Generating and understanding speech

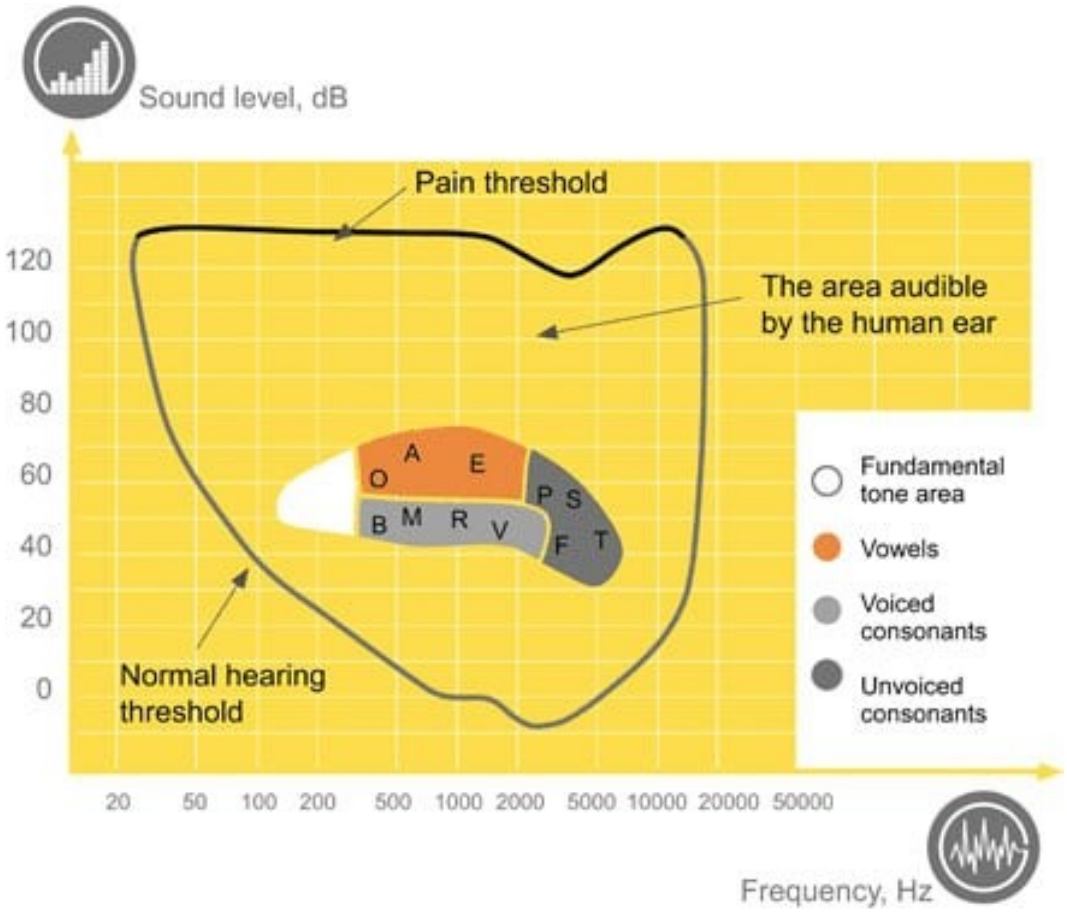
Speech occurs by air being forced past the vocal chords, which then begin to vibrate. The vibrations become a fundamental tone, which is reinforced in the oral and nasal cavity. The more air forced past the vocal chords per time interval, the stronger the sound – it is here that the volume at which we speak is determined. By placing the tongue and the lips in different positions we form the different sounds we call letters – vowels and voiced and unvoiced consonants. The vowels (a, e, o etc.) are a direct extension of the fundamental tone and are relatively strong compared to the voiced consonants (b, d, m etc.).

The vowels are also a lower frequency and the consonants a high frequency. While the vowels create the sound volume of speech, it is the consonants which are the bearers of information. This can be demonstrated in a very simple way – leave out the vowels when you whisper and it is still possible for the information to be heard in its entirety.

Try this in a more visual way by writing down a sentence, first with all the consonants removed and then with all the vowels taken out instead. Which is the easiest to read?

Source: Ecophon

Normal hearing



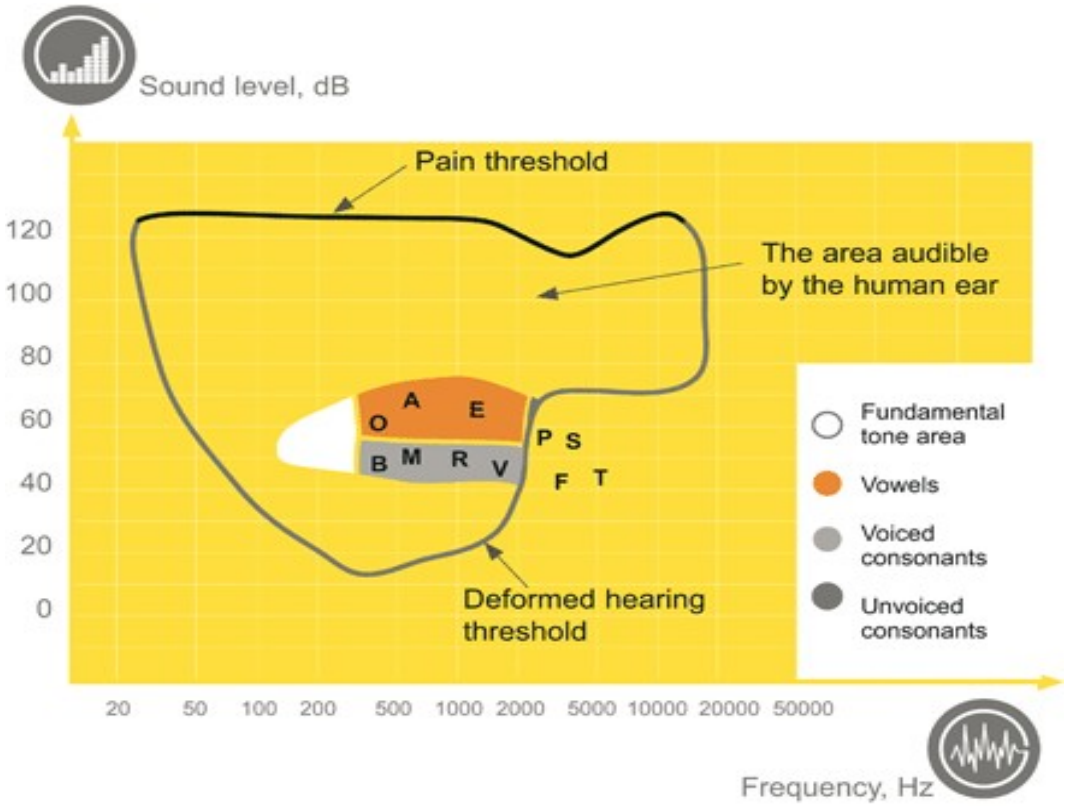
The energy of the vowels primarily lies in the range 250 – 2,000 Hz and that of voiced consonants (b, d, m etc.) in the range 250 – 4,000 Hz.

Unvoiced consonants (f, s, t etc.) vary considerably in strength and lie in the frequency range 2,000 – 8,000 Hz.

To be able to understand speech clearly, it is therefore important to have good hearing across the entire range of frequencies from 125 – 8,000 Hz, but especially in the range of the unvoiced consonants.

Source: Ecophon

Impaired hearing



When hearing is impaired, it is common to lose the ability to understand consonants which often contain little sound energy and lie in the frequency range 2,000 – 8,000 Hz.

Source: Ecophon