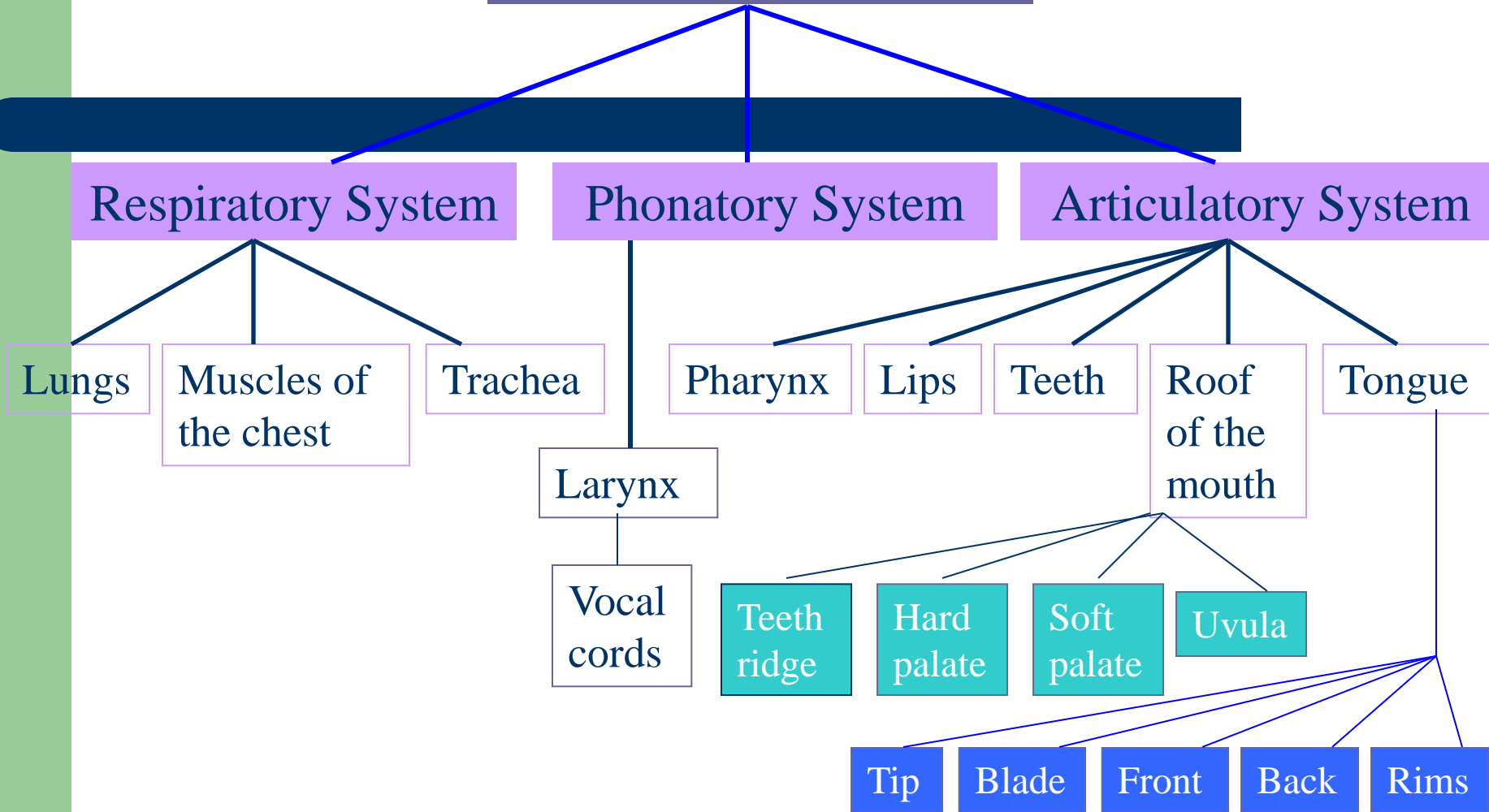


# **Place and Manner of Articulation Sounds in English**

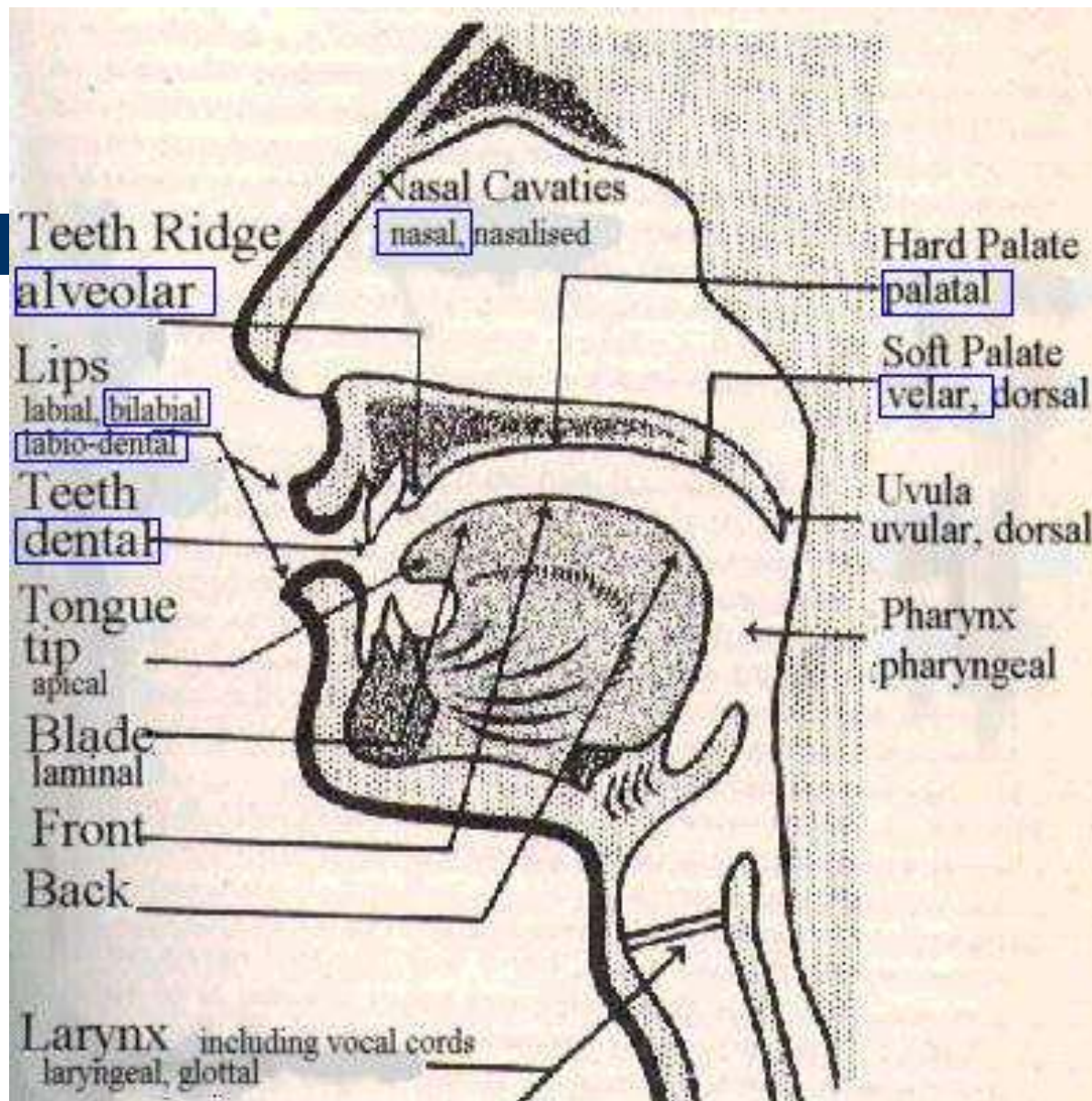
Dr. Bushra Ni'ma



# Organs of Speech



# The Organs of Speech



# The larynx

- ❑ The air from the lungs comes through the wind pipe or trachea, at the top of which is the larynx.
- ❑ In the larynx are two vocal cords, which are like a pair of lips placed horizontally from front to back.
- ❑ They are joined in the front, but can be separated at the back, and the opening between them is called the *glottis*.

