Mr. Aounali
LEVEL
First Year LMD

Mohammed Kheider University

English Department

Module: Phonetics

Lecture 2: Introduction to Articulatory Phonetics

The production of speech: The Physiological Aspect

Objectives: *By the end of this course you'll be able to:*

1- Be aware of the process of sounds production.

2- Recognise the vocal tract and name each speech organ.

3- Know the function of each organ in the production of English sounds.

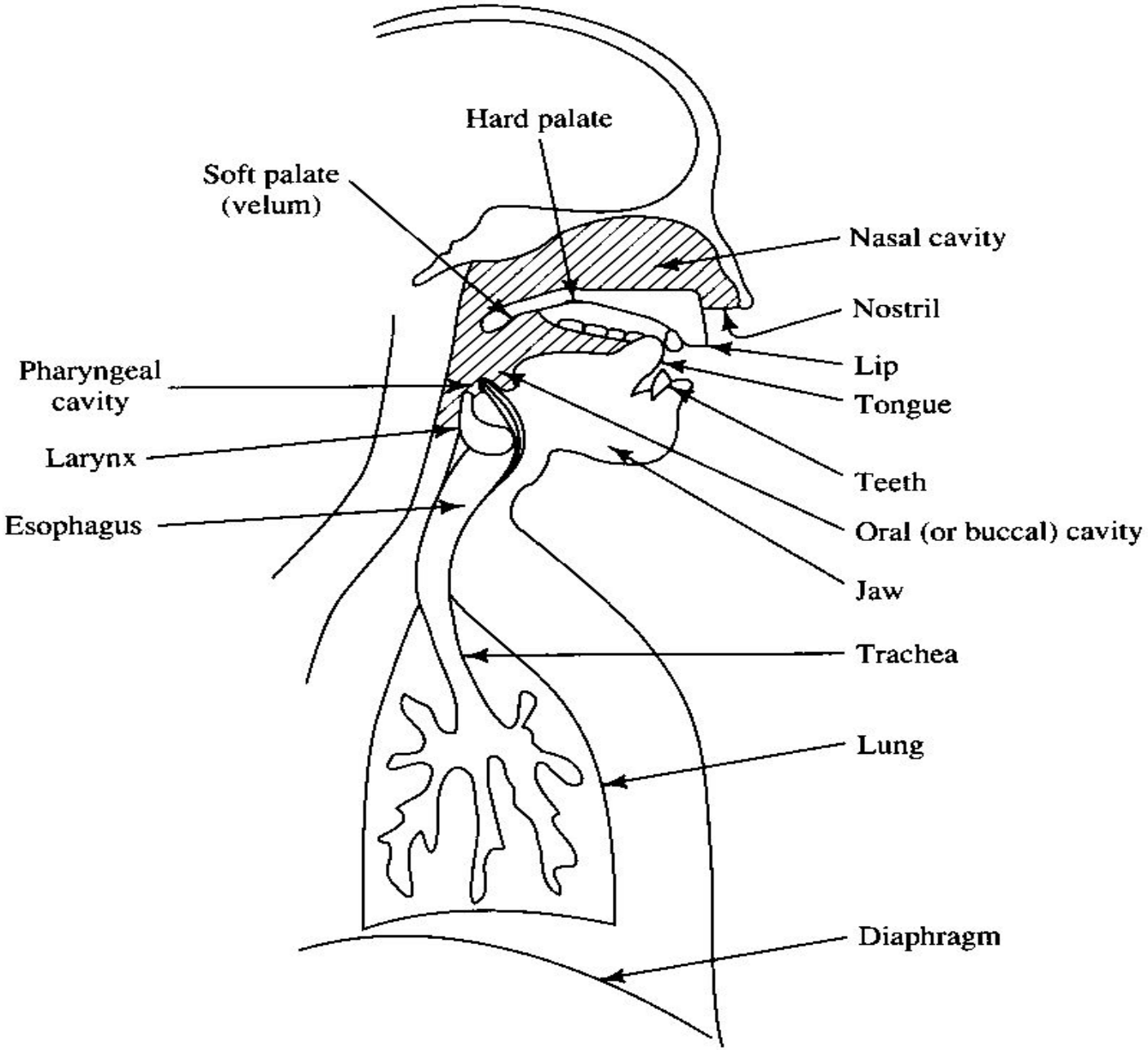
4- Use the previous information in defining the properties of English sounds.

