

STARTING PHONETICS: CLEARING THE GROUNDS

Lesson 1: Writing, spelling and pronunciation

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Identify the differences and similarities between the ancient and modern writing systems;
- ❖ Identify the connection between writing and sound articulation;
- ❖ Identify the three basic types of letters-sound correspondence

All world's languages have their distinctive writing systems. The Chinese writing system used in China, commonly labeled as *Hànzi*, is different from the *Abugida* writing system used in India and other world scripts. Knight (2012) notes that some of these earliest writing systems were essentially based on pictures (**Logogram** or **pictogram**) and symbols that represent specific objects in reality. Many traditional alphabetic systems, such as *Aztec* writing system and *Aramaic* writing system, had been adopted by people in ancient civilizations. Yet, the earliest logographic systems cannot fully represent all the events, objects and concepts used in the modern era and most of them became obsolete and outdated. Conversely, other earliest writing systems have long been continuously modified and developed to represent the sounds of the modern languages and language varieties, such as The Chinese writing system (Knight (2012)).

Sounds and letters Correspondence:

The mapping of sounds-to-letters admits of varying degrees from one language into another. Italian language is an epitome of one-sound-one-letter correspondence, that is, the perfectly match between the word and the letter. By way of example, the three letters of the Italian word *rosa*, meaning a rose, match perfectly with three sounds of the same word. In stark contrast with the Italian language, English language does not display a full sounds-letters match. Ogden (2009) notes that the English writing system is based on “a system where a set of twenty-six symbols is used to represent the forty-five or so sounds” (p. 3). This explains why non-native speakers of English find difficulties in learning the spelling forms of many English words, such as *thoroughly* and *queue*! Because English, Knight (2012) adds, “has been influenced by many other languages throughout its history, and because all languages change over time” (p. 4), spelling form and phonetic form are separated in several words.

Types of sounds-letters match:

In essence, there are four categories of sounds-letters match. The first category refers to a single sound that is represented by more than one letter. For instance, the sound / **z** / is marked by the letter < **s** > in words like *disease* and *cease*, but is spelt as < **z** > in the words *utilize* and *criticize*. Conversely, one letter in the English language can be pronounced differently in different English words. For instance, the letter < **g** > is realized with the post-alveolar sound / **ʒ** / in the word *pleasure* and with the post-alveolar / **dʒ** / in the word *large*. Another

category wherein sounds do not correspond with letters can be found in words with silent letters, such as *debt* and *know*. Similarly, while native English speakers do not articulate the letters < **h** > and < **g** > in the word *night*, they do pronounce the same letters in other words like *gate* and *humid*! There are, also, English words with double letters that correspond to one single sound, such as *butter* and *hissing*. Homographs and homophones represent further cases of mismatch between sounds and letters in the English language. The former refers to those words which have the same spelling form, but have different sounds or meanings such as *live* and *live*. The latter, conversely, refers to words with **identical** phonetic realizations, but have different spelling forms or meanings (Crystal, 2008). For example, the words *eight* and *ate* are homophones.

Lesson 2: What is Phonetics?

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Understand the locus of Phonetics
- ❖ Understand the role of phonetics in the advancement of other scientific fields and areas of research

Introduction:

The previous course considered the complex way in which spoken discourse and written discourse are inextricably connected. However, linguists from all strands of thought concur that speech is primary and writing is secondary. Infants learn how to speak their mother tongue before they start learning how to write through schooling. The long arc of humankind history reveals that speaking was a primary medium of expression in almost all the ancient civilizations. In many of these earliest cultures, singing, chanting and other forms of oral culture had earned honor-roll status as the main symbolic sources of cultural identity and communication among people. In brief, speaking lies at the heart of all human interactions.

Definition of Phonetics:

