





SCHOOL OF HUMANITIES

UTTARAKHAND OPEN UNIVERSITY

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Semester-IV

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PHONETICS AND PHONOLOGY



UTTARAKHAND OPEN UNIVERSITY

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PHONETICS AND PHONOLOGY

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UNIT 1. AN INTRODUCTION TO PHONETICS

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1.1. INTRODUCTION

Speech sounds form the foundation of any spoken language. Among these, consonants and vowels play a crucial role in shaping the phonological structure of words. Understanding how these sounds are produced, described, and classified is essential for the study of phonetics and linguistics. This module introduces learners to the articulatory features of consonants and vowels, exploring the physiological mechanisms involved in their production and the parameters used to describe and categorize them. By examining how different sounds function within language systems, students gain deeper insight into the building blocks of spoken communication

1.2. OBJECTIVES

After reading this unit you will be able to

- Define and differentiate the three branches of phonetics: articulatory, acoustic, and auditory.
- Identify and describe the articulatory features of speech sounds.
- Use the IPA to transcribe and analyze speech sounds.
- Understand the basic physiology of speech production.
- Recognize phonetic distinctions in different languages.

1.3. INTRODUCTION TO PHONETICS

As the names suggest, *phon*etics and *phon*ology have a shared interest: speech sounds (*phone* from Ancient Greek $\varphi \omega v \hat{\eta}$, means 'sound, voice'). The fields differ in the aspects of speech sounds that are in the focus of research (although the distinction between the fields is not always clear). Phonetics, the scientific study of speech, concerns the physical aspects of speech and communication. It is divided into three main branches: Articulatory phonetics studies the speech organs and mechanisms of speech production. Acoustic phonetics studies the physical properties of speech sounds. Perceptual (or, auditory) phonetics studies the processing and interpretation of speech sounds by the ears and the brain. Figure 1.1 illustrates the relations among the main branches of phonetics.





1.4.1 ARTICULATORY PHONETICS

Speech sounds are created by modifying the volume and direction of a flow of air using various parts of the human respiratory system. We need to consider the state of these parts in order to be able to describe and classify the sounds of human languages. Figure 2.1 illustrates the parts of anatomy we need to examine.



Fig. 2.1 The vocal tract and articulatory organs

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Airstream Mechanism

We can start with the airflow itself- where is it initiated and which direction is it travelling in? The major 'initiator' is the lungs and the most common direction is for the air to flow out from the lungs through the trachea (windpipe), larynx (in the Adam's apple) and vocal tract (mouth and nose); all human languages involve this type of airstream mechanism, known as "pulmonic egressive" (= from the lungs outwards) and for many, including English. It is the sole airstream mechanism employed for speech sounds. A number of languages also employ other possibilities; the air may he moving inwards (an ingressive airslrearn mechanism), the Aow itself may begin, at the velum (soft palate) or the glottis (the space between the vocal cords) - velaric and glottalic airstreams respectively. This gives a possible six airstream mechanisms:

- Pulmonic egressive used in all human languages
- Pulmonic ingressive not found
- Velaric egressive nol found
- Velaric ingressive used in e.g. Zulu (S. Africa)
- Glottalic egressive used in e.g. Navajo (N. America)
- Glottalic ingressive used in e.g. Sindhi (India).

However, as can be seen from the list above, two of the possible types - pulmonic ingressive and velaric egressive - are not found in any human language (it is unclear why this is so).

Having established the starting point of the airflow and the direction it is travelling in, we can then look at what happens to it as it moves over the other organs involved in speech sound production. For what follows, we will assume a pulmonic egressive airstream mechanism: sounds produced with other airstrearn types will be discussed in later sections.

