

# ALL SCIENCES ACADEMY



## Proceeding Book of 3rd International Conference on Trends in Advanced Research ICTAR 2025

04-05 April 2025: Konya, Turkey



# ABSTRACT BOOK OF 3RD INTERNATIONAL CONFERENCE ON TRENDS IN ADVANCED RESEARCH ICTAR 2025

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## **Teaching Phonetics in English Language: The Speech System**

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**Abstract** – The sounds in language have initial role in the speech system. They all differ and cannot be repeated. Sometimes the speakers differ in repeating the same sounds because of different factors depending on the speaker. Each system is language specific. Foreign language speakers find themselves in a chaos of sounds because of the nature of the “problem” i.e. the speaking or learning a foreign language. This chaos is supposed to be fixed by following certain rules or codes. In English, this chaos is resolved by studying phonemes, allophones, redundancy and their distinctive and non-distinctive features.

*Keywords – English, phonemes, allophones, chaos, system, language.*

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### **I. INTRODUCTION**

Phonetics is the scientific study of human speech sounds. While these sounds may seem ordinary and straightforward within a specific language, Phonetics goes far beyond that. It plays a crucial role in learning a new language, serving as one of its foundational elements [1]. Phonetics also explains how words are pronounced using the International Phonetic Alphabet (IPA). The phonetic alphabet is defined as "an attempt to make a permanent and unambiguous record of what goes on in our speech"[2]. Finally, in 1889, the International Phonetic Alphabet was formulated and this system is still in use. Sounds play a fundamental role in the speech system. Each sound is unique and cannot be exactly replicated. Various factors can influence how a speaker repeats the same sounds, including:

- The level of silence or noise in the environment
- The speaker's level of fatigue
- Whether the speaker is distracted
- The speaker's willingness to repeat the sound
- The speaker's linguistic background

Language is made up of three interconnected systems:

- The sound system
- The word system
- The grammar system

These systems serve as the foundation for constructing meaning, and each one is unique to a specific language. In English, these three systems are rather complicated. The sound system consists of 44 phonemes and the alphabet of 26 letters. The grammar system is also rather complex, consisting of inflexional suffixes that indicate the past or present participle, etc. There are significant differences between English and any language in regard to those systems. Speaking of the sound system it can be noted that some of the differences may not be easily perceived by the human ear. Thanks to modern phonetic instruments, speech

sounds can be converted into visual representations, making them more distinguishable. When learning a foreign language, speakers often experience a sense of confusion due to the complexity of unfamiliar sounds. This "chaos" can be managed by following specific rules or codes. As a result, each speech system has two key characteristics:

- It contains a limited number of sound units
- It contains certain rules to combine those units

## II. THE SOUNDS OF ENGLISH

The speech subsystem of the verbal code consists of two types of units:

1. Distinctive features – properties of sounds
2. Speech sound types – phonemes

From figure 1 below, it can be seen that the major division of sounds is into nasals and orals, where as orals then are divided into stops and continuants. Stops are also called plosives and they are pronounced with a full constriction of the air, while continuants are the fricatives, affricates, approximants and all the vowels. The sound system of any language can be analyzed from two perspectives:

- How individual sounds are produced (phonetics)
- The connection between sounds and meaning (phonology)

The minimum number of phonemes varies across languages but never exceeds fifty. For example, Hawaiian has only thirteen phonemes, whereas Danish and Lithuanian have between 32 and 59. A phoneme is the smallest unit of sound, which may or may not carry meaning. When phonemes are combined, they form morphemes, which are the smallest linguistic units that have semantic meaning.