1- Speech production mechanism

The production of any speech sound takes place when the air escapes from **the lungs** which serve as an air reservoir and energy source.

Then, the airstream passes through the **trachea** (wind pipe) and through the **larynx** which lies behind the throat.

The larynx contains two stretched membranous cords called '**the vocal cords**' which are made of an elastic tissue. As they open and shut off, the vocal cords regulate the amount of air that passes to the lungs. Afterwards the air goes up through the **pharynx**, and escapes via either the **oral cavity** or the **nasal cavity**.



2. SPEECH ORGANS

First, we will discuss all the steps of the production of human speech sounds:

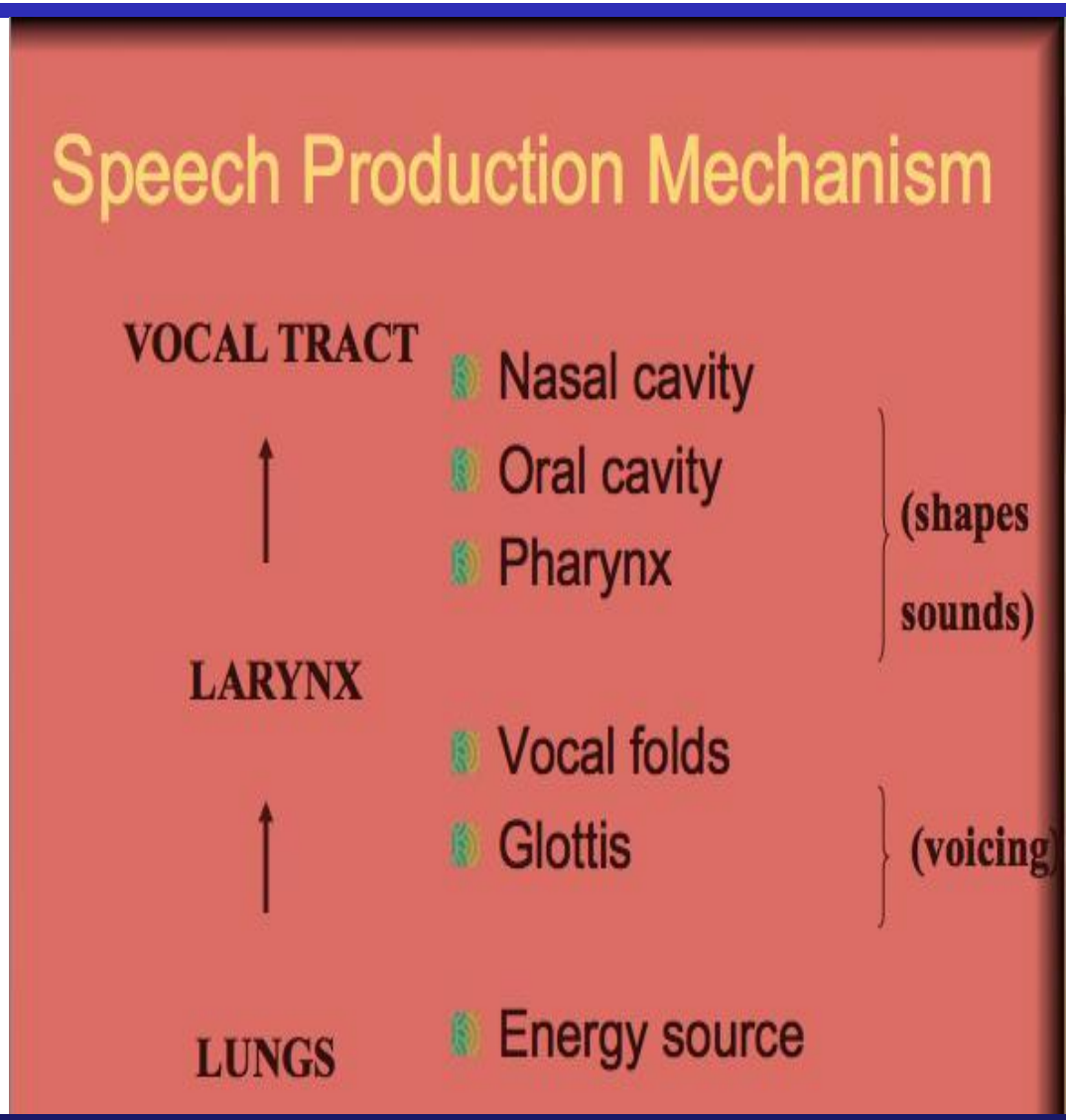
2.1. Stages of speech sounds production:

Any production of language by means of speech happens through three stages:

The psychological stage: In the first place, the information of the concept will take place in the brain.

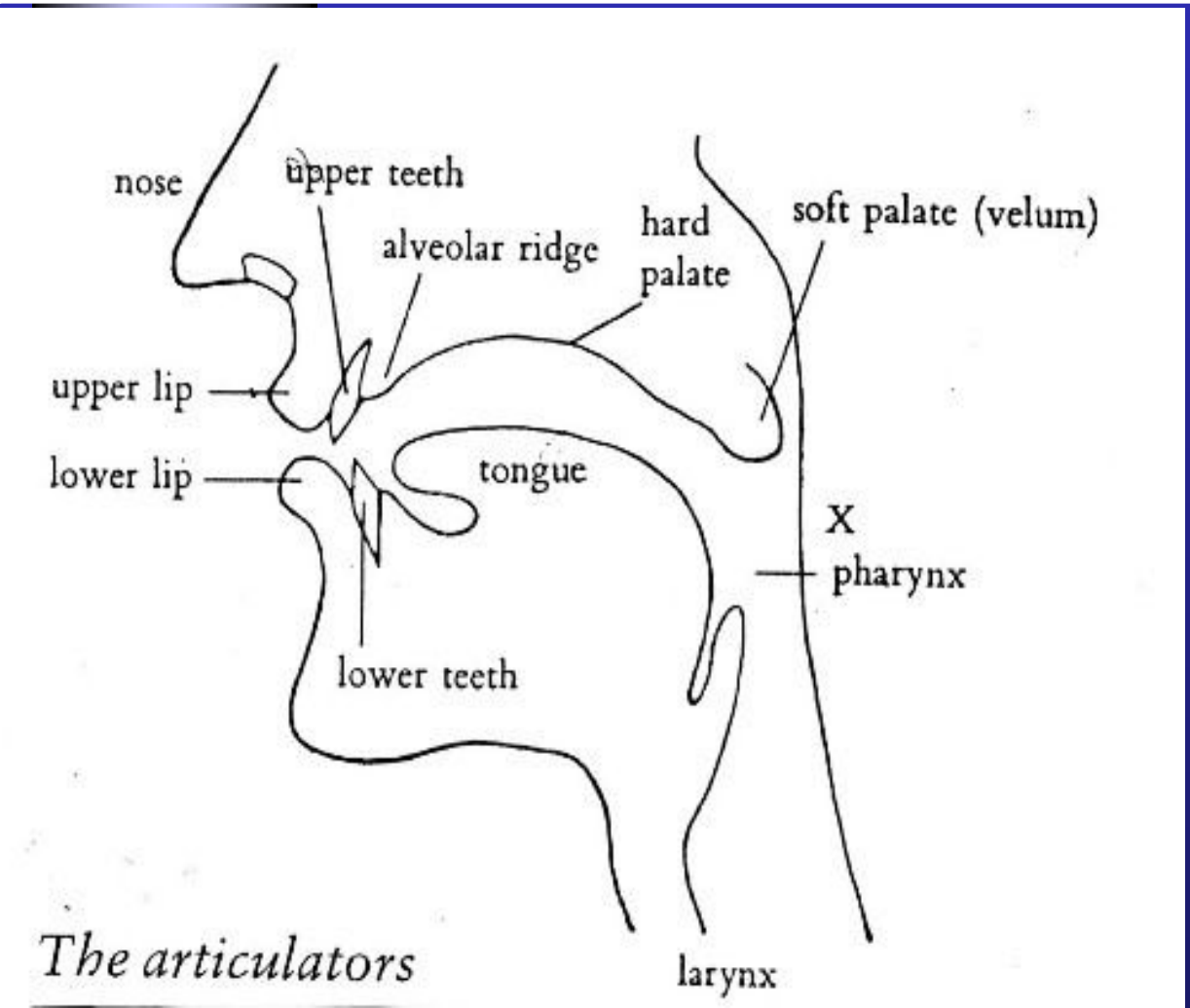
The articulatory stage: The nervous system transmits this message to the organs of speech. These in turn will produce a particular pattern of sounds.