The vocal cords

As air is pushed out from the lungs, it moves up the trachea into the larynx. In the larynx the airflow encounters the vocal cords. The vocal cords are actually two folds of tissue, but when visualized from above (as in laryngeal

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examination) they appear as white cords sunounded by pinkish areas (hence the popular term 'vocal cords'). These flaps run from the arytenoid cartilages in the back to a point on the inner smface of the thyroid cartilage in the front. When the vocal cords are apart, as in Figure 2.2 (this shows an open glottis), then the air passes through

Unhindered, resulting in what is known as a voiceless sound,



Fig. 2.2 Open glottis Note: In this and subsequent figures showing states of the glottis the bottom of the diagram corresponds to the front of the larynx. Note that all the figures in this chapter are schematic rather than anatomically accurate representations.

such as in the initial and final sounds in the word "pass" (Since English orthography is not a system of phonetic representation. a single sound may be represented by more than one orthographic symbol. as in the final sound in "pass".) Lying above the true vocal folds are the false folds. The false vocal folds can also be set into vibration to produce some sounds, such as with a hard cough, but are not normally associated with speech production. The thyroid cartilage, located at the front of the larynx, causes the protrusion known as the Adam's apple in the front of the throat.

If however the vocal cords are brought together by muscular contractions, as in Figure 2.3 (which shows a narrowed glottis), then as the air is forced through, air pressure causes the vocal cords to vibrate. This

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vibration (voicing) is maintained by aerodynamic and elastic forces until movement of the arytenoid cartilages separates the vocal cords



Fig. 2.3 Narrowed vocal cords

This vibration results in a voiced sound, as in all three sounds in 'buzz'. You can feel (as well as hear)

the difference between voiceless and voiced sounds by placing your finger against your Adam's apple and then making prolonged 'sss' (as in 'hiss') and 'zzz' (as in 'his') sounds: for the 'zzz' sound you should be able to feel the vibration of the narrowed vocal cords, while for 'sss' the vocal cords are wide apart and there is no such vibration.

These two positions - open and nan-owed - are the most common in the languages of the world, but the vocal cords may rake on a number of other configurations which can be exploited by languages. For instance, they may be completely closed (see Figure 2.4), not allowing air to pass through at all and thus causing a build-up of pressure below the vocal cords: when they are opened, the pressure is released with a forceful outrush of air (similar to a cough).

The sound so produced is known as a glottal stop which is found in many kinds of British English - e.g. Cockney, Glasgow, and Manchester. Etc,- as the final sound of words like 'what'. Alternatively, the

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vocal cords may be open only at one end, as in Figure 2.5, resulting in what arc known as creaky voice sounds, found in languages such as Hausa



Fig. 2.4 Closed glottis



(spoken in Nigeria). Imitating the sound of an unoiled door closing slowly involves creaky voice.

Finally, the vocal cords may be apart (much as for voiceless sounds), but the force of air may still cause some vibration. giving what are known as breathy voice or 'murmured' sounds, found in Hindi (spoken in India) or, for many speakers or English, in the 'h' of 'ahead'.

The velum

The position of the velum is the next consideration. The velum or soft palate is a muscular flap at the back of the roof of the mouth: this may be raised - cutting off the nasal tract - or lowered – allowing air into and through the nose (see Figure 2.6). When the velum is raised (known as 'velic closure'), the air can only flow into the oral tract, that is, the mouth: sounds produced in this way are known as oral sounds (all those in 'frog'. for example). When the velum is lowered, air flows into both mouth and nose, resulting in nasal sounds (the first and last sounds in 'man', or the vowel in French pain 'bread', for example).

The oral tract

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We have thus far considered the type of airstream mechanism involved in rhe production of a speech sound, the state of the vocal cords (whether the sound is voiced or voiceless. for instance) and the state of the velum (whether the sound is nasal or oral). We must now look at the srate of the oral tract: in particular, rhe position of the active articulators (lower lip and tongue) in relation to the passive articulators (the upper surfaces of the oral tract).

The active articulators are, as their name suggests, the bits that move - the lower lip and the tongue. It is convenient to consider the tongue as consisting of a number of sections (though these cannot move entirely independently, of course). These are: the tip. blade. Front. Back and root: the front and back together are referred to as the body (see Figure 2.6). The passive articulators are the non-mobile parts - the upper lip, the teeth, the roof of the mouth and the pharynx wall. The roof of the mouth is further subdivided into alveolar ridge, hard palate. soft palate (or velum) and uvula (see. again, Figure 2.6).

Consideration of the relative position of active and passive articulawrs allows us to specify what are known as the manner of articulation and the place of articulation of the speech sound.





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Manner of articulation

Manner of articulation refers to the vertical relationship between he active and passive articulators, i.e. the distance between them (usually known as stricture): anything from being close together, preventing air escaping, to wide apart, and allowing air to flow through unhindered.