# The roof of the mouth

- The roof of the mouth can be subdivided into four parts:
  - the *teeth-ridge* or the *alveolar ridge*, the hard convex surface just behind the upper front teeth
  - the *hard palate*, the hard concave surface behind the teeth-ridge
  - the *soft palate*, the soft portion behind the hard palate
  - the *uvula*, a small fleshy structure at the end of the soft palate

# Consonants

- The description of a consonant includes the following description:
  - the nature of the air-stream mechanism
    - pulmonic / glottalic / velar , egressive / ingressive
  - the state of the glottis
    - voiced / voiceless/ whispered
  - The position of the velum or the soft palate
  - The articulators involved (the place of articulation)
  - The nature of stricture involved (the manner of articulation)

# The Air-Stream Mechanism

- Three types of air-stream mechanism:
  - *pulmonic*
    - in which the lungs and the respiratory muscles set the air-stream in motion
  - *glottalic*
    - in which the larynx, with the glottis firmly closed, is moved up or down to initiate the air-stream
  - *Velaric*
    - in which the back of the tongue in firm contact with the soft palate is pushed forward or pulled back to initiate the air-stream

## The Air-Stream Mechanism

- These air-streams can be:
  - *Egressive*, the air is pushed out
    - e.g., Sounds of English are produced with *egressive pulmonic* air-stream.
  
  - *Ingressive*, the air is pulled in
    - e.g., Some sounds produced with an *ingressive glottalic* air-stream.



# The State of the Glottis

- ❑ When we breath in and out, the glottis is open. That is, the vocal cords are drawn wide apart producing ***voiceless sounds***.
- ❑ If the vocal cords are held loosely together, the pressure of the air coming from the lungs makes them vibrate; that is, they open and close regularly many times a second. Sounds produced in this way are called ***voiced sounds***.

# State of the soft palate

Raised

Nasal passage blocked

Oral sounds produced

Lowered

Nasal passage open

Oral passage blocked

Nasal sounds produced

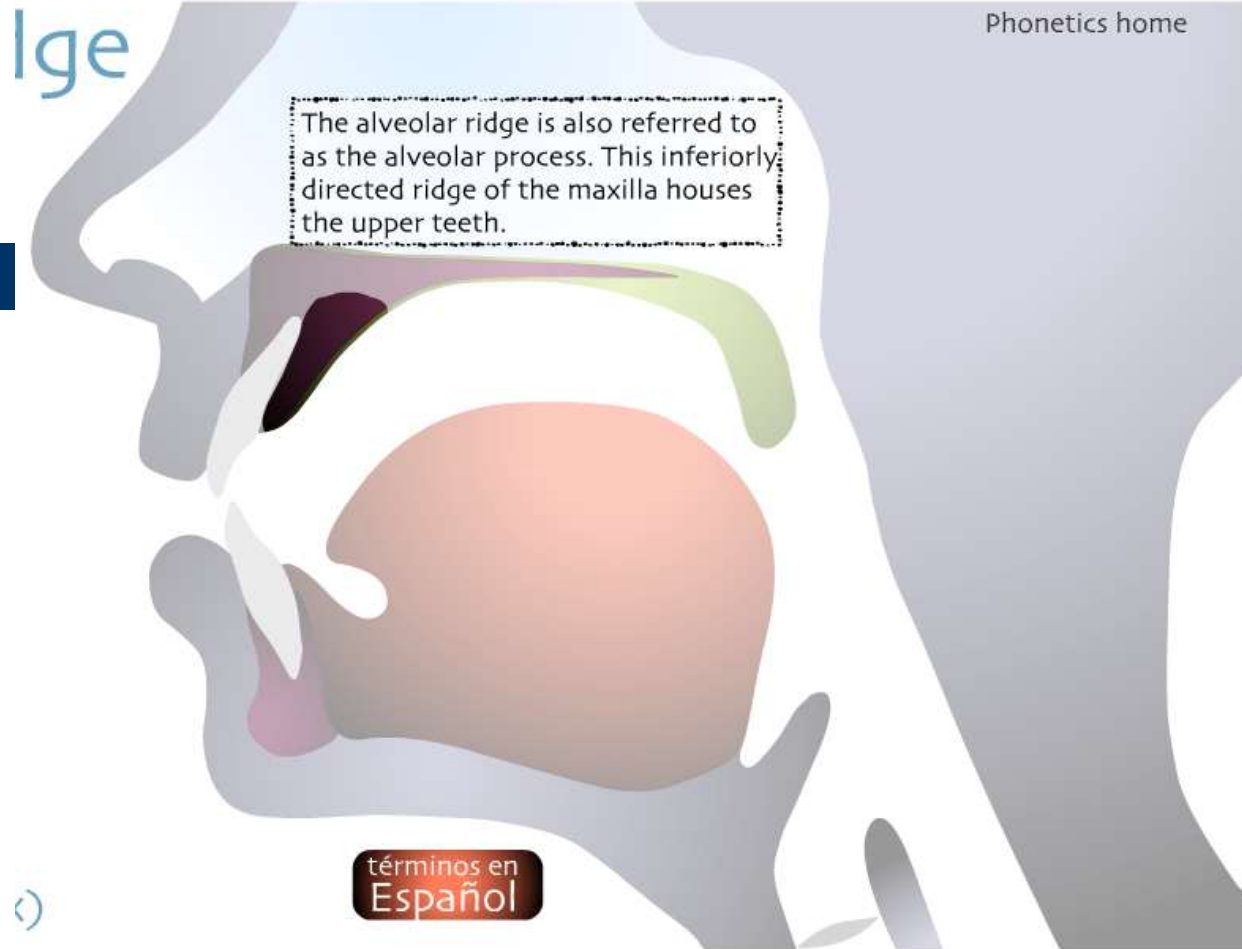
Oral passage open

Nasalized sounds produced

# The Articulators

- The organs of speech above the glottis are the articulators involved in the production of consonants:
  - Active articulator
    - the lower lip and the tongue
  - Passive articulator
    - the upper lip, the upper teeth, the roof of the mouth and the back wall of the throat (or Pharynx).
  
- In the production of a consonant, the active articulator is moved towards the passive articulator.

