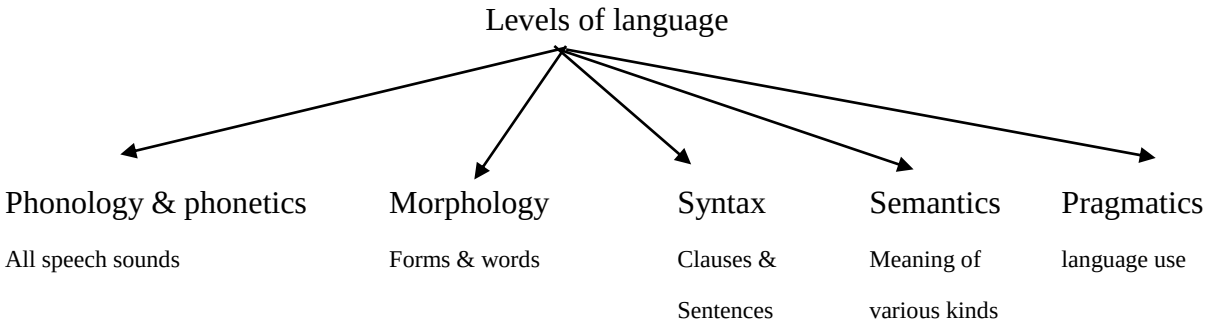
Lecture note

ENM 31013 – Linguistics and Syntax

Phonetics and Phonology



Phonetics: It is the study of the human speech sounds. It is the study of the inventory of all speech sounds.

Phonology: It is the study of systems of sounds, often the sound system of a particular language. In phonology we study how the sounds or the ways in which sounds are used systematically in different language.

Branches of Phonetics

I. Acoustic phonetics- The study of physical properties of speech sounds using laboratory instruments. The spectro-temporal properties of the sound waves produced by speech, such as their frequency, amplitude and harmonic structure.

II. Auditory phonetics – It is the study of speech perception. The perception, categorization, recognition of speech sounds and the role of the auditory system and the brain.

III. Articulatory phonetics – The study of speech production. The position, shape and movement of articulators or speech organs such as lips, tongue and vocal cords etc.

Speech production

- Speech sound are produced by interfering in some way with a body of moving air.
- Phoneticians use the term 'Airstream Mechanism' to describe the body of moving air used in speech production.

- The commonest air stream mechanism that help producing speech sounds is the PULMONIC EGRESSIVE MECHANISM
- .Pulmonic Egressive mechanism refers to the process of air being expelled from the lungs, up the wind pipe and gets out through the mouth or through the nose or through both as shown below.

Oral cavity (mouth) / nasal cavity (nose) / through both.

↑

Pharynx

↑

The air passes through Glottis (the space between the vocal cords)

↑

The air reaches the Larynx

↑

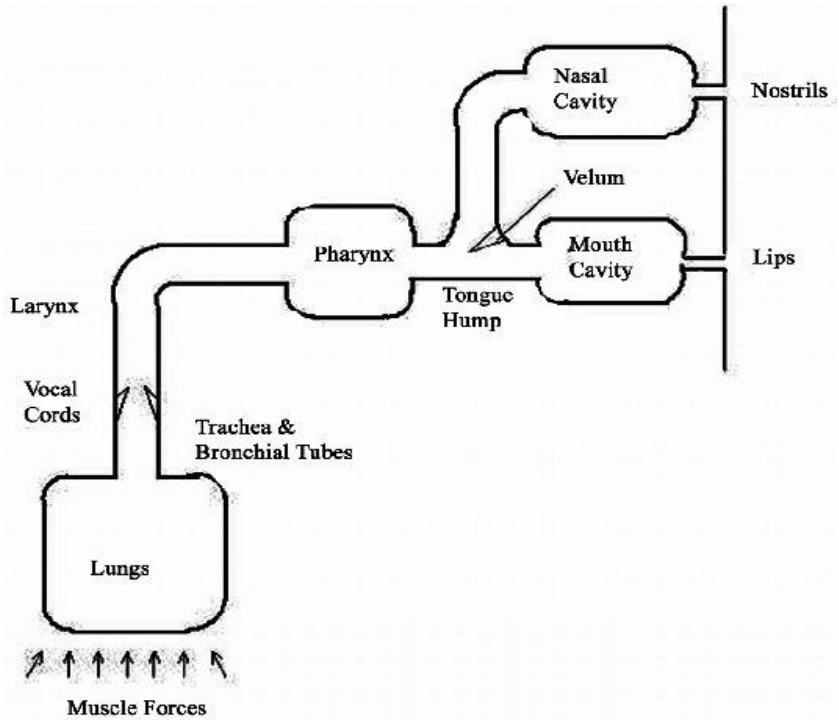
Air is pushed up from the lungs and goes up the wind pipe (trachea)

Producing speech sounds involve three biological processes.