When the articulators are pressed together (known as complete closure), a blockage to the airflow is created, causing air pressure to build up behind the blockage. When the blockage is removed the air is released in a rush. The sounds produced in this way are known as stops; these may be oral (with velum raised), as in the first and last sounds in 'bad', or nasal (lowered velum), as in the first and last sounds in 'bad' is the position of the velum, since. the active articulators are in the same positions for both words.

The first and last sounds in 'church' also involve complete closure but have a different release of air. In the oral stop we have looked at so far, the active articulator is lowered completely, giving a wide 'escape hole' for the air, as for the stop sounds in 'bad': for the first and last sounds in 'church' the active articulator is lowered only slightly,giving a slower release of the air through a narrow channel between the articulators. As the air passes through this narrow space there is friction (see fricatives in the next paragraph). Sounds produced in this way are known as affricates.

When the articularors are close together, but without complete closure (a stricture known as close approximation), the air is forced through the narrow gap between the articulators, causing some turbulence; sounds so produced are known as fricatives (the first and last sounds in 'fez').

For the other major sound types - liquids, glides and vowels - there is free passage of air through the oral tract, though the exact relation between the articulators will vary. For vowels (the middle sounds in 'cat', 'dog', 'meat'. etc.) and glides (sometimes known as 'semi-vowels') (the initial sounds in 'yak' and 'warthog'),the articulators are wide apan and the air flows out unhindered (this is known as open approximation). For liquids (the first and last sounds in 'rail'), there is both contact and free air passage: for the 'r' sound, the sides of the tongue are in contact with the gums, but the air flows freely down the centre of the tongue, and for tbc 'l' sound, the centre of the tongue is in contact with the alveolar ridge but the air flows out freely over the lowered sides of the tongue.

PHONETICS AND PHONOLOGY **Place of articulation**

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Place of articulation refers to the horizontal relationship between the articulators. It specifies the position of the highest point of the active articulator (usually some part of the tongue, but the lower lip may also be the active articulator) in relation to the passive articulator. The passive articulator involved typically gives its name to the place of articulation. The major places of articulation are shown in Table 2.1.

Let us mention here two that are not: retroflex and pharyngeal. A retroflex sound involves a particular shape of the tongue as well as a horizontal relationship between the articulators. The tongue tip is curled towards the back of the mouth. Such sounds may be heard in Indian English for 't' and 'd', clue to the influence of native languages of the Indian subcontinent, many of which have retroflex consonants. A pharyngeal sound involves moving the root of the tongue towards the back of the throat. i.e, the pharynx wall. Such sounds are common in many varieties of Arabic and Hebrew.

It is also possible for it speech sound to have two places or articulation simultaneously,known as 'dual articulations'. The articulations may be of equal importance, as in the initial labial-velar sound in 'wombat', involving as active articulators the lower lip and the back of the tongue. or one place may be 'added on' to another (primary) place. This latter situation is found, for example, in the palatalised stops of Slavic languages such as Polish or Russian, where a raising of the tongue body towards the hard palate accompanies the main place of articulation of the stop, as in Russian [bral) 'to take'.

| Place of articulation | Active articulator | Passive articulator | Example |
|-----------------------|---------------------|--|------------------------------|
| bilabial | lower lip | upper lip | bat |
| labiodental | lower lip | upper teeth | fish |
| dental | tongue tip or blade | upper teeth | mo <u>th</u> |
| alveolar | tongue tip or blade | alveolar ridge | dog |
| retroflex | curled tongue tip | area immediately behind alveolar ridge | Malayalam [kutti] 'child' |
| palato-alveolar (or | | | |
| alveo-palatal) | tongue blade | area immediately behind alveolar ridge | <u>sh</u> ark |
| palatal | tongue front | hard palate | yak |
| velar | tongue back | velum | goat |
| uvular | tongue back | uvula | Fr. rat 'rat' |
| pharyngeal | tongue root | pharynx wall | Ar. [Samm] 'uncle' |
| glottal | vocal cords | vocal cords | hare |

Table 2.1 The major places of articulation

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Speech sound classification

We now have a method of describing the articulation of any speech sound by specifying (1) The airstream mechanism. (2) The state of the vocal cords. (3) The position of the velum. (4) The place of articulation and (5) the manner of articulation. Thus, the first sound in 'pig' could be classified - using these five features - as a pulmonic egressive, Voiceless, oral and bilabial stop.