As of early 1900s, earliest linguists have long been interested in examining how speech sounds are made in many world languages and language varieties. The scientific discipline, which addresses speech articulation, is commonly termed **Phonetics**, and the specialists working within this linguistic field are called **Phoneticians**. Linguists posit different definitions for the concept of **Phonetics**. George Yule (2020), for instance, defines Phonetics as “the general study of the characteristics of speech sounds” (p. 29). A more complex definition is provided by the linguist David Crystal (2008), who notes that phonetics is “the science which studies the characteristics of human sound making, especially those sounds used in speech, and provides methods for their description, classification and transcription” (p. 363). Said plainly, phoneticians employ scientific methods and statistical tools to study the ways in which: 1) world speech sounds, both consonants and vowels, are produced by speakers, transmitted in the form of sound waves and perceived by listeners, 2) the different types of sounds, 3) the main categories of speech sounds, 4) and their phonetic transcriptions. O’Grady and Archibald (2015) point out that there are roughly 600 consonants and 200 vowels used in all world languages. Some of these

sounds are common among all world languages, such as / s / and / b /, whereas other sounds are language-exclusive. By way of example, the sound / x / can be found in Arabic and Spanish but not in English and French. Furthermore, phoneticians approach speech sounds from three distinct, yet interrelated, perspectives, namely: Articulatory Phonetics, Acoustic Phonetics and Auditory Phonetics (see course 3).

PHONETICS AND PHONOLOGY

Lesson 3: Branches of Phonetics

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Understand the three main branches of phonetics
- ❖ Understand the main objectives and characteristics of each subfield

Introduction:

We covered a great deal about what is phonetics, its characterization and goals. We learned that phoneticians seek to examine, scientifically, the ways in which human beings produce various speech sounds in isolated words and connected speech. Phoneticians, also, concur that there are three ways to think about phonetics, namely **Articulatory Phonetics**, **Acoustic Phonetics** and **Auditory Phonetics**. These three branches represent the fundamental pillars in the field of Phonetics.

Articulatory Phonetics:

Articulatory Phonetics, the most widely studied subfield in phonetics, sheds light on speech **production**, or **articulation**. Any phonetician or a student of phonetics specialized in this branch seeks to understand the complex mechanisms involved in the production of consonants and vowels, contact between speech articulators and airflow, all of which play a major role in producing speech sounds. The questions: *How are speech sounds made?* and *Which speech organs are involved in speech articulation?* are usually investigated by any researcher working within the articulatory phonetics realm. Articulatory Phonetics, it must be noted, is considered as the backbone of the other main subfields of phonetics-Acoustic Phonetics and Auditory Phonetics.

Acoustic Phonetics:

Researchers working within Phonetics realm are concerned, not only with how speakers produce speech sounds, but also how those speech sounds and voices move from the speaker to the hearer in the form of sound waves. This Phonetics subfield is commonly called **Acoustic Phonetics** or **Physics of speech** and it essentially addresses “the physical properties of speech sound, as transmitted between mouth and ear” (Crystal, 2008, p. 7). Ashby (2011) points out that researchers tend to measure the sound waves, or the disturbances in the air, by means of many softwares and applications, such as **PRAAT**, **Audacity** and **WASP**.

Auditory Phonetics:

In stark contrast with **Articulatory Phonetics**, **Auditory Phonetics** (or **Speech Perception**) examines how listeners *receive* and *perceive* speech sounds (Ashby, 2011). Said plainly, researchers seek to understand how a single speech sound, be it a vowel or a consonant, is perceived by the listener, and transmitted from the outer ear, through the middle and inner ears to the brain in the form of electric impulses. Phoneticians use several ear trainings and technological programs to understand how we hear voices, on the one hand, and to have a clear image about how the brain understands the meanings of such speech segments and discriminates between various types of sounds, on the other. By the same token, sociolinguists working within **Speech Perception** field (Campbell-Kibler, 2008) tend to use the same programs and online open sources to gauge the segmental segments and supra-segmental features uttered by speakers of various regional, ethnic and social origins.

Lesson 4: Vowels vs. Consonants

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Demystify the concepts of vowels and consonants
- ❖ Identify the main differences and similarities between vowels and consonants

Native speakers tend to talk of and comment on highly marked consonants and vowels in day-to-day interactions. They usually talk of ‘*weird*’ vowels, ‘*prestigious*’ consonants and even ‘*funny*’ consonants typically associated with certain dialects and accents. Using his/her phonetic ear, for instance, any native English speaker can easily tell you that the words *win* and *fan* have three sounds. Things become more complicated, however, if the same speaker is asked to hazard a guess about the number of consonants and vowels in words like *xenophobia* and *onomatopoeic*. From phonetic and phonological standpoints, phoneticians study the differences between vowels and consonants in terms of degree of stricture, vowel quality, position in the syllable and significance.

