
Nuffield Centre Dyspraxia Programme

3rd Edition 2004-2011 (NDP3)

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Please note The Nuffield Centre Dyspraxia Programme (NDP3) is intended to be used under the supervision of a qualified speech and language therapist who will apply clinical judgement in selecting appropriate activities and methods for an individual child.

Nuffield Centre Dyspraxia Programme

Folder 1 - Manual

Introduction

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Chapter 2 Management of developmental verbal dyspraxia a review of the literature.

Chapter 3 Assessment.

Chapter 4 Introduction to the Nuffield Centre therapy approach and treatment planning.

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Assessment forms

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Early sound making

- Early sound making sheets and Articulograms (Articulogram cards in folder 2)
- Lip shape drawings
- Voice worksheets

Single sounds

- Single consonant reference grid
- Consonant Articulograms
- Single Consonant lottos (2 per page)
- Mixed consonant lottos
- Single Consonant Sequencing worksheets
- Single Vowel reference grid

-
- Vowel Articulograms
 - Single Vowel lottos (2 per page)
 - Mixed Vowel lottos
 - Single Vowel Sequencing worksheets

Transition from single sounds to CV and VC words

- C + V = CV build up worksheets
- C + V = CV hiding worksheets
- C + V = CV onset and rime worksheets
- V + C = VC build up worksheets
- V + C = VC hiding worksheets

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CV Words

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- CV Words (arranged by onset)
- VC Lottos (2 per page)
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CVCV words

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- CVCV ending cues
- CVCV nouns
- CVCV characters
- CVCV verbs
- CVCV stories

CVC words

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- CV - CVC sequencing worksheets
- CVC - CVC sequencing worksheets
- CVC rhyming words
- CVC words

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- Multisyllabic pictures

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- CV CV clauses
- CVCV CVCV phrases
- CVCV CVCV clauses

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Early sound making

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To be used in conjunction with the voice exercise sheets and long vowel cards.

For more information on what to do and how to do it

Manual: Chapter 5: Therapy

You can use these materials to

- Encourage sound making and vocalisation
- Elicit a range of consonants and vowels
- Elicit early CV syllables
- Develop awareness and control of lips tongue palate voice and airstream for speech
- Develop control of voice pitch and volume

Encouraging sound making

Notes for therapists

Children who have not yet begun to develop speech frequently require support to develop other areas of language, communication, attention and listening, in the first instance. While the focus of therapy is on these skills, children can be encouraged to make sounds as part of everyday activities.

Notes for parents

It is important to talk to your child right from birth. By hearing a lot of chatter around him, your baby will learn that talking is an important way of communicating that is enjoyable.

You can use everyday activities eg: feeding, changing and bath time as opportunities to talk to your baby. Encourage him to look at you and listen to your voice.

Try to use an interesting tuneful voice as this will be more appealing to your baby. Once he begins to make sounds, join in with these and imitate his actions and noises, eg: smiling, laughing, tongue movements, raspberries, humming, etc. Taking turns in this way will help your child learn about turn-taking in conversations.

Making sounds is actually just as important in the early stages as producing words. Therefore, focusing on sounds and trying to encourage your child to make as much sound as possible is time well spent.

Suggested activities

Babble Patterns

Once your child produces babble sequences (strings of consonant syllables eg: ba,ba,ba; ma, ma, ma, etc) join in with this as with any other noise making. Copy the sounds he makes and offer different ones eg: ga,ga,ga. See if he makes any attempt to copy you.

Try adding intonation, stress and rhythm to the babble sequence that you produce. This makes the model more interesting to listen to, easier to copy, and easier to retain in memory.

For instance, produce three syllables in a row with the last one having greater loudness and pitch movement e.g. ba,ba, BA! To add even greater stimulation, fit this rhythm to a pattern of movement that you perform with some part of the child's body, e.g. tapping the tummy, making bicycle movements with the legs etc., in time with the babble sequence.

At a later stage, once babble patterns have become established, these may be 'sung' as the melody to replace words for well-known nursery rhymes.

Animal Sounds

When playing with farm/zoo animals, looking at books, looking around farms or zoos, try to stress the animal sounds as well as their names eg: It's called a cow and it says "moo".

Make copying animal sounds fun - pretending to be different animals, using facial expressions and hand movements to help.

Environmental Sounds

Use environmental sounds when playing with your child, for example “ring-ring” when the phone rings, “rrr” for the food mixer, “shshsh” for the water coming out of the tap or the fireman’s hose, “wow w” for the siren. Again try to put stress on making the sounds of these things rather than just naming them.