In fact, for consonants, it is more usual to use a three term classification, referring to voicing, place and manner. with airstream and velum only referred to when they are not pulmonic egressive and oral respectively; thus the 'p' sound in 'pig' is normally referred to as a voiceless bilabial stop. 'z' as in 'fez' is a voiced alveolar fricative.

For vowels, the classification is slightly different voicing is typically irrelevant, since in most languages, vowels are always voiced, and the vertical (manner for consonants) and horizontal (place for consonants) dimensions are more restricted. All vowels are produced with a stricture of open approximation, so manner as such is irrelevant: however different vowels do involve differences in the highesr point of the tongue: for the vowel sound in 'sit' the tongue is higher than for the vowel sound in 'sat'; we refer to 'high', 'mid' and '1ow' vowels. Horizontally, vowels are restricted to the palatal and velar regions; compare the vowels in 'fee' (made in the palatal area) and 'far' (made further back in the velar area); in this dimension we refer to vowels as 'front'. 'central' and 'back'. There is a further consideration for vowels, however, not usually relevanc for consonants: that of lip rounding. (Note that even though the upper lip is considered a passive articulator, it doe participate in lip rounding.) The vowel sound in 'see' involves no lip rounding, while the lips are rounded for the vowel sound in 'sue': you can check this by looking in a minor as you say these sounds. Thus the vowel sound in 'see' can be referred to as a high front unround vowel, that in 'sort'as a mid back round vowel.

Consonants vs. vowels

Syllable structure plays a role when we attempt to clarify a major distinction between speech-sound types that we have thus far simply been assuming: that between consonants and vowels. This is not as straightforward as it might at first appear; at first glance, the essential difference would seem to have to do with degree of stricture, i.e. the distance between the active and passive articulators. For consonants there is some kind of obstruction in the oral tract, whereas for vowels there is no such hindrance to the

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outflow of the air. Thus, stops (oral and nasal). Fricatives and liquids all involve a stricture of at least close approximation. Liquids and nasals might appear to be counterexamples to this claim, since the air flows out freely for these sound types. In each case, however, there is some obstruction in the oral tract; for nasals, complete closure (since they are stops). For liquids, there is some contact between articulators, but this does not extend across the full width of the oral tract - so. for the 'I' in "lion'. the middle of the tongue tip is in contact with the alveolar ridge, but the sides of the tongue are lowered, allowing free airflow.

The class of glides is a problem for this definition, however, since for them there is a Stricture of open approximation. For these sounds, the consonant/vowel distinction rests not so much with the phonetics as with the phonology. That is, it has to do with how the sounds function in the language, rather than with the details of their articulation. True vowels like the 'i. in 'pig' are syllabic: that is, they comprise the essential part of the syllable, known as the nucleus, and without which there would not be a syllable.Glides, on the other hand, behave like consonants in that tbey do not form the nuclei of syllables, but rather occur on the edges of syllables. That is, the main difference between the Yin 'yak' and the 'I' in 'pig' is not so much the articulation (which is much the same. though the 'y' may well be somewhat shorter), but the function of the two sounds. In 'pig' the segment represented by 'I' is the nucleus (or head) of its syllable; in 'yak' the segmenl represented by 'y' is not the nucleus (the 'a' is),but rather the onset. So we might say for English and many other languages that a vowel is a sound produced with open approximation and which is a syllable nucleus: this will exclude glides. which are not nuclei. and will also exclude syllabic liquids and nasals (as in the linal sounds of 'throstle' and 'mutton') since these are not produced with open approximation.

1.4.2 ACCOUSTIC PHONETICS

Speech sounds consist of small variations in air pressure that can be sensed by the ear. Like other sounds, speech sounds can be divided into two major classes—those that have periodic wave forms (*i.e.*, regular fluctuations in air pressure) and those that do not. The first class consists of all the voiced sounds, because the <u>vibrations</u> of the vocal cords produce regular pulses of air pressure.