# ALVEOLAR RIDGE

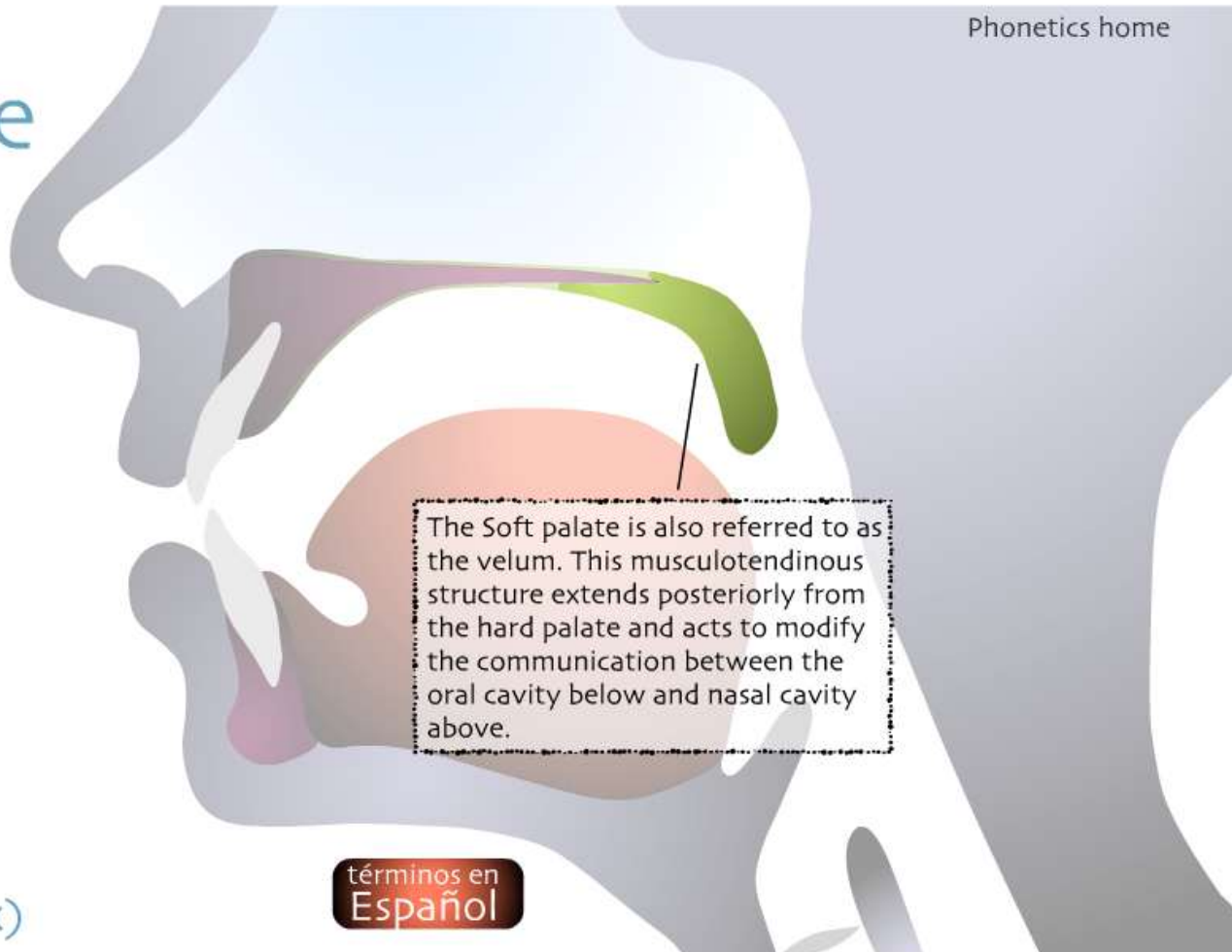


The alveolar ridge is also referred to as the alveolar process. This inferiorly directed ridge of the maxilla houses the upper teeth.

# SOFT PALADE

Phonetics home

e



The Soft palate is also referred to as the velum. This muscolotendinous structure extends posteriorly from the hard palate and acts to modify the communication between the oral cavity below and nasal cavity above.

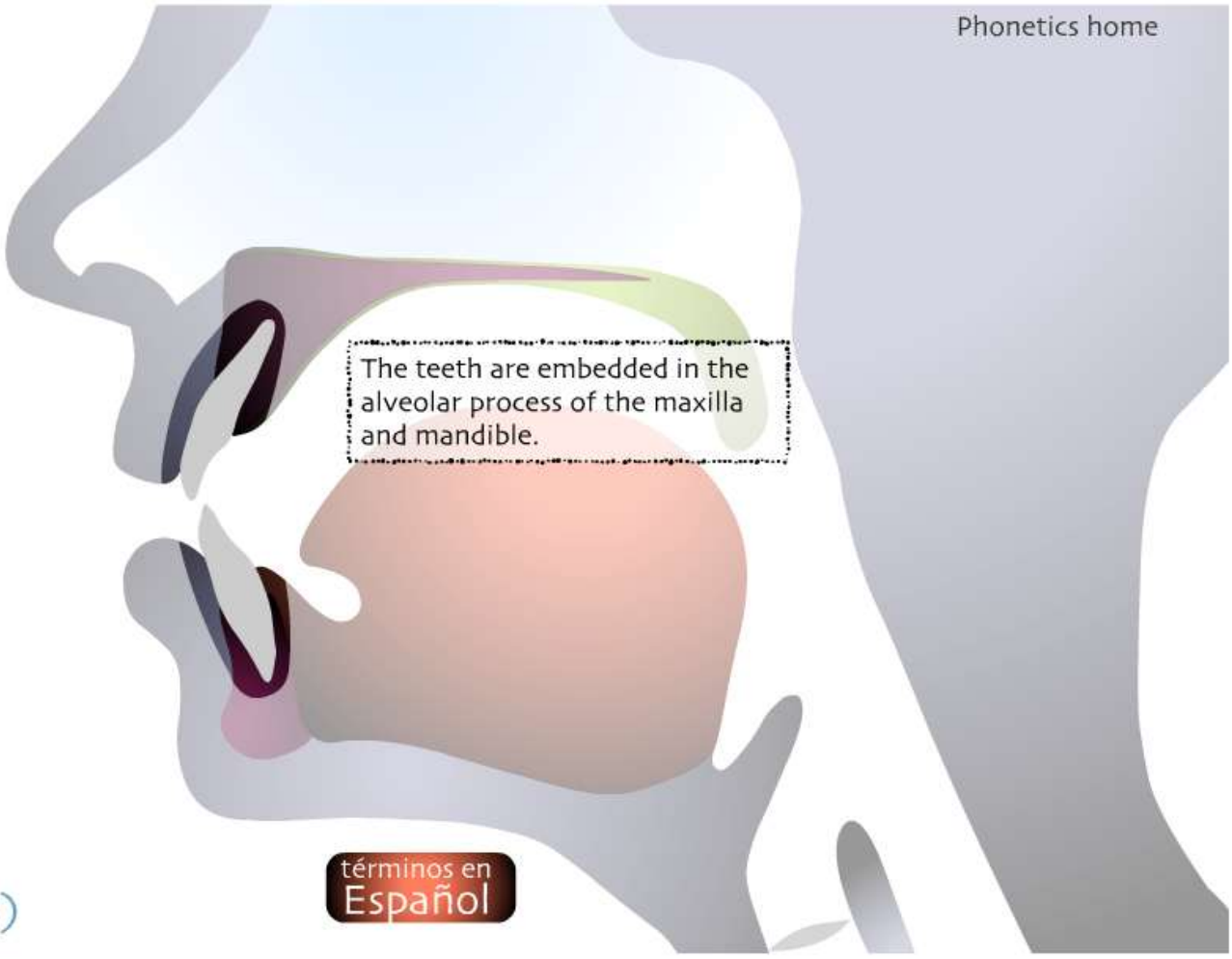
términos en  
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The soft palate is also referred to as the velum. This muscolotendinous structure extends posteriorly from the hard palate and acts to modify the communication between the oral cavity below and nasal cavity above.