Use expressive sounds such as “ow!” and “uh-oh” as well and encourage your child to join in with these.

**NDP3 sample pages
Not for distribution**

Vocalisation

Notes for therapists

The first step towards sound production is to establish voluntary vocalisation. This may initially involve developing awareness and control of automatic vocalisations such as a laugh, cough or cry. First vocalisations will usually be some sort of vowel.

See also voice worksheets, page 24 onwards.

Materials: cars, animals, bricks, teddy, aeroplane

Activities

- Model the child's usual vocalisation for him to copy.
- Practise imitating long and short vocalisations. Use simple visual feedback and motivators to keep the child's interest. For example, move a car along the table with a long sound, or jump a toy animal across the table for a series of short sounds.
- Practise imitating loud and quiet vocalisations. Use simple visual feedback and motivators to keep the child's interest. For example, wake a toy with a loud sound and keep him sleeping with a quiet sound.
- Practise imitating rising and falling tones. Use simple visual feedback and motivators to keep the child's interest. For example, make a toy aeroplane go up or down with rising and falling pitch.
- Practise these exercises with any of the long vowel sounds / ee ah oo air or er / that the child can imitate.

Special instructions

Notes for therapists

These activities aim to combine vocalisation with oral movement to extend the range of sounds and syllables produced, and eventually bring these under voluntary control. The activity is suitable for children who are able to initiate vocalisation to produce a vowel sound, and have some control of lip and tongue movement. Lip and jaw movement can be assisted if appropriate. At this stage it is usually better for the child not to aim for specific sounds, but rather to focus on experimenting.

Materials: mirror, plastic tube, toothbrush, tongue depressor

Activities

- Model / ah / or / er / for the child to copy.
- Make a "battle cry", by tapping his lips with your fingers while he vocalises, or help him to tap his own lips.
- Get the child to look in a mirror and vocalise while moving his mouth. Listen to the changing sounds. Model vocalisation while opening and closing your mouth, and see if he can copy and produce / amamama / or / abababa /. Vocalise with a smile lip shape and see if you get / ee / or with rounded lips and see if you get / oo /. Don't worry exactly what sounds are produced; the aim is just to get some variation. Help the child to close, smile or round his lips to begin with, if necessary. Join in with the sounds he makes.
- If it is difficult for him to smile, try getting him to hold the handle of a toothbrush, tongue depressor crosswise between his teeth, and switch his voice on to get / ee /.
- If it is difficult for him to round his lips, try getting him to hold a short length of plastic tubing (around 8 cm long and 1cm diameter) between his lips and encourage him to vocalise to get an / oo / sound. Make sure that he is sitting securely and keep control of any equipment that the child is putting in his mouth, to avoid risk of injury or choking.
- If he can produce long / ee ah oo / sounds, try short / i a oo / as well.
- If he can copy / ee / or / oo /, try / beebabee / or / booboo / syllables. Help him to get his lips in the right place if necessary.
- See if he can keep his lips together and copy a long / mmm /. Practise this while looking at some food pictures, or eating a snack!

Special instructions

Notes for therapists

These activities aim to combine vocalisation with oral movement to extend the range of sounds and syllables produced, and eventually bring these under voluntary control. The activity is suitable for children who are able to initiate vocalisation to produce a vowel sound, and have some control of lip and tongue movement. Lip and jaw movement can be assisted if appropriate. At this stage it is usually better for the child not to aim for specific sounds, but rather to focus on experimenting.

If a child cannot imitate front tongue sounds, it is often easier to start with his tongue between his teeth, where he can see and feel it more readily. It also reduces the possibility of back tongue/velar production, as the tongue is further forward.

Materials: mirror

Activities

- Get him to look in a mirror and stick his tongue out, or touch his teeth with his tongue. Now see if he can wiggle his tongue a bit from side to side (or in and out). Now tell him to switch his voice on and then wiggle his tongue, to make a "wiggly / l /". See if you get any other sounds as well.
- Get him to look in a mirror and see if he can hold his tongue between his teeth. Tell him to switch his voice on and see if he can copy a long / nnn / sound. Getting him to hold his tongue between his teeth will help him to know where his tongue is when he first tries these sounds.
- Tell him to hold his tongue between his teeth, then model / dadada / with your tongue between your teeth.
- Once he can make / n / and / d / sounds with his tongue between his teeth, just remind him to put his tongue on his teeth, and you say the sound as you would normally for him to copy. He will gradually learn to make the sounds with his tongue just behind his teeth.
- Once he can imitate / n / and / d / sounds fairly consistently, show him the NDP picture cues for these sounds (nose / n / and drum / d /) while you practise them.
- See if he can imitate these syllables: dee dah doo nee nah noo. You might need to remind him to open his mouth to make the / ah / sound, smile for the / ee / sound and make a round mouth for / oo /. If necessary help him to get his lips in the right place.