From a listener's point of view, sounds may be said to vary in pitch, loudness, and quality. The pitch of a <u>sound</u> with a periodic wave form—*i.e.*, a voiced sound—is determined by its <u>fundamental frequency</u>, or rate of repetition of the cycles of air pressure. For a speaker with a <u>bass</u> voice, the fundamental

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frequency will probably be between 75 and 150 cycles per second. Cycles per second are also called hertz (Hz); this is the standard term for the unit in frequency measurements. A <u>soprano</u> may have a speaking voice in which the <u>vocal cords</u> vibrate to produce a fundamental frequency of over 400 hertz. The relative loudness of a voiced sound is largely dependent on the <u>amplitude</u> of the pulses of air pressure produced by the vibrating vocal cords. Pulses of air with a larger <u>amplitude</u> have a larger increase in <u>air pressure</u>.

The quality of a sound is determined by the smaller variations in air pressure that are superimposed on the major variations that recur at the fundamental frequency. These smaller variations in air pressure correspond to the overtones that occur above the fundamental frequency. Each time the vocal cords open and close there is a pulse of air from the <u>lungs</u>. These pulses act like sharp taps on the air in the vocal tract, which is accordingly set into vibration in a way that is determined by its size and shape. In a vowel sound, the air in the vocal tract vibrates at three or four frequencies simultaneously. These frequencies are the resonant frequencies of that particular vocal tract shape. Irrespective of the fundamental frequency that is determined by the rate of vibration of the vocal cords, the air in the vocal organs remains the same. In this way a vowel has its own characteristic auditory quality, which is the result of the specific variations in air pressure caused by the superimposing of the vocal tract shape on the fundamental frequency produced by the vocal cords.

1.5. DIFFERENCE BETWEEN PONETICS AND PHONOLOGY

As the names suggest, *phon*etics and *phon*ology have a shared interest: speech sounds (*phone* from Ancient Greek $\varphi \omega v \dot{\eta}$, means 'sound, voice'). The fields differ in the aspects of speech sounds that are in the focus of research (although the distinction between the fields is not always clear). **Phonetics**, the scientific study of speech, concerns the physical aspects of speech and communication. It is divided into three main branches: **Articulatory phonetics** studies the speech organs and mechanisms of speech production. **Acoustic phonetics** studies the physical properties of speech sounds. **Perceptual** (or, **auditory**) **phonetics** studies the processing and interpretation of speech sounds by the ears and the brain

Phonology is a branch of linguistics dealing with the relations among speech sounds in particular languages and in languages generally. Certain approaches to phonology are concerned with the cognitive aspects of speech sounds, namely the mental representation of speech sounds (in the "mind" of the

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speaker) and the rules governing the interactions among them. In other words, phonology is a theory of grammar in the descriptivistic sense – it is the set of linguistic rules concerning speech sounds that speakers acquire spontaneously and use intuitively (and subconsciously).

Superficially, phonetics and phonology are differentiated by research methods. Studying the articulation of speech sounds is relevant mainly to phoneticians, while analyzing sound patterns in written records is a typical practice in phonology. However, the two fields are not really separable. For example, phoneticians are interested in the innate physiological components underlying the production and perception of speech, which are shared by all humans. However, articulation and perception are also affected by linguistic experience. In other words, the phonology of a given language affects, to some extent, the way speakers of that language produce and perceive speech. In the opposite direction, phonological processes and historical sound changes are typically studied by theoretical phonologists. Yet, these changes often have an articulatory or perceptual basis. Although it is more convenient to discuss phonetics and phonology separately, I emphasize the link between them, whenever possible.

1.6. IMPORTANCE IN LINGUISTICS, LANGUAGE LEARNING AND SPEECH THERAPY

Phonetics, the scientific study of speech sounds, is a foundational field in the study of human language. It concerns how sounds are produced (articulatory phonetics), how they travel through the air (acoustic phonetics), and how they are perceived by the human ear (auditory phonetics). Though phonetics is often viewed as a technical subfield, its applications extend far beyond academia. It plays a critical role in linguistics, language acquisition, language teaching, and speech therapy.Let us explores the importance of phonetics across these domains, illustrating how it enhances understanding, communication, and intervention in language-related fields.

Phonetics in Linguistics

In linguistics, phonetics is crucial for understanding the structure and function of spoken language. It provides the tools to describe and compare the sounds of the world's languages with precision and consistency.