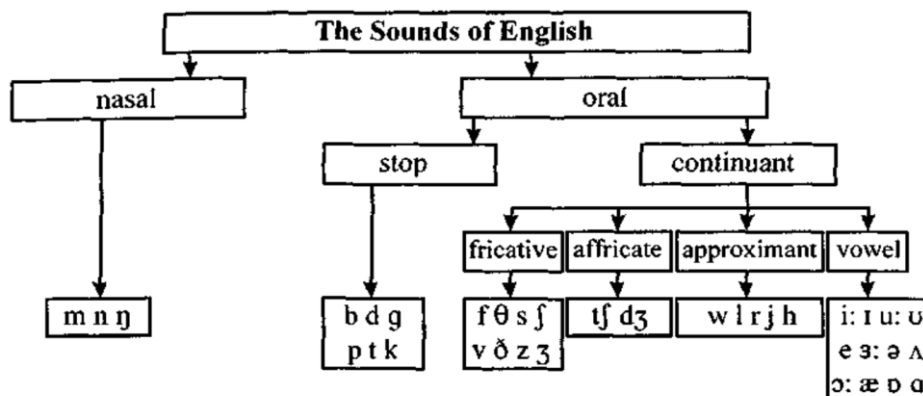


Fig. 1 The Sounds of English

A phoneme is a distinct unit in a language. Any spoken language can be broken down into a series of units, and each language has a relatively small, fixed set of these units. Most sounds can be grouped together. The key question is how we determine the phonemes of a language. The most widely accepted view is that phonemes are contrasted sounds, meaning they are distinct from one another and serve to differentiate larger units of meaning. For example, "pin" vs. "pen" or "men" vs. "man." Pairs of words that differ in only one sound are known as minimal pairs. Key concepts in phoneme analysis include complementary distribution, variation, distinctive features, allophones, and others. A phoneme can be expressed in various ways. While theoretically, a phoneme could have an infinite number of allophones, in practice, these allophones are grouped into several categories. Allophones within the same group may differ, but they always share some phonetic similarity. The allophones that do not show any noticeable or significant

changes in speech are referred to as principal or typical. Hence, allophones that undergo noticeable changes in speech are known as subsidiary. These subsidiary allophones are always predictable, as the phonetic contexts in which they occur are determined by the language.

### III. INTERESTING FEATURES OF SOUNDS

The number of sound units varies among animals, as they typically produce sounds only to express basic vital functions and emotions. In human language, phoneme combination rules restrict certain speech sound clusters, which in turn reduces the total number of possible morphemes. One key characteristic of the phonological subsystem of speech is its tendency toward symmetry. In many languages, the number of voiced and voiceless consonants is nearly equal. Similarly, the quantity of front vowels often matches that of back vowels, with their positions forming mirror images of each other. English sounds have several unique and intriguing characteristics:

1. **Consonant Clusters:** English permits the combination of multiple consonants at the start or end of words, which can be tricky for speakers of languages that avoid such clusters. Examples include words like "strengths" and "twelfths."
2. **Vowel Length and Tension:** English features both tense and lax vowels. Tense vowels, such as in "beat" or "boot," are pronounced with more tension and are generally longer than their lax counterparts, like in "bit" or "foot."
3. **Unstressed Syllables:** In English, unstressed syllables are often reduced, which can make pronunciation difficult for learners. For example, in the word "banana," the second "a" is pronounced as a schwa [ə], making it sound like "buh-nuh-nuh."
4. **Flapping:** In American English, the "t" and "d" sounds between vowels can be pronounced as a flap, which sounds like a quick "d." This occurs in words like "butter" and "ladder."
5. **Aspiration of Stops:** The sounds /p/, /t/, and /k/ are aspirated (accompanied by a burst of air) at the beginning of stressed syllables in English. For instance, "pat" has an aspirated "p," whereas "spat" does not.

### IV. REDUNCANCY

Redundancy refers to the ability to predict the presence of a linguistic unit based on another unit that is consistently paired with it. Its primary function is to counteract disturbances in communication. Redundancy is the ability to foresee the occurrence of a linguistic unit solely from the presence of another associated unit [3]. To understand this concept fully, a deeper knowledge of phonetics is necessary. Languages structure their sound systems by maximizing the use of a limited number of essential features [4]. This approach minimizes redundancy, aiming for greater representational simplicity. Redundancy in English phonetics refers to the repetition or predictability of certain phonetic features that don't add new information but assist in making communication clearer and more efficient. Here are some examples of redundancy in English phonetics:

- **Vowel Reduction:** In unstressed syllables, vowels often reduce to the schwa sound [ə], simplifying pronunciation without changing the meaning. For example, in the word "banana," the second "a" becomes a schwa [ə].
- **Consonant Assimilation:** In fast speech, consonants may change to resemble neighboring sounds, creating redundancy that helps speech flow smoothly. For example, in "ten bucks," the "n" sound might blend with the "b," making it sound like "tem bucks."
- **Stress Patterns:** English relies on stress to differentiate word meanings and sentence structure. The stress pattern in a sentence like "The dog bit the man" provides redundancy by clarifying the subject and object roles, even when spoken quickly.