The acoustic stage: The movement of the organs of speech will create disturbance in the air which enables us to hear particular sounds and discriminate between them.



2.2. THE ARTICULATORS (in the Vocal Tract)

All the organs (shown on the figure below) contribute in the production of speech.
All the sounds of English are made using air on its way out from the lungs. The lungs pull in and push out air, helped by the diaphragm. The air goes out via the trachea, where the first obstruction it meets is the larynx. Inside the larynx the air passes by the vocal folds (cords), which, may vibrate or not. Afterwards the air goes up through the pharynx, and escapes via either the oral or the nasal cavity.



The articulators

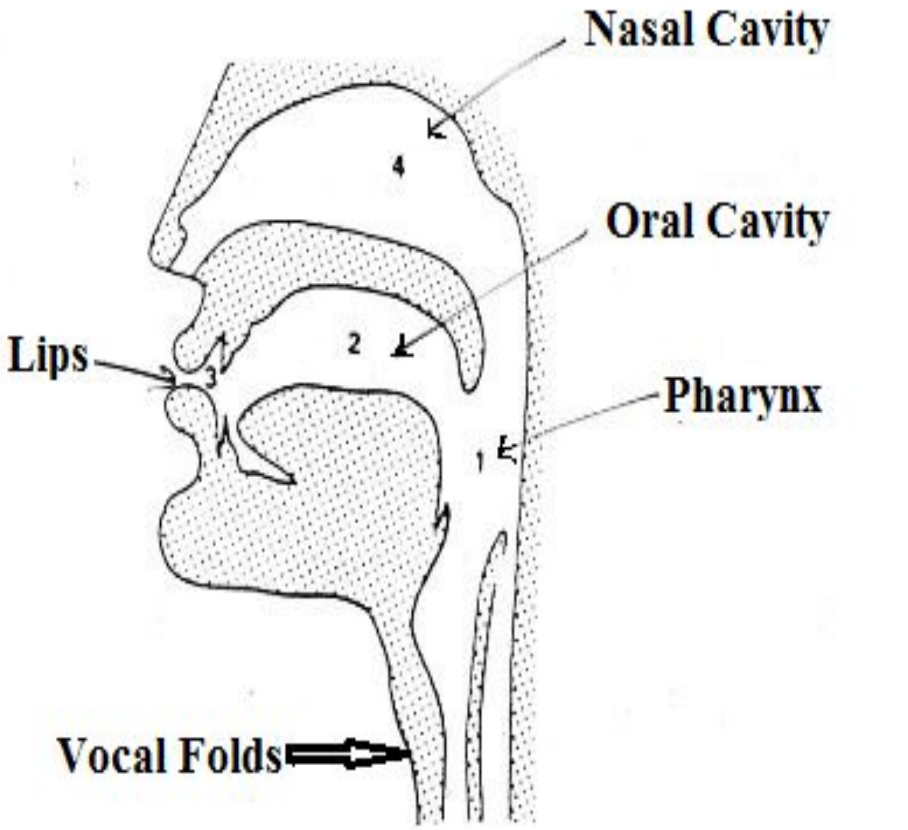
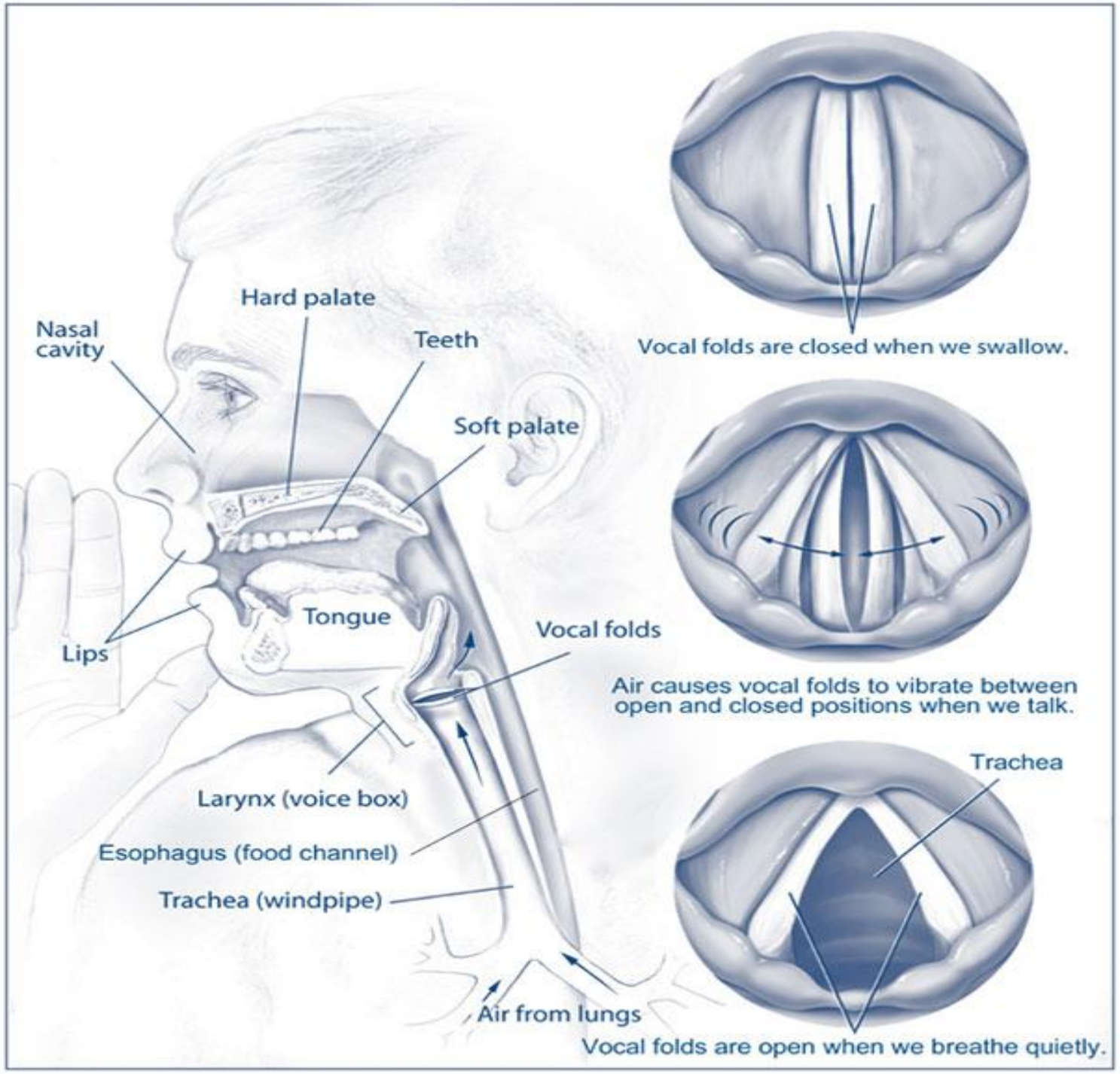