PHONETICS AND PHONOLOGY **Descriptive and Comparative Linguistics**

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Phonetics allows linguists to document and analyze the sound systems of languages in an objective and replicable manner. Using the International Phonetic Alphabet (IPA), researchers can transcribe the speech of native speakers, preserving endangered languages or dialects and comparing them cross-linguistically. For example, the retroflex sounds in Dravidian and Indo-Aryan languages can be clearly represented and compared using phonetic notation.

Phonetics and Phonology

Phonetics provides the empirical basis for phonology, the study of how sounds function within a language. While phonology deals with abstract systems of rules and contrasts (e.g., phonemes), phonetics gives phonologists the data they need by describing the actual sounds. A clear understanding of phonetic distinctions helps identify allophones, minimal pairs, and phonemic inventories across languages.

Language Evolution and Historical Linguistics

In historical linguistics, phonetics helps trace sound changes over time. Understanding articulatory and acoustic properties can explain why certain sound shifts are more likely to occur (e.g., assimilation, lenition, or vowel shifts). Phonetics thus contributes to reconstructing proto-languages and understanding language change mechanisms.

Phonetics in Language Learning and Teaching

Phonetics is indispensable in both first and second language acquisition, particularly when it comes to pronunciation, listening skills, and intelligibility.

Pronunciation Training

For second language (L2) learners, mastering pronunciation is one of the most challenging tasks. Native language influence often interferes with accurate production of L2 sounds. For example, Indian learners

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may struggle with English sounds like θ and δ or distinguishing vowel pairs like /1/ and /i:/. Phonetic training helps learners:

- Become aware of the differences between their native language and the target language
- Understand place and manner of articulation
- Learn to correct fossilized pronunciation errors

Using IPA, learners can visualize how a sound is formed, rather than relying on inconsistent spelling or imitation.

Listening and Speaking Skills

Phonetics improves listening comprehension by training learners to recognize subtle sound distinctions that may not exist in their native language. It also fosters better speaking skills by emphasizing rhythm, stress, and intonation patterns. These prosodic features are crucial for conveying meaning in natural conversation.

Language Teaching Methodology

For teachers, phonetics is a powerful diagnostic tool. Teachers trained in phonetics can more accurately identify a student's pronunciation issues and provide targeted feedback. They can also model correct articulation and guide learners using technical terminology. In multilingual contexts like India, where English is a second language, phonetics-based teaching can help bridge pronunciation gaps caused by mother tongue interference.

Phonetics in Speech Therapy and Clinical Linguistics

In the realm of speech-language pathology, phonetics is foundational to diagnosing and treating speech disorders. Accurate phonetic transcription and analysis help clinicians develop effective intervention strategies.

Speech Sound Disorders

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Children and adults may exhibit articulation disorders such as lisps, substitutions (e.g., saying /w/ for /r/), or omissions. Phonetic analysis allows therapists to:

- Identify the specific nature of the error
- Determine whether it is developmental or atypical
- Create treatment plans tailored to the patient's needs

For instance, knowing whether a client substitutes a voiced for a voiceless sound (e.g., /b/ for /p/) can inform exercises to improve voicing control.

Stuttering, Apraxia, and Dysarthria

In motor speech disorders such as apraxia and dysarthria, phonetics helps document difficulties in planning or executing speech movements. Therapists analyze patterns of misarticulation, inconsistency, or abnormal rhythm to target underlying neuromuscular deficits. Phonetic transcription can also track progress over time and adjust therapy goals accordingly.

Voice and Resonance Disorders

Phonetic training assists in treating disorders related to pitch, loudness, and quality of voice. By understanding articulatory and acoustic principles, speech therapists can guide clients toward healthier vocal habits. In resonance disorders (e.g., hypernasality), phonetics helps isolate the affected sounds and structures.

Applications in Technology and Forensic Linguistics

Phonetics also finds relevance in technological and legal domains. In speech synthesis and recognition technologies (e.g., Siri, Google Assistant), phonetic knowledge informs how systems interpret and produce speech naturally. In forensic linguistics, phonetic analysis of voice recordings helps identify speakers or detect deception, playing a role in criminal investigations and legal proceedings.