I. ***Respiration process*** – In this process lungs provide the energy source

II. ***Phonation process*** – Vocal cords convert the energy into audible sound.

III. ***Articulation process*** – audible sound is transformed into intelligible speech sounds with the help of articulators.



In English language, speech sounds can be classified into two based on the way sounds are produced.

I. Consonants- these speech sounds are produced by obstructing in some way the flow of moving air through the vocal tract.

II. Vowels – These speech sound are produced with relatively free passage of the air stream, the articulators do not touch each other, so the flow of air is not obstructed.

CONSONANTS

These speech sounds can be defined according to

I. Voicing
II. The Place of articulation
III. The manner of articulation

Voicing

Depending on the vibration produced by the vocal cords, consonant sounds can be classified as

i. Voiced sounds - Consonants with relatively more vibration of the vocal cords are called voiced.
E.g. [n], [d], [v], [z] …

ii. Voiceless sounds - Consonants with relatively little vibration of the vocal cords are called voiceless.
E.g. [p], [m], [t], [f], [s], [k]…

Place of articulation

(what organs that come together to form the sounds)

Place	Articulators	Examples
Bilabial	Both lips	[p] pit [b] beat [m] meat
Labio-dental	Lower lips & upper front teeth	[f] fine [v] vine

Dental	Tip of the tongue & upper front teeth	[θ] Thigh [ð] Thy
Alveolar	Tip / blade of the tongue & alveolar ridge	[t] tip [s] sip [d] dip [z] zip [r] rip [n] nip
Palato Alveolar	Blade of the tongue rising towards the alveolar ridge & the front of the hard palate	[ʃ] sheep [ʒ] genre [tʃ] cheap [dʒ] jeep
Palate	Front of the tongue & the hard palate	[j] yes
Velar	Back of the tongue & the velum	[k] cot [g] got [ŋ] song
Labio velar	Simultaneously using both lips & raising the back of the tongue towards velum	[w] win
Glottal	Vocal cords	[h] hot

The Manner of articulation

It refers to the manner in which the air stream is modified. That is the extent to which the air flow is restricted.

1. **Stop / Plosives** – The articulators come together & completely cut off the flow of air momentarily, then they separate abruptly. That is, the air flow is stopped and released quickly.
   [p], [b], [t], [d], [k], [g], [m], [n]

2. **Africate** – The articulators come together and completely cut off the flow of air, just as they do in a stop, then they separate gradually.
   [tʃ] , [ʒ]

3. **Fricative** – The articulators are brought very close together leaving only a very narrow channel through which the air squeezes on its way out producing turbulence in the process.
   [f], [v], [θ], [ð], [s], [z], [ʃ], [ʒ]

4. **Approximant / Flap**- The articulators are brought near each other but a large gap enough gap is left between them for air to escape without causing turbulence.
   [r], [w], [j]

5. **Nasal** - Nasal sounds are produced with air escaping through the nose, the velum is lowered to allow access to the nasal tract.
   [m], [n], [ŋ]

6. **Lateral** – To produce a lateral, the air is obstructed by the tongue at a point along the centre of the mouth but the sides of the tongue are left low so that air is allowed to escape over one or both sides of the tongue.
   [l]

   If you say the following words slowly and carefully you will be able to observe how the air escapes over the sides of the tongue in the last sound

   Peddle, Paddle, Huddle, kettle, bottle, cattle.

NOTE: The production of consonants involve 4 major parameters

1. **The Air stream mechanism** – the way in which the moving body of air that provides the power for speech production is generated and the direction in which it moves.

2. **The state of the Glottis** – whether the vocal cords are open or closed leaving a very tiny space.

3. **The Place of articulation** – The place/ places in the vocal tract where the air stream is obstructed in the production of a consonant.

4. **The manner of articulation** - The way in which the air stream is interfered with in producing a consonant.