Figure (3): Sound Modification Places. (Thomas 1976:33)

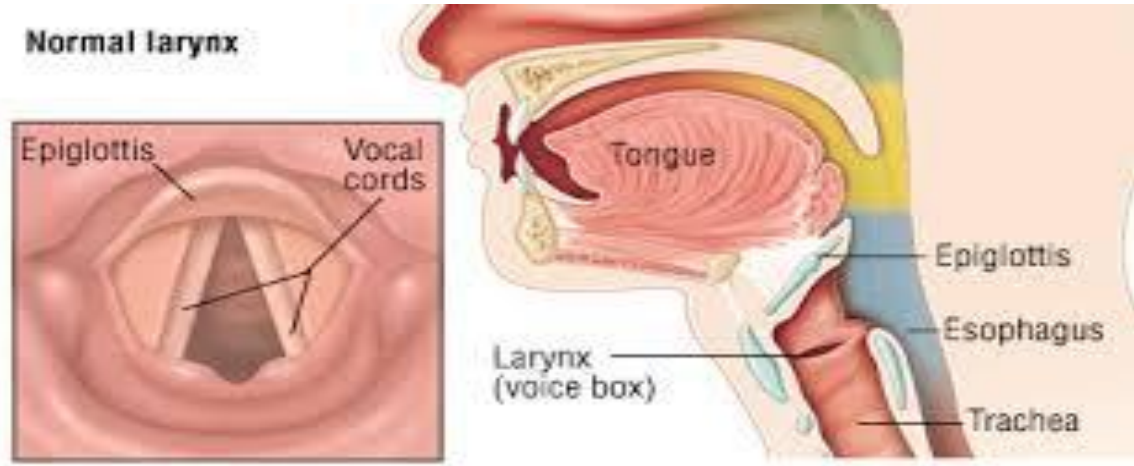
Almost all the organs involved in speech production also have other functions. The lungs and the diaphragm are obviously involved in breathing, as is the nasal cavity, which cleans, heats and humidifies the air that is breathed in. The teeth and the tongue play a part in digestion, and in a way, so do the vocal folds, as they have to be closed when swallowing, to keep the food from going down the wrong way.



3. THE FUNCTION OF EACH ORGAN OF SPEECH

1. The Vocal Cords (folds)

When the air is released from the lungs up arrives first at the ***larynx*** which contains two elastic tissues lying opposite each other across the air passage. The vocal cords, which can move towards each other to stop or let the air to pass freely in the ***glottis.***



Say a long **/m/** sound and put your fingers on your neck by the side of the **larynx**. You will feel *the vibration* of the **vocal cords**. Now say **/s/** sound. You will feel *no vibration*. This vibration is called **voice**. Some English sounds are **voiced** sounds and the others are **voiceless** sounds.