- **Phonetic Context:** Certain sounds in English are predictable based on their surrounding sounds. For example, the "t" in "bat" and "pat" may be aspirated (with a burst of air) at the start of a stressed syllable, adding redundancy to how the sound is produced, which helps with clarity in speech.
- **Coarticulation:** Coarticulation refers to how sounds blend together in connected speech. This blending results in redundancy, as sounds are influenced by their neighbors, making speech smoother and more predictable. For example, in "good morning," the "d" may merge with the "m" sound.
- **Allophonic Variation:** A single phoneme in English can be articulated in different ways depending on its context, which is another form of redundancy. For example, the phoneme /t/ can become a "flap" [ɾ] between vowels in words like "butter" or "ladder," but it is still recognized as the same phoneme.

## V. CONCLUSION

Speech sounds are made with the use of air from our lungs as well as the organs of speech, i.e. lips, tongue, teeth and the vocal cords to create different sounds. Moreover, by manipulating the sounds in different ways different sounds are produced (see fig.3):

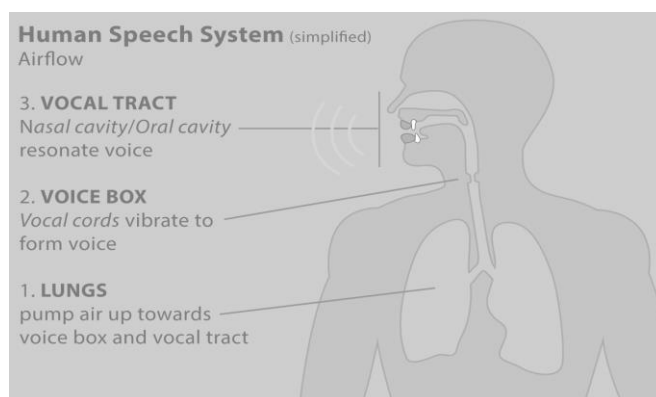


Fig.3 The Human Speech System

- Phonemes are different sounds that indicate a different meaning, e.g. pill/bill, till/dill, mill/nil
- Allophones are variations in pronunciation of individual sounds that do not signal difference in meaning, e.g. the difference in the way the /l/ is pronounced according to the sounds that surround it, as in “plane” and “pail” [5].

Which sounds can be put together in a given language is a rule governed; i.e. certain sounds can go together while others cannot. In English /ŋ/ can appear at the end of a string of sounds as in ‘sing’ but not at the beginning (as opposed to languages such as Thai where /ŋ/ can appear at the beginning). In English language there are more sounds than letters. For example, there are: 12 vowel sounds, only 6 vowel letters. To represent pronunciation the International Phonetic Alphabet (IPA) has been created. By using IPA representation of how words are pronounced can be seen: coot noun /ku:t/. The alphabet also allows UK/US variations to be noted: YouTube noun has different pronunciation in British/American: UK /'ju:.tʃu:b/ US /'ju:.tu:b/. What is important considering teaching Phonetics is to give clear instruction and theory to students in order to master the sounds and the phonetic alphabet. What is expected by the students is achieving correct pronunciation; be able to transcribe most of the words and vice versa to be able to convert a transcribed text into a written text. Finally, it is important to learn and master the places and types of articulation in order to be able to get acquainted with the phonological features of the sounds.

In conclusion it can be stated that the phoneme is an abstract unit. All allophones of the same phoneme possess a set of pronunciation features which make this phoneme functionally different from any other phoneme in the language. The phoneme is a minimal functional objective and abstract unit of the language which serves to differentiate meanings of bigger linguistic units. A phoneme represents a set of functionally relevant pronunciation features (distinctive features). The number of the phonemes in any language is much smaller than a number of sounds actually pronounced. The total number of the phonemes in English is 44 out of which 24 consonantal phonemes and 20 vowel phonemes. They are essential for understanding and mastering the English sounds and pronunciation.

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