# TEETH

Phonetics home

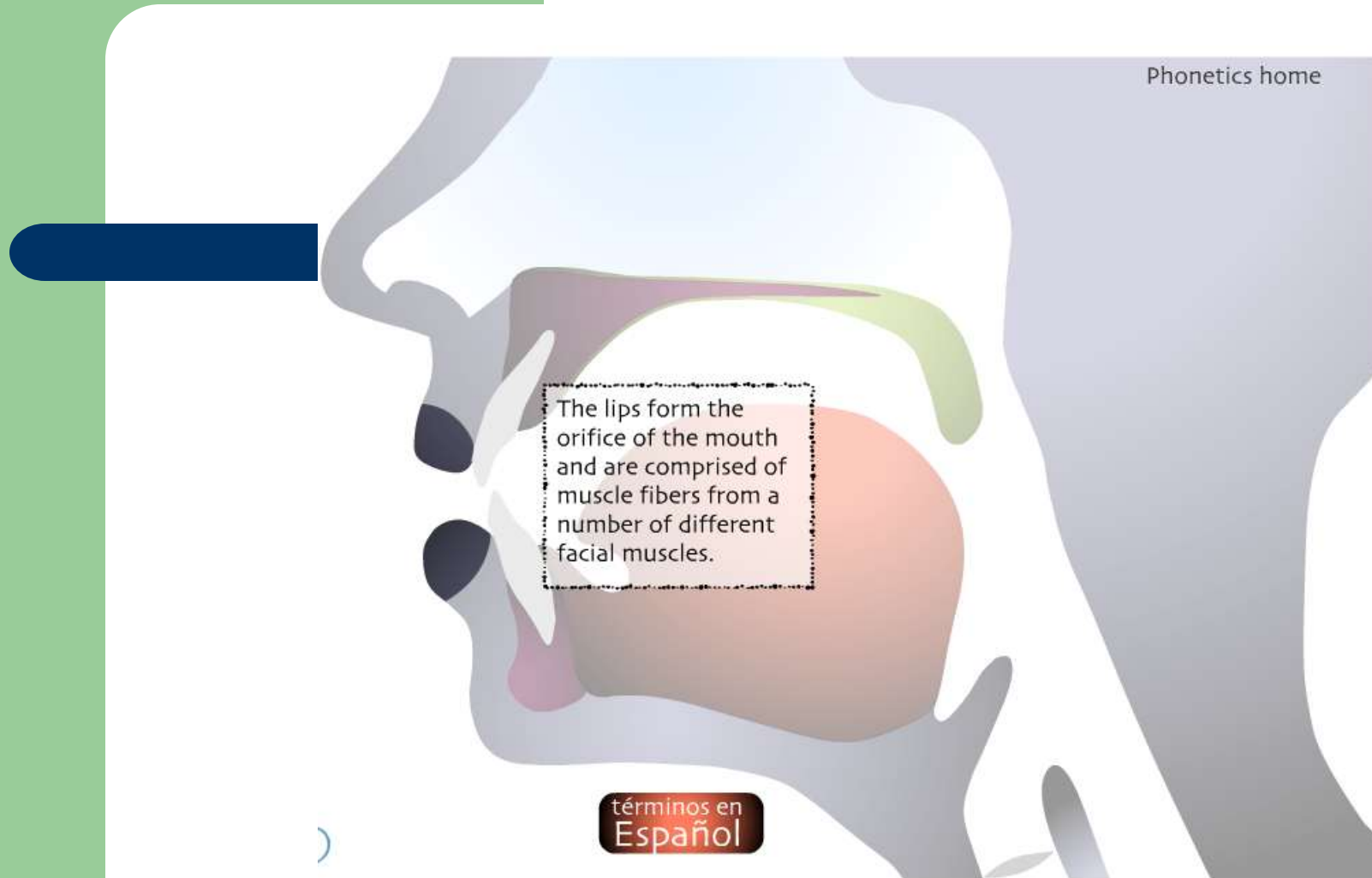


The teeth are embedded in the alveolar process of the maxilla and mandible.

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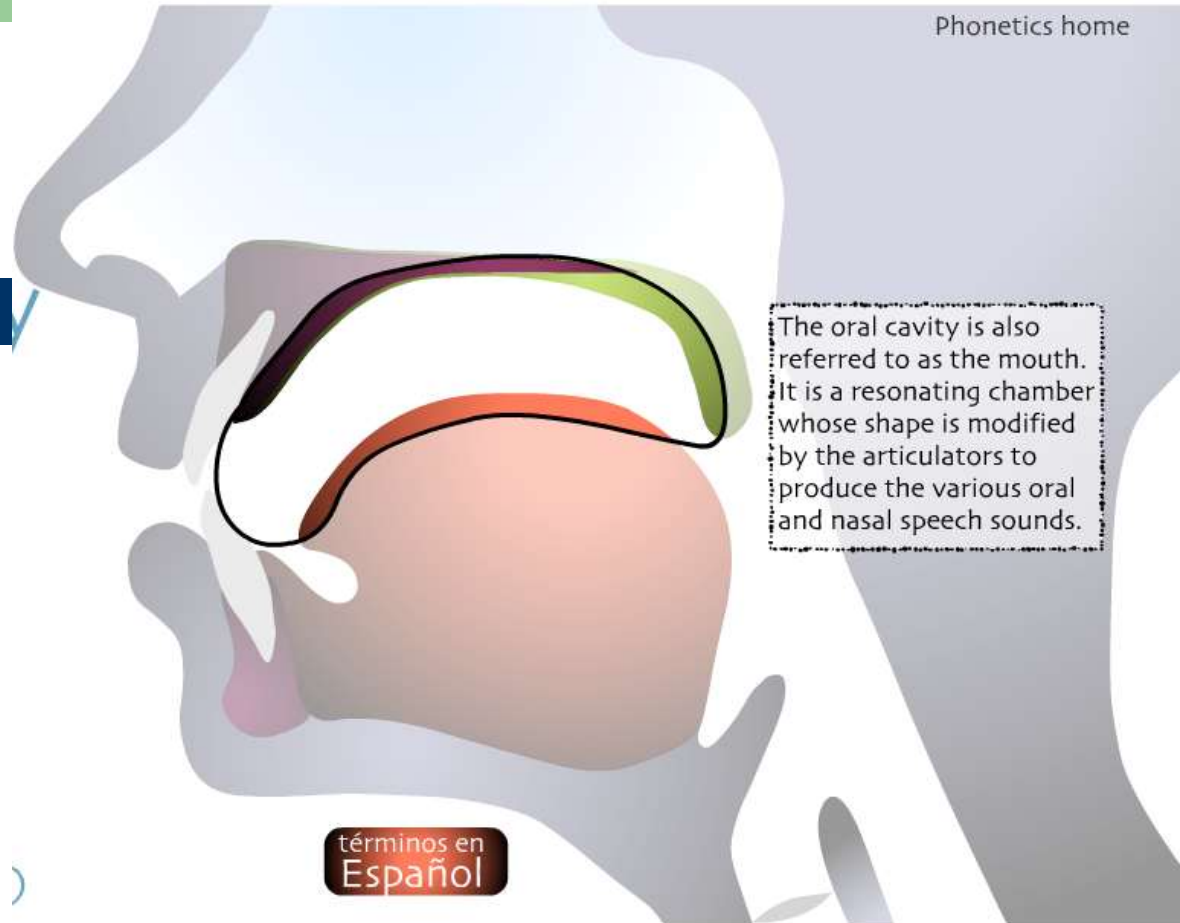
The teeth are embedded in the alveolar process of the maxilla and mandible.

# LIPS



The lips form the orifice of the mouth and are comprised of muscle fibers from a number of different facial muscles.