Special instructions

Notes for therapists

These activities aim to combine a voiceless airstream (blow) with oral movement to extend the range of sounds and syllables produced, and eventually bring these under voluntary control. They are suitable for children who are able to produce an oral blow and have some control of lip and tongue movement. Lip and jaw movement can be assisted if appropriate. At this stage it is usually better for the child not to aim for specific sounds, but rather to focus on experimenting. Make sure sounds are modelled with no voice, no following "uh" sound and no jaw movement.

Materials: mirror, bubbles, simple blowing toys

Activities

- Start with a simple blowing activity. Use bubbles if the child can make a round mouth, or use easy whistles and blowing toys.
- Get the child to look in a mirror. Tell him to open his mouth and blow, to get a / h /. Make sure you model the sound with no voice – just like breathing out. See if he can steam up a mirror with his / h /.
- Now tell him to put his tongue on or between his teeth, and blow. See what sounds he can make if he wiggles his tongue. You may hear / s /, / t / or / th / sounds.
- Tell him to put his lips together, and then blow to get a / p /. Again make sure you model just the first part of the sound, with no "uh". Keep your jaw still – you don't need to open your mouth, just blow your lips apart.
- Tell him to hold his tongue between his teeth, and then blow, to get a basic / t /. "Tongue between teeth" is often easier to achieve to begin with than the correct "tongue behind teeth" position. Once this sound is produced fairly easily with his tongue between his teeth, see if he can make / t / with his tongue in the correct position – just behind his teeth.
- See if he can hold his tongue gently behind or between his teeth and do a long blow to get something like a / sss /. The child's best attempt at / s / may sound more like / th / to begin with.
- Once / h p t s / sounds can be elicited reasonably accurately and consistently, show him the NDP picture cues (hippo for / h /, popper for / p /, tap for / t / and snake for / s /) while practising these sounds.
- See if the child can imitate simple VC words "up", "eat" and "out". You will probably have to model each sound separately to begin with (eg: / u-p /, / ou-t /).

Special instructions

Basic lip shapes ee ah oo m and short i a oo

Notes for therapists

Children who can produce voice at a voluntary level, and attempt basic lip shapes, can combine these to attempt a basic range of vowels and / m /. Children who have difficulty achieving the lip shapes independently may be assisted to produce them. Many children have little difficulty achieving the appropriate tongue positions for these vowels, once the correct lip shape is achieved. In accents where / ah / has a back tongue position, it can be helpful to tell the child to push his tongue back with a finger. Where insufficient tongue length is achieved, it is sometimes better to start with the half-open vowels (see below).

Materials: a set of lip shape pictures (open, closed, smile and round), either the classic pictures (p23) or articulograms (p21). For a fishing game, you will need 3 copies of each picture, with paperclips attached, and a magnetic fishing rod.

Activities

- Catch a picture, look in the mirror and make the lip shape. Tell the child what shape he is making (open mouth, closed or "lips together", smile, round). Assist by pushing his lips gently into the correct position if necessary, as demonstrated by your SLT.
- See if he can keep his mouth in the correct position while you count to 3.
- Now say the sound by getting the lip shape and then switching on his voice – open for / ah /, closed for / m /, smile for / ee / and round for / oo /.
- See if he can whisper the sounds, with no voice.
- Now try the short vowels, which have almost the same lip shapes – open for short / a / smile for short / i /, round for short / oo /.

Special instructions

Notes for therapists

First diphthongs and others can be created by sequencing basic lip shapes. A number of CV syllables can also be attempted.

Materials: a set of lip shape pictures (open, closed, smile and round), either the classic pictures (p23) or articulograms (p21). For a fishing game, you will need 3 copies of each picture, with paperclips attached, and a magnetic fishing rod.