Vowels refer to speech sounds made without any contact between speech organs. All vowels are voiced sounds whose articulation involves no obstruction or blockage to the airflow that may escape through the oral cavity. Consonants, in contrast, are “sounds made with a lot of constriction in the mouth, so that the air coming up from the lungs gets squashed” (Knight, 2012, p. 9). Some consonants are typically voiced, such the first and last sounds of the word *red*, whereas other consonants are voiceless, such as the middle sound of the word *better*. When you produce the vowel / **e** /, you can feel that your tongue raises against the roof of your mouth, but not close enough to build a complete closure. Conversely, when you utter the sound / **m** /, both upper lips and lower lips form a complete closure such that the air does not pass through the mouth. In stark contrast with vowels production, the articulation of consonants admits of varying degrees of stricture. By way of example, the sounds / **s** / and / **f** / involve less obstruction to the airflow than the sounds / **g** / and / **k** /. Similarly, there are several points of reference for describing vowels, ranging from vowel quality (monophthongs vs. diphthongs vs. triphthongs), tongue shape and position to lips shape. As for consonants possibilities, it is possible to distinguish between consonants with regard to their manner of articular, place of articulation and force of articulation

Vowels and consonants differ in terms of their positions in the word. Generally speaking, vowels tend to occur in the middle of words—e.g., *late*, *what*— or in isolation as in the words *eye* and the pronoun *I*. In contrast, consonants usually occur in the initial position and/or final position of the words, such as in *wood* and *eight* (Knight, 2012). With this difference in mind, it is, also, worth noting that vowels tend to be more important than consonants in the word. Consider how dropping off consonants and vowels affects the meaning of the word *cart*. If, for instance, you drop off the consonants / **k** / or / **t** /, the word would remain meaningful (art / **ɑ:rt** /, car / **kɑ:r** /). If you omit all the consonants, the word would still be meaningful (the British pronunciation of the word *are* is / **ɑ:** /). However, if you drop off the long vowel / **ɑ:** / only, the word would be meaningless / **krt** /*. Therefore, vowels tend to be, comparatively, more significant than consonants in English words structures.

Lesson 5: Phonetic Transcription (IPA chart)

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Understand how speech sounds are represented in the International Phonetic Alphabet Chart (IPA)
- ❖ Learn how to transcribe consonants and vowels

Sounds Transcription: An overview

Since 1888, phoneticians and linguists have been working on designing a global set of symbols that attempts to represent the sounds spoken in many world languages (Yule, 2020). The **International Phonetic Alphabet Chart (IPA)** is the most well-known system of sounds transcription. It consists of many symbols that describe the pronunciation of consonants and vowels as accurately as possible. By way of example, Table 1 below illustrates the consonants associated with what is commonly labeled **Standard English**, a type of English that is mostly used in political conferences, broadcasting (**BBC** and **CNN**), academic books and research papers.

Table 1

Phonetic Symbols of English Consonants

| Symbol | Example | Symbol | Example |
|--------|----------------|--------|-------------------|
| /θ/ | th <u>ing</u> | /ð/ | <u>th</u> is |
| /t/ | te <u>st</u> | /v/ | <u>v</u> ast |
| /n/ | kn <u>ow</u> n | /b/ | <u>b</u> lame |
| /tʃ/ | ch <u>ea</u> t | /z/ | <u>Z</u> ip |
| /r/ | <u>r</u> ink | /ʒ/ | plea <u>ʒ</u> ure |
| /d/ | <u>d</u> all | /d/ | <u>d</u> rink |
| /j/ | <u>j</u> it | /g/ | <u>g</u> ate |
| /dʒ/ | <u>d</u> ge | /m/ | <u>m</u> aze |
| /tʃ/ | <u>t</u> urch | /n/ | <u>n</u> ine |
| /tʃ/ | <u>t</u> es | /dʒ/ | <u>d</u> ge |
| /ŋ/ | <u>ng</u> | /ŋ/ | <u>ng</u> |
| /v/ | <u>v</u> ave | /l/ | <u>l</u> ate |