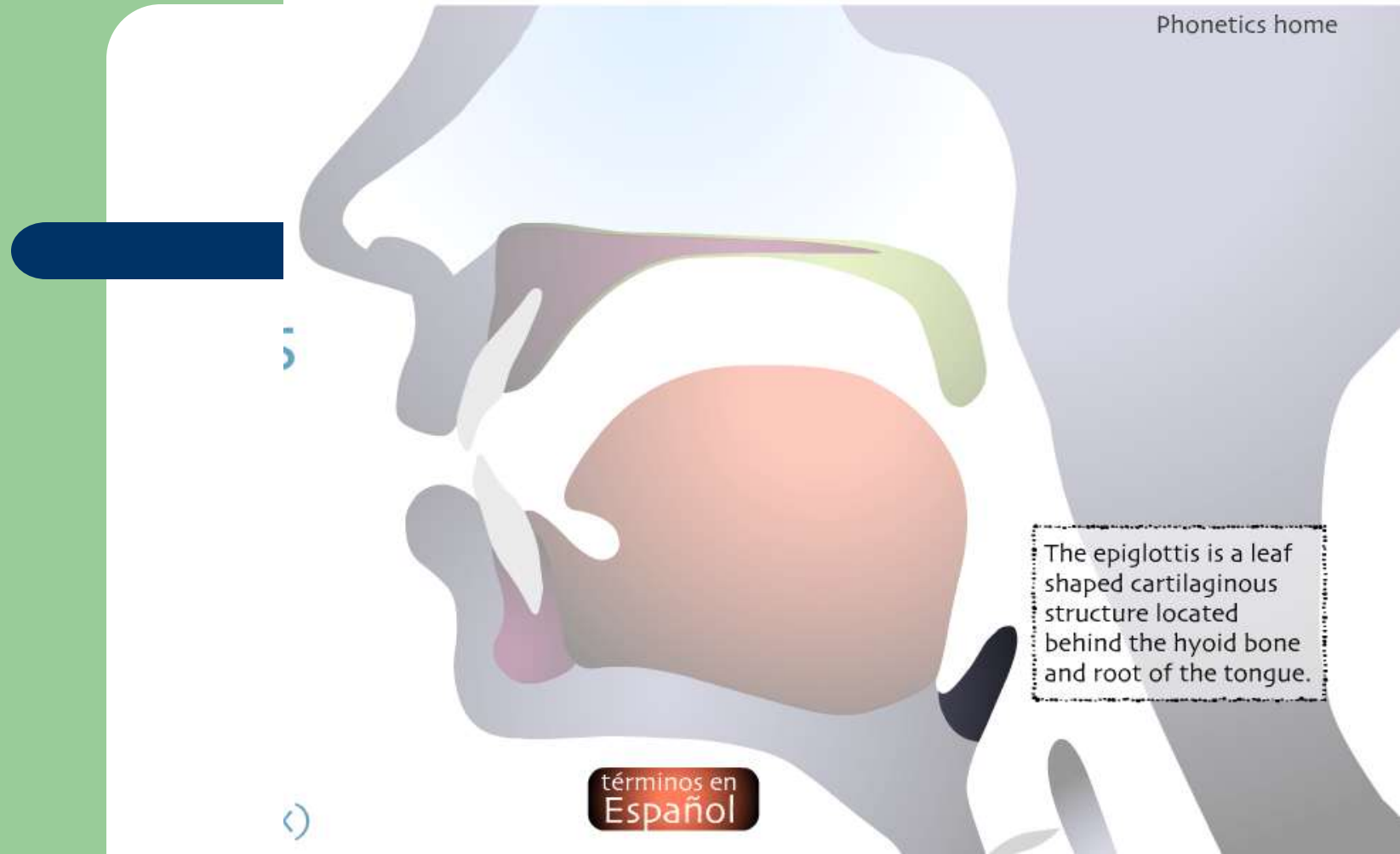
# ORAL CAVITY



The oral cavity is also referred to as the mouth. It is a resonating chamber whose shape is modified by the articulators to produce the various oral and nasal speech sounds.