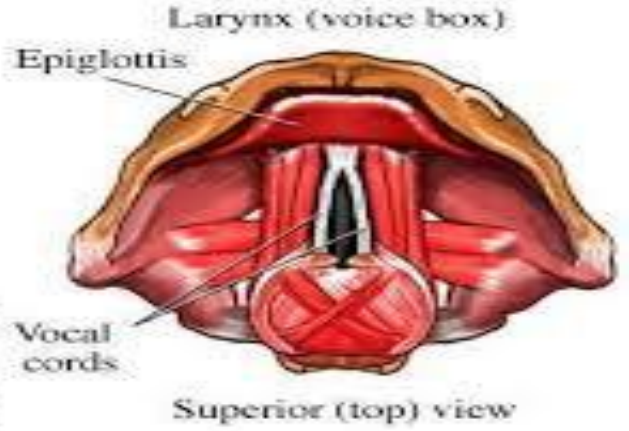


Fig 7.04. Larynx
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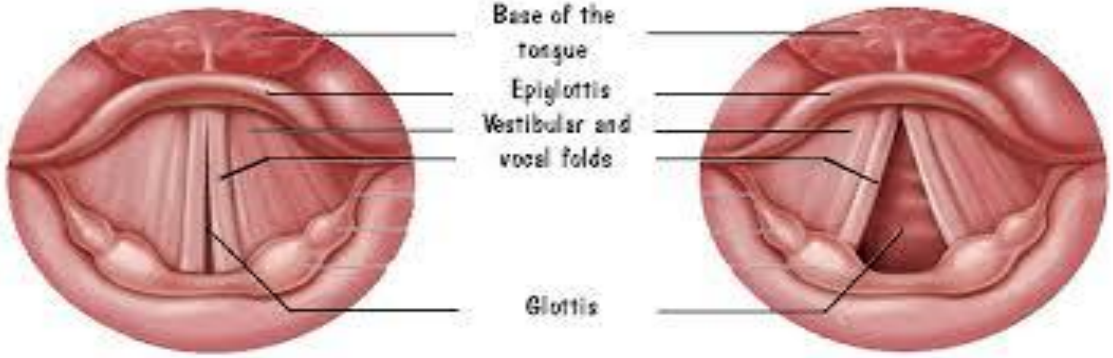
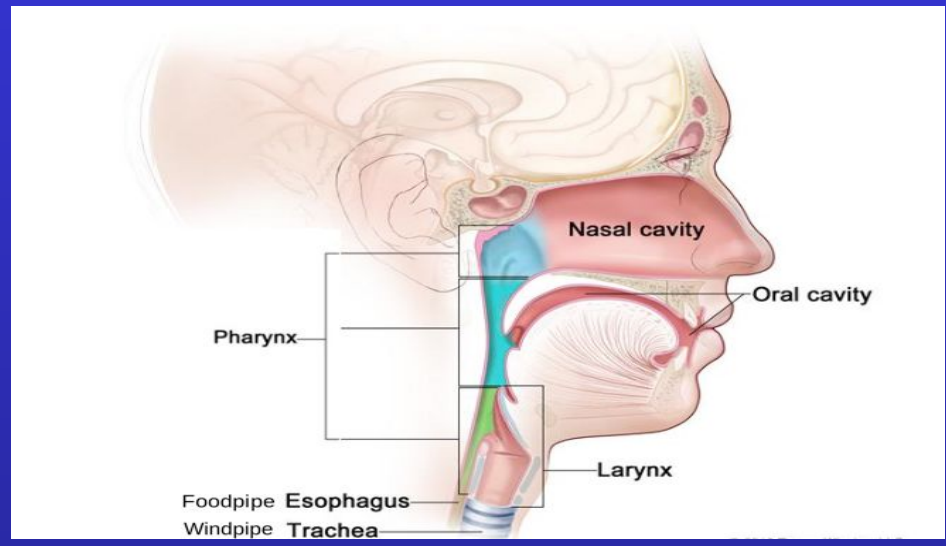


2. Pharynx

It is the place which comes immediately above the larynx and behind the back of the tongue. It is between the larynx the nasal cavity.