The symbols listed above are part of the International Phonetic Alphabet system (IPA). Certain sounds, such as /g/ and /n/ are pretty familiar to all students, while others like /ð/ and /ʃ/ seem to be unfamiliar. You can see that the symbol /z/ is used to transcribe the underlined letters in the words *Zinc* and *disease*. This simply means that there is no one-to-one match between the uttered sounds (spoken form) and orthography (written form). You can also notice that there are two phonetic symbols that consist of two symbols, mainly /dʒ/ and /tʃ/. These two symbols describe complex sounds in the English language. For instance, /dʒ/ and /tʃ/ represent the initial combined sounds of the words *judgment* and *cheating*, respectively. Similar to consonants, there are also symbols for all the vowels spoken in English. So, for instance, we write the symbol /e/ to describe the middle sound of the words *men* and *ten*, and use the vowel /i:/ to describe the final sound of the word *bee*. Some phonetic symbols were conventionally created to represent more complex sounds, commonly termed **Diphthongs** and **Triphthongs**. So, the symbol /ɔɪ/ can be found in words like *boy* and *toy*, and the symbol /aɪ/ is commonly used in words like *fire* and *liar*.

On Phonemic Transcription and Phonetic Transcription:

In the previous section, we covered a great deal of ground. We overviewed the standard transcription of English sounds and discussed some relationships and examples. In phonetics realm, such standard system of transcribing sounds is commonly called **Phonemic Transcription**. It is, equally, labeled as **Broad Transcription** because it tells us about how each sound is pronounced, but does not contain any further detailed phonetic data. Said differently, while the aforementioned symbols-e.g., /m/, /n/, /k/- can accurately represent the spoken forms of English, they do not provide us with more information about the exact pronunciation of each consonant in different contexts. By way of example, although it is easy to recognize the way in which the symbol /p/ corresponds with the letter < p >, it does not include any details about its different realizations in isolated words and connected speech. Using your phonetic ear, you can easily realize that, phonetically, the letter < p > is produced with a puff of air if it is placed at the beginning of the word, but it is produced without a release of air if it is placed at the end of the word. Therefore, Phoneticians have introduced another type of transcription, called **Phonetic Transcription** or **Allophonic Transcription**, to account for, not only the major phonetic data, but also every minor change in the pronunciation of the sound. More details about these types of transcription can be found in the course '*Broad Transcription vs. Narrow Transcription*'.

Lesson 6: Phonetics vs. Phonology

"Phonetics gathers the raw material, phonology cooks it."

Kenneth Pike, 1947

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Understand the concepts of phonetics and phonology
- ❖ Identify the relationship between phonetics and phonology
- ❖ Learn some basic phonetic patterns and rules that govern the occurrence of some specific sound realizations in English.

Introduction:

Each individual speaker pronounces one speech sound in different ways and in different words and situations. By way of example, a native speaker of English may pronounce the sound / **k** / with a puff of air in words like *kit* and *cake*. In words like *stuck* and *duck*, however, the same speaker would pronounce the sound / **k** / without a release of airflow. Such difference and many other cases are not arbitrary, as many non-linguists believe, but rule-governed and constrained by internal factors. Whenever the sound / **k** / occurs at the beginning of the word and is followed by a vowel, it is produced with a puff of air (**aspirated**). The same sound is said to be **unaspirated** if it occurs at the end of the word. The same rule can be applied to other sounds, like / **p** / and / **t** /, to name but a few. In fact, the distinction between how a sound is made and how it is pronounced in specific phonetic contexts corresponds significantly with the relationship between **Phonetics** and **Phonology**. The former is essentially concerned with the various ways in which human beings utter speech sounds and how the three systems, respiratory, phonatory and articulatory, operate to produce voices and sounds. Conversely, the latter, Yule (2020) notes, “is about the underlying design, the blueprint of each sound type, which may vary in different physical contexts” (p. 45).

The epigraph stated above (Pike, 1947) nicely echoes the relationship between the two fields. While it is possible for every student to learn phonetics as an independent field along with its basics, it is quite impossible for him/her to understand phonology without having a solid background knowledge in phonetics. Phonetics inputs to the field of phonology which needs a lot of phonetic information to account for all the potential sound patterns and their surrounding contexts. In brief, phonology is dependent on phonetics. A specialist in phonetics would ask: how do we produce sounds? whilst a phonologist would ask: which phonological factors influence the pronunciation of a single sound in different sound contexts.

SPEECH MECHANISMS

Lesson 7: Anatomy, Physiology and Speech Mechanisms

INSTRUCTIONAL OBJECTIVES

After studying this course, students will be able to:

- ❖ Understand the basics of speech mechanisms
- ❖ Learn the three processes involved in speech productions, namely respiration, phonation and articulation
- ❖ Understand the airstream types involved in speech production
- ❖ Learn about the speech organs that play a major role in the articulation of sounds