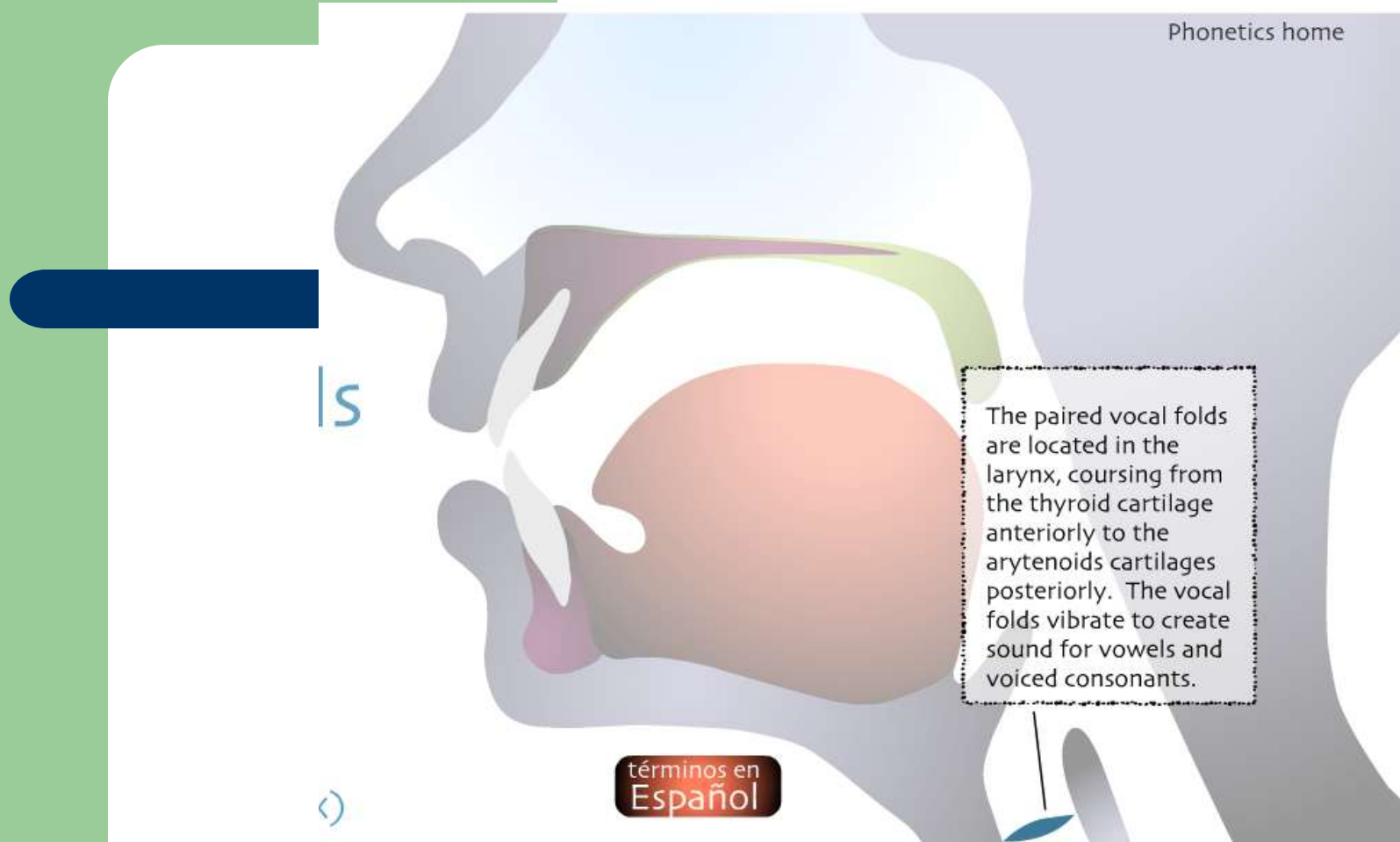


# EPIGLOTTIS



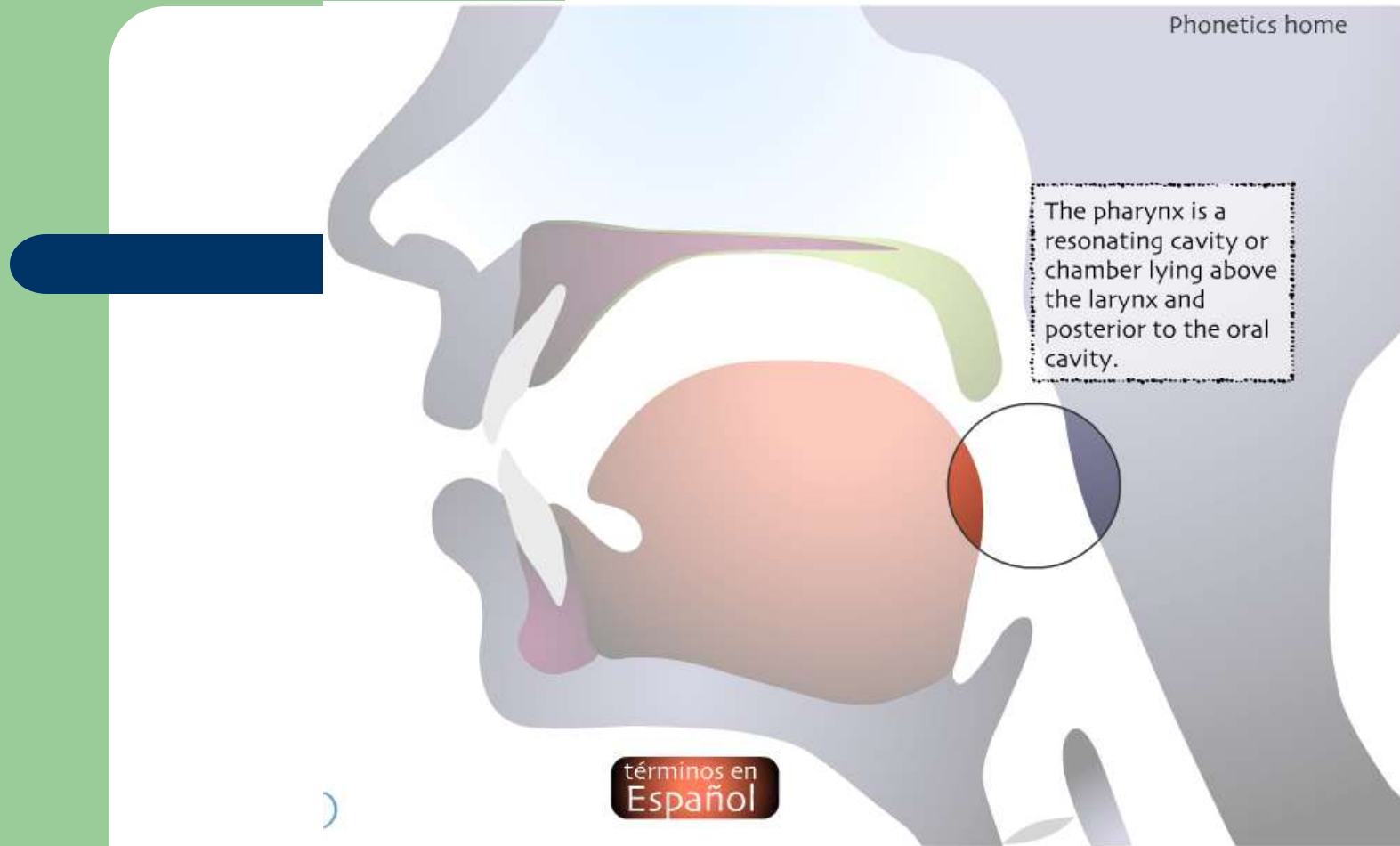
The epiglottis is a leaf shaped cartiliginous structure located behind the hyoid bone and root of the tongue.

# VOCAL FOLDS



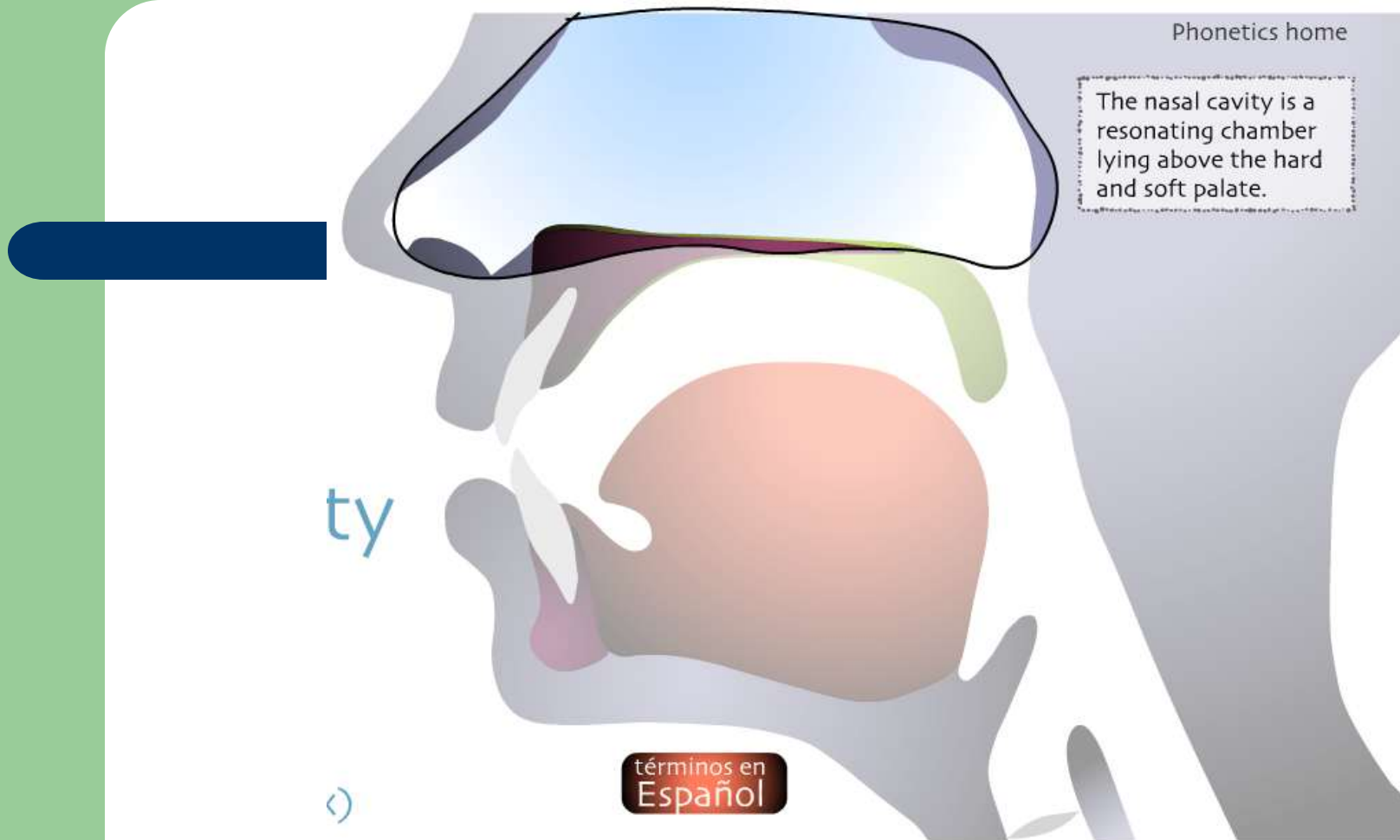
The paired vocal folds are located in the larynx, coursing from the thyroid cartilage anteriorly to the arytenoids cartilages posteriorly. The vocal folds vibrate to create sound for vowels and voiced consonants.

# PHARYNX



The pharynx is a resonating cavity or chamber lying above the larynx and posterior to the oral cavity.