Thus, Phonetics is more than a theoretical field—it's a practical, interdisciplinary tool that enhances our understanding and use of language. In linguistics, it forms the backbone of descriptive and historical

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analysis. In language learning and teaching, it improves pronunciation, listening, and speaking outcomes. In speech therapy, it guides diagnosis and treatment of speech disorders. Even beyond these fields, phonetics informs technology, artificial intelligence, and forensic analysis.

In a multilingual country like India, where English functions as a second language for millions and pronunciation often diverges from native norms, phonetics becomes especially relevant. It empowers educators, learners, and clinicians to understand how sounds function and how they can be improved or corrected.

Ultimately, phonetics is essential for anyone interested in how we produce, perceive, and perfect spoken language—making it a cornerstone of human communication.

1.7. SPEECH PRODUCTION MECHANISM

Speech Mechanism (Air- Stream):

Human beings use specific body mechanisms to produce the speech sound. The air- stream is the basis of speech sounds. In speech mechanism, we use our breath to produce various speech sounds. The air that we breathe out is used to modify into speech sounds. It is called 'egressive' and when the air stream which is taken in as breath is used to produce speech sounds is called 'ingressive'.

There are two types of air –stream mechanism. One is Pulmonic egressive and the other is Pulmonic ingressive. Majority of the languages make use of pulmonic egressive air- stream mechanism while a few languages use pulmonic ingressive air – stream mechanism. For instance, for the articulation of English speech sounds, we use pulmonic egressive air – stream mechanism. The actions of our speech organs play a very important role to produce different sounds.

Production of Speech Sounds:

Phonetics is the study of speech sounds. When we produce speech sounds we use the Speech Mechanism which includes certain organs of the body such as the muscles of the chest, vocal cords, lips, teeth, tongue, palates etc as seen in the following tree diagram. The movement of these organs causes some disturbance which passes or goes to the ear of the listener in the form of sound waves. The listener then interprets them/sound waves as sounds.

1.8. CONSONANTS AND VOWELS

What makes one consonant different from another?

Producing a consonant involves making the vocal tract narrower at some location than it usually is. We call this narrowing a **constriction**. Which consonant you're pronouncing depends on where in the vocal tract the constriction is and how narrow it is. It also depends on a few other things, such as whether the vocal folds are vibrating and whether air is flowing through the nose.

We classify consonants along three major dimensions:

- place of articulation
- manner of articulation
- voicing

The **place of articulation** dimension specifies where in the vocal tract the constriction is. The **voicing** parameter specifies whether the vocal folds are vibrating. The **manner of articulation** dimesion is essentially everything else: how narrow the constriction is, whether air is flowing through the nose, and whether the tongue is dropped down on one side.

For example, for the sound [d]:

- Place of articulation = alveolar. (The narrowing of the vocal tract involves the tongue tip and the alveolar ridge.)
- Manner of articulation = oral stop. (The narrowing is complete -- the tongue is completely blocking off airflow through the mouth. There is also no airflow through the nose.)
- Voicing = voiced. (The vocal folds are vibrating.)

Voicing

The vocal folds may be held against each other at just the right tension so that the air flowing past them from the lungs will cause them to vibrate against each other. We call this process **voicing**. Sounds which

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are made with vocal fold vibration are said to be **voiced**. Sounds made without vocal fold vibration are said to be **voiceless**.

There are several pairs of sounds in English which differ only in voicing -- that is, the two sounds have identical places and manners of articulation, but one has vocal fold vibration and the other doesn't. The $[\theta]$ of *thigh* and the $[\delta]$ of *thy* are one such pair. The others are:

voiceless voiced

| [p] | [b] |
|------|------|
| [t] | [d] |
| [k] | [g] |
| [f] | [v] |
| [θ] | [ð] |
| [s] | [z] |
| ប្រ | [3] |
| [tʃ] | [dʒ] |

The other sounds of English do not come in voiced/voiceless pairs. [h] is voicess, and has no voiced counterpart. The other English consonants are all voiced: [1], [1], [w], [j], [m], [n], and [ŋ]. This does not mean that it is physically impossible to say a sound that is exactly like, for example, an [n] except without vocal fold vibration. It is simply that English has chosen not to use such sounds in its set of distinctive sounds. (It is possible even in English for one of these sounds to become voiceless under the influence of its neighbours, but this will never change the meaning of the word.)