Activities

- Catch 2 pictures, look in the mirror and make each lip shape in turn. Remind the child what shape he is making (open mouth, closed or "lips together", smile, round). See if he can maintain the lip shape while you count to 3.
- Now say the sounds in turn - open for / ah /, closed for / m /, smile for / ee / and round for / oo /. See if he can join them by keeping his voice going while he changes from one lip shape to the next.
- The following vowels, consonants and syllables can be attempted:

/ eye /	from ah + ee	(open + smile)
/ ow /	from ah + oo	(open + round)
/ ear /	from ee + ah	(smile + open)
/ w /	from oo + ah	(round + open)
/ y /	from ee + ah	(smile + open)
/ ma /	from m + ah	(closed + open)
/ moo /	from m + oo	(closed + round)
/ me /	from m + ee	(closed + smile)
/ arm /	from ah + m	(open + closed)
/ wee /	from oo + ee	(round + smile)
/ you /	from ee + oo	(smile + round)

- If the above sounds and syllables are achieved easily, see if he can repeat them, for example / mamama / or / owowow/.

Special instructions

Placement for sound production p b m t d n (k) (g)

Notes for therapists

These activities develop awareness and control of bilabial, alveolar and velar placement and provide opportunities to model and practise a basic range of consonants. They are suitable for children who are able to imitate at least some consonant sounds and can follow instructions to open and close their mouth and put their tongue behind or between their teeth.

This worksheet allows you to specify sounds to be targeted, and to give specific instructions for an individual child. Consistent verbal cues should be associated with each placement: for example "lips together", "tongue on your teeth" and "mouth open".

A simple licking activity may be used to support focus and motivation. It should be noted that these tongue movements are not required for speech. Children who are unable to achieve tongue tip movement outside their mouth but are able to imitate some consonants or achieve labial and alveolar placement with support can attempt the sound production activity, but should not be expected to do the licking task.

CAUTION: If you are using a licking activity, make sure that the child is sitting down, and keep control of the tongue depressor or lolly stick so that the child doesn't jab himself in the mouth. Beware of food allergies and feeding difficulties. Check with parents that foods are safe and acceptable.

Materials: mirror

For licking activity: plate, tongue depressor, suitable foods (could be sprinkles, peanut butter, jam, marmite, sprinkles, sesame seeds, grated apple).

Activities

Lip sounds

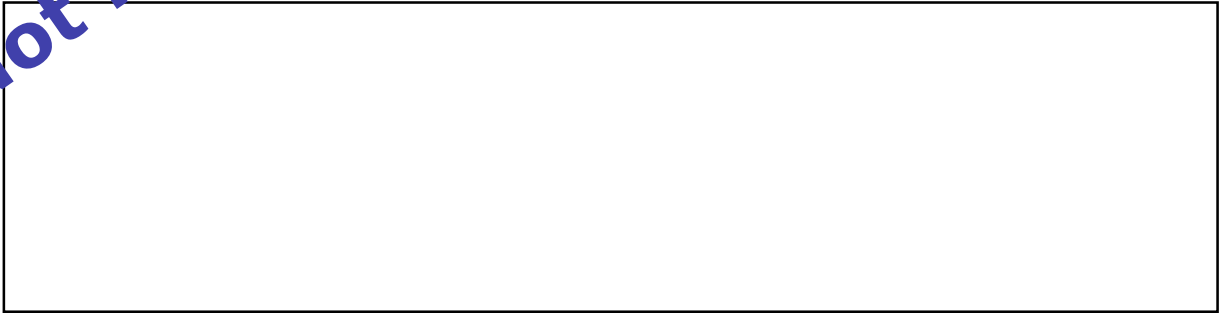
- Get him to look in the mirror and tell him to put his lips together. Get him to keep his lips together while you place sprinkles on his lips for him to lick off. Now say each of the lip sounds / m b p / three times. Model the sounds for him to copy. Show him any of the sounds that he can't yet say.

Special instructions

Teeth sounds

- Now tell him how to make some sounds with the front of his tongue on his teeth. Get him to look in the mirror while saying the teeth sounds / n d t s / and see if he can see his tongue just behind his teeth. Model the sounds for him to copy. Show him any of the sounds that he can't yet say. Place the sprinkles in one or four positions (above, below and at either corner of his lips) for him to lick off.