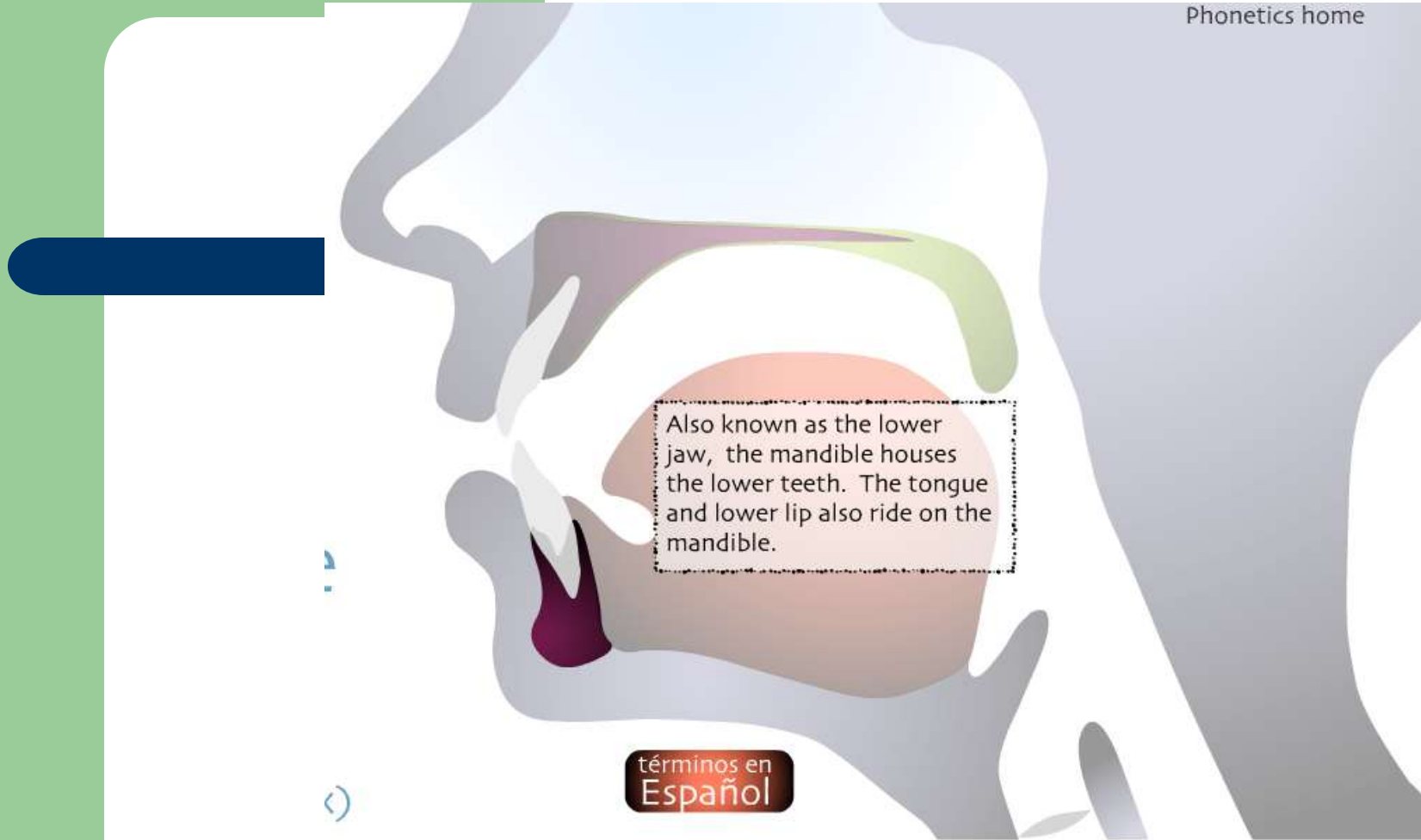
# NASAL CAVITY



The nasal cavity is a resonating chamber lying above the hard and soft palate.

# MANDIBLE

Phonetics home

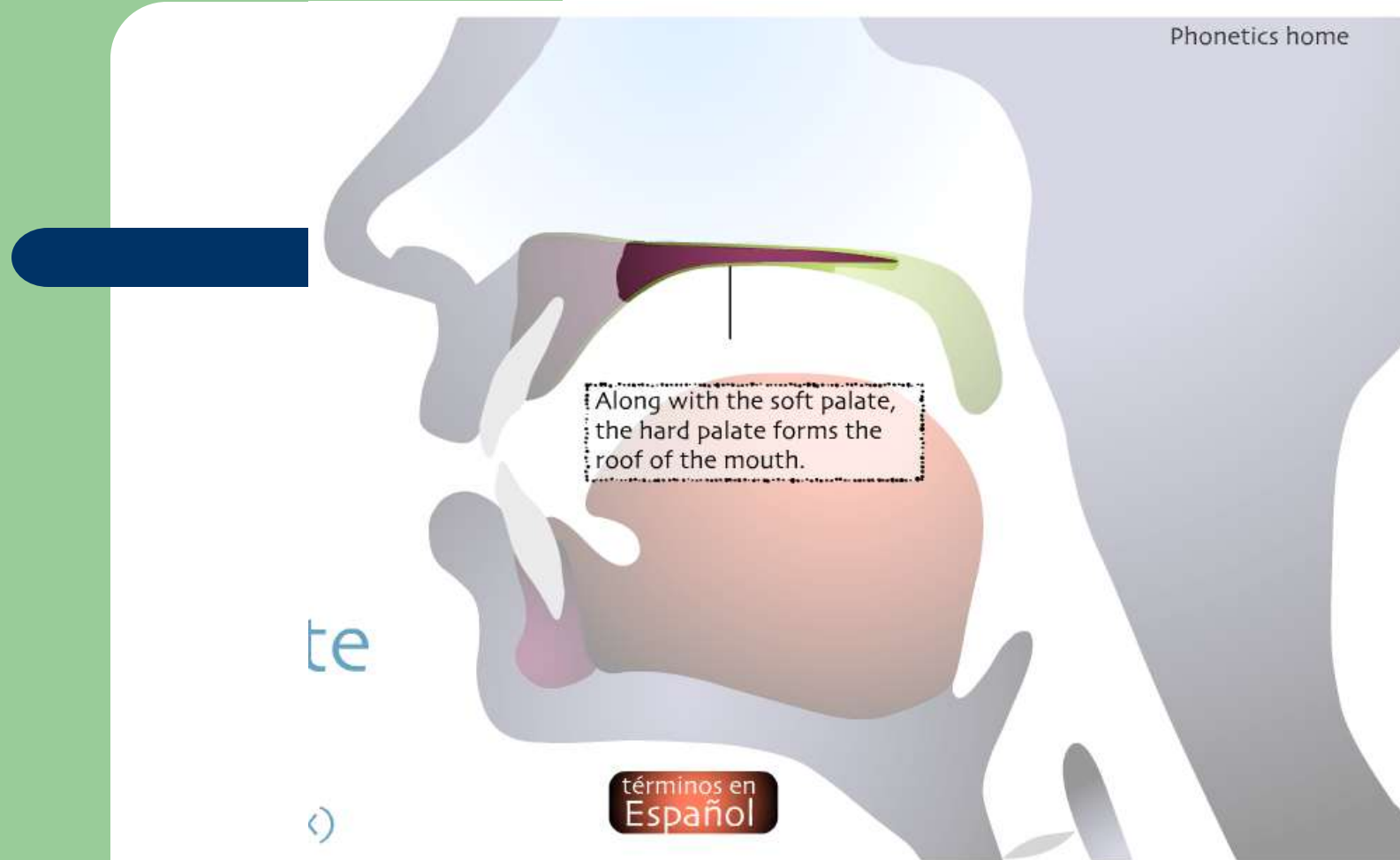


Also known as the lower jaw, the mandible houses the lower teeth. The tongue and lower lip also ride on the mandible.

términos en Español

Also known as the lower jaw, the mandible houses the lower teeth. The tongue and lower lip also ride on the mandible.

# HARD PALATE



Along with the soft palate the hard palate forms the roof of the mouth.

# TONGUE BLADE



The blade is that part of the tongue lying just below the upper alveolar ridge.

# TONGUE BACK



The tongue back is that part of the tongue lying below the soft palate.



# TONGUE TIP



The tongue tip is that part of the tongue lying closest to the from teeth.

# The Nature of Stricture Involved-I

- that is, the different ways in which the passage of air is restricted in the production of consonants
  - **Complete closure**
    - The active and the passive articulators making a firm contact with each other, thus preventing the passage of air between them. E.g., /p/, /b/
  - **Complete oral closure**
    - The active and passive articulators make a firm contact with each other, thus preventing the passage of air between them, but the soft palate is lowered, thereby allowing the air to escape through the nose. E.g., /m/, /n/

# The Nature of Stricture Involved-II

- **Intermittent closure**
  - The air passes between the active and passive articulators intermittently. It involves the vibration of the active articulator against the passive. [Scottish r]
- **Flap**
  - For some consonants the active articulator strikes against the passive articulator once only. /r/ in very
- **Close approximation**
  - The two articulators are brought very close to each other so that the space between them is very narrow. E.g., /f/, /v/, etc.