3. The Palate

The palate forms the roof of the mouth and separates the mouth cavity from the nasal cavity. It contains hard palate, soft palate which an be lowered or raised, and alveolar ridge, in which the former ends in the **uvular.**

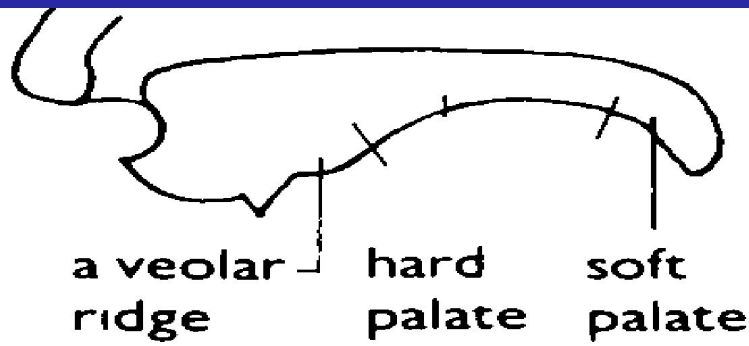


Fig. 5 The parts of the palate

4. The Teeth

The lower front teeth are not important in speech except in /s/, /z/. But the two upper front teeth are used more in English sounds like /**θ**/, /**ð**/.

5. The Tongue

The tongue is divided into four parts, the back of the tongue is under the soft palate and the front is under the hard palate whereas the blade is under the alveolar ridge and the tip behind teeth.

The tongue takes many shapes and positions when articulating vowels

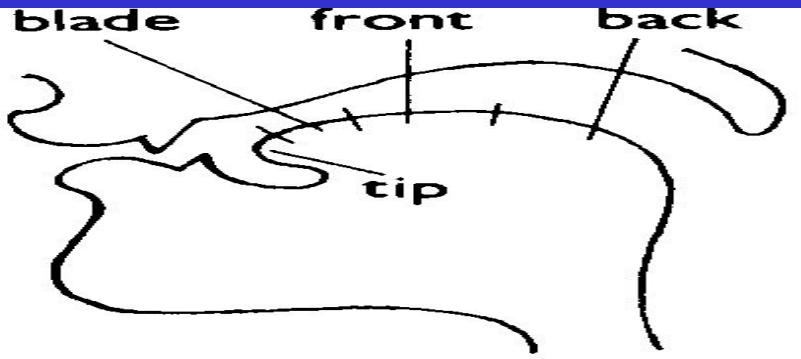


Fig. 6 The parts of the tongue

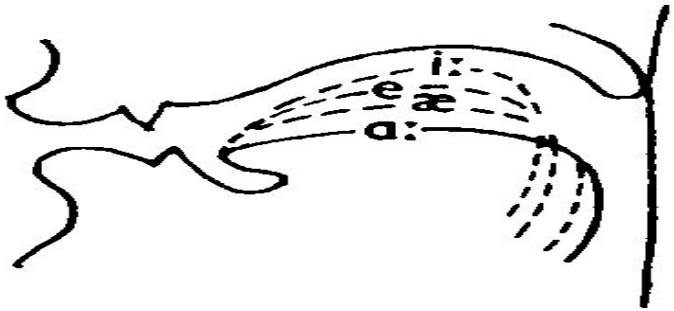


Fig. 7 Tongue positions for /i:, e, æ, ɑ:/

6. The Lips

The lips can take many positions. They can stop the air and release it suddenly like in /p/ & /b/. Lower lip can touch the upper teeth to produce /f/,/v/. The articulation of vowels depend mainly on the shape of the lips such as: /i:/ , /u:/

Exercise 1: Use the information obtained from the course to fill in the following table, which compares the survival as well as the speech functions of each of the speech organs

Organ	Survival function	Speech function
Lungs	exchange oxygen and carbon dioxide	supply air stream
Vocal cords	----------	----------
Tongue	----------	----------
Teeth	----------	----------

Thank you for your attention

1. Cruttenden, Alan. (2008) *Gimson's Pronunciation of English*. *Hodder Arnold Publication*.

2- Roach, Peter. (1983) *English Phonetics and Phonology . (1st Edition) Cambridge University Press.*