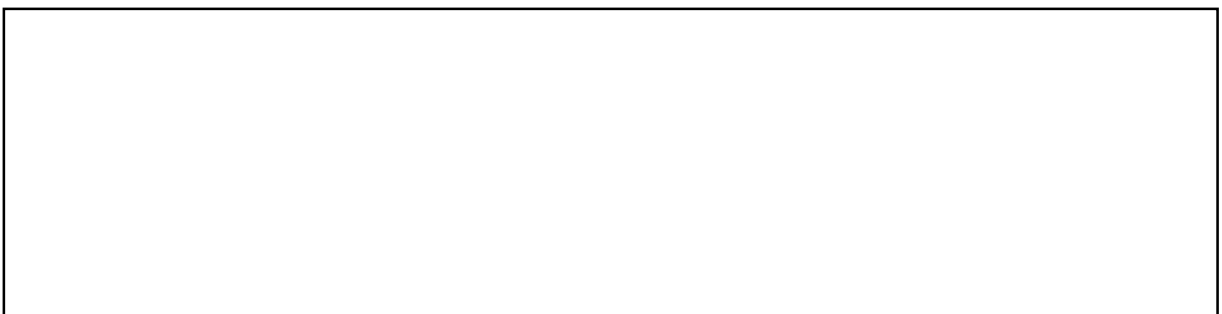
Special instructions



Back sounds

- Now tell him to open his mouth and look in the mirror. Tell him there are some sounds we make with the back of our tongue. Young children often find these sounds difficult, so you may need just to let him watch you make / k g / sounds. Model the sounds and see if he can copy them. See if he can stick his tongue out to lick some sprinkles off the stick or, with care, let him put the stick in his mouth to lick the sprinkles off.

Special instructions



CV babble

Notes for therapists

The production of CV syllables is an important early speech skill. In normal speech development these skills are practised in babble from around 6 months. Many children with developmental verbal dyspraxia have not developed these skills. This activity is suitable for children who are able to produce some of the voiced consonants / m n b d g w / and the basic long vowels / ee ah oo /, or short vowels / i a oo /, in isolation, but do not produce all combinations in CV syllables.

Voiced consonants are usually easier, as voice onset coincides with articulation. The following vowel influences production of the consonant, so it is important to practise syllables with a range of different vowels. For example, lip closure for / bee / will be more spread, and for / boo / will be more rounded, and the tongue will already be moving towards the target position for the vowel during production of the consonant. Some children need to be reminded to "get ready" for the vowel before saying the first sound.

Materials: favourite toys and games, with 12 – 20 pieces the child can win by repeating syllables.

Activities

- Start with any syllables that the child already produces. These may be attempts at words, such as / mu / for Mum or / gaga / for Quack quack.
- Repeat these syllables while playing with favourite toys and games. For example, tell him what to say for each brick while you make a tower, or each car as it goes along a track. Repeat each of his syllables 3-6 times, eg: / bababa /.
- See if he can copy other syllables with / m n b d g w / and / ee ah oo / vowels. Try these syllables: me, mah, moo, bee, baa, boo, knee, nah, noo, dee, dah, doo, gee, gah, goo, wee, wah, woo.
- Try some harder vowels / air or er eye ay oh ow oy ear /. Try these syllables: where, bear, dare, door, more, bore, bir, gir, were, bye, die, guy, why, my, nigh, may, neigh, way, bay, day, bow, no, go, doh, wow, now, dow, boy, noy, doy, beer, deer, near.
- Try / p t k h f s / with easier vowels first. Try these syllables: pea, poo, paw, pow, tea, two, toe, tie, car, key, cow, coo, ha, hair, who, hay, high, how, fair, four, fir, far, sea, saw, say, so.

Special instructions

Half-open lip shapes / air or er ay oy oh and short e u

Notes for therapists

An intermediate jaw position is needed for the above vowels in Southern British English. Note that there is variation in how vowels are produced in different accents. These activities are suitable for children who are able to make a basic range of vowel sounds but have difficulty with some or all of the above sounds – typically producing / air / as / ah /, short / e / as / a /, / ay / as / eye /, / or / as / oo / and / oh / as / ow /.

Materials: mirror, toothbrush, vowel articulograms (p21)

Activities

- Start by making sure that he can produce the basic lip shapes: **open** (like / ah /, **smile** (like / ee /) and **round** (like / oo /). Look in a mirror, show him the articulogram, tell him what shape it is, and see if he can make the shape easily.
- Tell him he is going to try and make these shapes with his mouth a little bit open.
- See if he can copy / er / or short / u / as in umbrella. Get him to look in the mirror and show him the **open a bit** articulogram. If his mouth is too wide open, get him to hold the end of the toothbrush handle between his teeth while he says the sound.
- Now try / air / and short / e / as in elephant, with the toothbrush handle between his teeth. Show him the **open a bit and smile** articulogram. If these still don't sound quite right, try telling him to push his tongue forwards towards his teeth.
- Now try / or / by making a round mouth, but holding the toothbrush handle between his teeth. Show him the **open a bit and round** articulogram.
- Once he manages these sounds with the toothbrush, let him have his first go with the toothbrush in place, then tell him to keep saying the sound, keep his mouth still, but let you slowly pull the toothbrush out. This may take a bit of practice!
- The next step is to get him to look in the mirror and try to get the correct lip shape before putting the toothbrush handle between his teeth.
- Finally, see if he can say the sounds correctly without the toothbrush. Tell him which lip shape (eg: **open a bit and round**) and get him to look in the mirror before he says the sound.
- Once he can make the long and short sounds easily, try the diphthongs / ay oy oh / which start from the same lip shapes.