# The Nature of Stricture Involved-III

- **Partial closure**
  - There may be a contact of the articulators in the centre of the vocal tract but the air may pass through the sides.  
e.g., //
- **Open approximation**
  - The two articulators are brought close to each other but the space between them is wide enough for the air to escape without friction. E.g., all vowels and the English /j/ and /w/ as in *yes*, *west*.

# The Place of Articulation - I

- ❑ The place of articulation simply means the active and passive articulators involved in the production of a particular consonant.
- ❑ A few are:
  - **Bilabial** : The two lips are the articulators. E.g., /p/, /b/, /m/
  - **Labio-dental**: The lower lip is the active articulator and the upper teeth are the passive articulators. E.g., /f/, /v/
  - **Dental**: the tip of the tongue is the active articulator and the upper front teeth are the passive articulators.

# The Place of Articulation - II

- ❑ **Alveolar:** The tip or blade of the tongue is the active articulator and the teeth-ridge is the passive articulator.
- ❑ **Post-alveolar:** The tip of the tongue is the active articulator and the back of the teeth-ridge is the passive articulator.
- ❑ **Retroflex:** the tip of the tongue is the active articulator, and it is curled back. The back of the teeth-ridge or the hard palate is the passive articulator.

# The Place of Articulation - III

- ❑ **Palato-alveolar:** The tip, blade, and front of the tongue are the active articulators and the teeth-ridge and hard palate are the passive articulators.
- ❑ **Palatal:** The front of the tongue is the active articulator and the hard palate is the passive articulator.
- ❑ **Velar.** The back of the tongue is the active articulator and the soft palate is the passive articulator. E.g. /k/, /g/

# The Place of Articulation - IV

- ❑ Uvular: The rear part of the back of the tongue is the active articulator and the uvula is the passive articulator. There are no uvular sounds in English.
- ❑ Glottal: Produced at the glottis. E.g., [h]



# THE MANNER OF ARTICULATION - I

Manner of articulation is the type of closure made by the articulators and the degree of the obstruction of the airstream by those articulators. The way in which the airstream, usually from the lungs, is interfered with in order to produce a speech sound. **Manner of articulation** describes how the tongue, lips, jaw, and other speech organs are involved in making a sound make contact. Often the concept is only used for the production of consonants

# The Manner of Articulation - II

- According to the manner of articulation consonants are usually classified as follows:
  - **Plosive:** In the production of a plosive, there is a simultaneous oral and nasal closure. The air behind the oral closure is compressed and when the active articulator is removed suddenly from contact with the passive one, the air escapes with an explosion.
  - **Nasal:** A nasal is produced by a stricture of complete oral closure, but in this case there is no closure of nasal passage. The soft palate is lowered and the air passes through the nose.

# The Manner of Articulation - III

- ❑ **Trill** (rolled consonant) The active articulator taps several times against the passive articulator (i.e., stricture of intermittent closure). E.g., [r] in *horse*.
- ❑ **Flap**: For a flap the active articulator strikes against the passive articulator once only. E.g., [r] in *very*.
- ❑ **Lateral** : A lateral consonant is produced by a stricture of closure in the centre of the vocal tract , but the air has a free passage on the sides. E.g., /l/.

# The Manner of Articulation - IV

- ❑ **Fricative:** In the production of a fricative consonant the articulator is one of close approximation. The active articulator is brought so close to the passive articulator that the passage between them is very narrow and the air passes through it with audible friction. E.g., /f/, /v/
- ❑ **Frictionless continuant:** [r] in red
- ❑ **Semi-vowel:** /j/, /w/

# Voiced and Voiceless Sounds

There are 26 letters in the English alphabet, but there are 39 sounds (15 vowel sounds and 24 consonant sounds) produced by these letters. (see vowel and consonant sections).

A vowel is a sound where air coming from the lungs is not blocked by the mouth or throat. All normal English words contain at least one vowel.

# Voiced and Voiceless Sounds

All the sounds produced in the English are either voiced or voiceless. Voiced sounds occur when the vocal cords vibrate when the sound is produced. There is no vocal cord vibration when producing voiceless sounds. To test this, place your finger tips hand on your throat as you say the sounds. When saying the voiced sounds, you should be able to feel a vibration. When saying the voiceless sounds you sound not be able to feel a vibration.

## Voiced

b  
d  
g  
v  
z  
**th**  
sz  
j  
l  
m  
n  
ng  
r  
w - y

## Voiceless

p  
t  
k  
f  
s  
*th*  
sh  
ch  
h

# Voiced and Voiceless Sounds

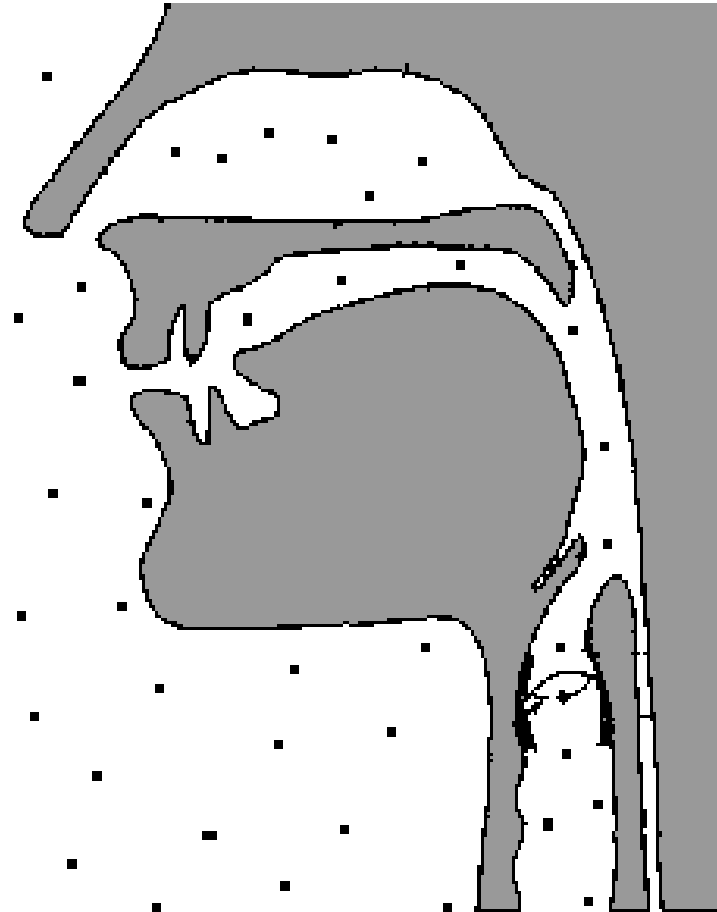
- Tips To distinguish between voiced & unvoiced sounds:
  1. Put your hands over your ears & say the sounds - you'll hear the voiced sounds.
  2. Put your hand on your throat while saying the sounds - you'll feel a vibration for the voiced sounds.
  3. Put a piece of paper in front of your mouth when saying the sounds - the paper will move when saying the unvoiced sounds.



# Plosives Consonants

A plosive is formed by the complete obstruction of the vocal tract by the articulators. This obstruction is then released, allowing the air to "explode" out of the mouth. When the air is blocked by the articulator, it begins to raise in pressure. Then, when the air is released, the high pressure air rushes out into the lower pressure area beyond the blockage. This results in a burst of air, signifying a plosive. In the following diagram, the dots represent the pressure of the air. The higher pressure areas have more dots per area, while the lower pressure areas have fewer dots per area.

# Plosives Consonants



Examples of plosives in English are /p/, /b/, /t/, /d/, /k/, /g/