snap and nap, brat and bat.

4.3 Segment a 2- 3- or 4- syllable word into sounds

This skill can also be learnt both by having students recognizing individual sounds in each syllable in a word and by saying the sounds in each syllable.

Activities for recognizing individual sounds in each syllable in a word include the following.

1. *Listen for the different sounds.* Say two 2- or 3-syllable words that differ only in one sound. The child states the sound that is different. Examples of pairs of words are

different initial sounds	pocket and locket, tunnel and funnel, river and giver, reckon and beckon
different medial sounds	remain and retain, forget and forgot, abrade and afraid, retire and require, remark and remake, amuse and abuse, defend and descend
different final sounds	refute and refuse, regale and regain, record and recall

If necessary, model 'stretching out' each word in a pair. Encourage the students to work in small groups to discover sets of 2- or 3-syllable words that differ only in one sound.

A variation of this activity is to say two words in which one of the words has one sound not in the other. The children's task is to identify the letter that is in one word but not in the other. Examples of pairs of words are

window and *widow*, *complete* and *compete*, *contract* and *contact*

2. *Clap for each sound.* Say a 2-syllable word such as 'mistake', ask the child to say separately each syllable and then each sound and to clap or tap as this is done. Later you can ask the child to count the number of sounds in the word. Ensure that the schwa is included in the total.

3. *Growing words.* Say two 2-syllable words and ask the child to select the word that has more sounds, for example,

Which word has more sounds ?

vanish avoid

Say three 2-syllable words and ask the child to select the word that has most sounds and the one that has least, for example,

Which word has most sounds ? Which one has least ?

bumper cargo decent

Say a 2-syllable word and ask the child to count the number of sounds. Then take turns with the child to say one word at a time that has one more sound, for example.

collar belong
concert conduct
blankets

This activity can be played between two teams, with the members of each team working together to think of words. They can also plan together a possible list of words of increasing sound length.

Activities for producing individual sounds in each syllable in a word include the following.

1. *Say the sounds in the word.* Introduce a 2-syllable word such as 'captain', say separately the two syllables and ask the child to segment each into sounds. Say a similar sounding word such as "napkin" and ask the child to repeat the pattern; first to segment the word into syllable-like units and then into sounds. Begin with two syllable words consisting of four or five sounds and gradually move to 2-syllable words consisting of more sounds. As the child's competence increases, move to 3- and 4-syllable words.

2 *Round robin sounding.* Say a 2-syllable word and then take turns with the child to say each sound in turn. Gradually extend the number of participants to three and then four. Also extend to 3- and 4- syllable words.