/ ay / starts from / air / or short / e /, and then changes to / ee /

/ oy / starts from / or / and then changes to / ee /

/ oh / starts from short / u / and changes to / oo /

Special instructions

**NDP3 sample pages
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Notes for therapists

The velar sounds, made with the back of the tongue, are often difficult for young children. It is generally better to aim for the alveolar sounds, made with the front of the tongue, first, but try for the back tongue sounds from time to time. Ideally the velars should be elicited at single sound level before entrenched errors are established. This activity is suitable for children who are able to make some front tongue sounds. The therapist will need to experiment with a particular child to ensure that this activity is appropriate and demonstrate it to parents or assistants. Special instructions can be added below.

Materials: mirror

Activities

- Tell the child to look in a mirror and open his mouth. Tell him there are some sounds we make with the back of our tongue, but the front of our tongue sometimes gets in the way for these sounds, so we need to keep it still with a finger. Hold his hand and help him to place his finger on the front of his tongue and hold it down. Don't let him make any sounds to begin with, just see if he can keep his tongue still. Don't keep his finger in more than a couple of seconds and, if he begins to gag, take his finger out.
- Now do the same thing again. Watch in the mirror to check whether the front of his tongue is down, but also to see when the back of his tongue is raised (this will give him the best chance of copying these sounds). When his tongue looks to be in the right position, model / k /. Don't add an "uh" sound at this point.
- If you don't get a / k /, try the following:
- Don't open his mouth as wide, so that the back of his tongue is nearer the roof of his mouth to begin with.
- Try holding his tongue down with 2 or 3 fingers instead of one.
- Once he manages a / k /, try the following:
- See if he can do 3 / k / sounds in a row.
- See if he can hold his tongue down by himself.
- Distract him between each attempt with a simple task (eg: "touch your nose", "close your eyes") and see if he can organise himself again.
- Gradually reduce the need for his finger on the front of his tongue. Start by / k-k-k / with his finger on his tongue. Tell him now that his tongue is getting used to making back sounds, we are going to see if the front of his tongue can keep out of the way by itself. Tell him to put his finger on his tongue and keep saying / k-k-k-k-k.../ while he slowly pulls his finger out of his mouth. He may need you to help him pull his hand away, because he is concentrating on what his tongue is doing! If the front of his tongue doesn't stay down, get him to put his finger back in and have another try. If this is still not successful, leave it for the moment and have another go next session.



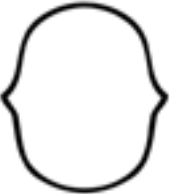





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- New sounds need lots of practice so they don't disappear. Arrange for him to have frequent very short practice sessions to begin with. For instance, every time he sees his teaching assistant in school, he can be asked to say / k-k-k /. At home, he can practise every time the Mum or Dad has a spare minute to help him. Remind him what to do and make sure that any one else who is going to practise his / k / knows the drill (e.g. "open your mouth, finger on your tongue, now / k-k-k /"). Expect him to need a bit of help getting organised again the next day! Remember to model these sounds with no "uh".
- Tell him to put his finger on his tongue and this time model / g / for him to copy. Reduce his dependence on his finger, and see if he can organise production despite distraction as for / k /.
- Now introduce the picture cues for / k g / (camera and geese). Practise each sound separately, then practise them with other sounds.
- See if he can copy these syllables: / gah goo go gay guy gear /. Remind him to open his mouth first, and if necessary use his finger again to begin with.

Special instructions




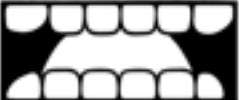







Articulograms

Basic and vowel articulograms

lips together 	long open 
mouth open 	open a bit 
round 	open a bit and round 
open a bit and smile 	smile 

Articulograms

Consonant articulograms

lips together 	tongue on your teeth 	mouth open 
tongue up 	bite your lip 	down your nose 
puff of air 	voice on 	blow 
open 	round 	smile 