Manner of Articulation

Stops

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A stop consonant completely cuts off the airflow through the mouth. In the consonants [t], [d], and [n], the tongue tip touches the alveolar ridge and cuts off the airflow at that point. In [t] and [d], this means that there is no airflow at all for the duration of the stop. In [n], there is no airflow through the mouth, but there is still airflow through the nose. We distinguish between

- nasal stops, like [n], which involve airflow through the nose, and
- oral stops, like [t] and [d], which do not.

Nasal stops are often simply called **nasals**. Oral stops are often called **plosives**. Oral stops can be either voiced or voiceless. Nasal stops are almost always voiced. (It is physically possible to produce a voiceless nasal stop, but English, like most languages, does not use such sounds.)

Fricatives

In the stop [t], the tongue tip touches the alveolar ridge and cuts off the airflow. In [s], the tongue tip approaches the alveolar ridge but doesn't quite touch it. There is still enough of an opening for airflow to continue, but the opening is narrow enough that it causes the escaping air to become turbulent (hence the hissing sound of the [s]). In a **fricative** consonant, the articulators involved in the constriction approach get close enough to each other to create a turbluent airstream. The fricatives of English are [f], [v], [θ], [δ], [s], [z], [f], and [3].

Approximants

In an approximant, the articulators involved in the constriction are further apart still than they are for a fricative. The articulators are still closer to each other than when the vocal tract is in its neutral position, but they are not even close enough to cause the air passing between them to become turbulent. The approximants of English are [w], [j], [1], and [l].

Affricates

An affricate is a single sound composed of a stop portion and a fricative portion. In English [tʃ], the airflow is first interuppted by a stop which is very similar to [t] (though made a bit further back). But instead of finishing the articulation quickly and moving directly into the next sound, the tongue pulls

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away from the stop slowly, so that there is a period of time immediately after the stop where the constriction is narrow enough to cause a turbulent airstream. In [tf], the period of turbulent airstream following the stop portion is the same as the fricative [f]. English $[d_3]$ is an affricate like [tf], but voiced.

Laterals

Pay attention to what you are doing with your tongue when you say the first consonant of [lif] *leaf*. Your tongue tip is touching your alveolar ridge (or perhaps your upper teeth), but this doesn't make [l] a stop. Air is still flowing during an [l] because the side of your tongue has dropped down and left an opening. (Some people drop down the right side of their tongue during an [l]; others drop down the left; a few drop down both sides.) Sounds which involve airflow around the side of the tongue are called **laterals**. Sounds which are not lateral are called **central**.

[1] is the only lateral in English. The other sounds of Englihs, like most of the sounds of the world's languages, are central.

More specifically, [1] is a lateral approximant. The opening left at the side of the tongue is wide enough that the air flowing through does not become turbulent.

Places of Articulation

The place of articulation (or POA) of a consonant specifies where in the vocal tract the narrowing occurs. From front to back, the POAs that English uses are:

Bilabial

In a bilabial consonant, the lower and upper lips approach or touch each other. English [p], [b], and [m] are bilabial stops.

The diagram to the right shows the state of the vocal tract during a typical [p] or [b]. (An [m] would look the same, but with the velum lowered to let out through the nasal passages.)



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The sound [w] involves two constrictions of the vocal tract made simultaneously. One of them is lip rounding, which you can think of as a bilabial approximant.

Labiodental

In a labiodental consonant, the lower lip approaches or touches the upper (teeth. English [f] and [v] are bilabial fricatives.

The diagram to the right shows the state of the vocal tract during a typical [f] or [v].

Dental

In a dental consonant, the tip or blade of the tongue approaches or touches the upper teeth. English $[\theta]$ and $[\delta]$ are dental fricatives. There are actually a couple of different ways of forming these sounds:

- The tongue tip can approach the back of the upper teeth, but not press against them so hard that the airflow is completely blocked.
- The blade of the tongue can touch the bottom of the upper teeth, with the tongue tip protruding between the teeth -- still leaving enough space for a turbulent airstream to escape. This kind of [θ] and [ð] is often called **interdental**.

The diagram to the right shows a typical interdental $[\theta]$ or $[\delta]$.

Alveolar

In an alveolar consonant, the tongue tip (or less often the tongue blade) approaches or touches the alveolar ridge, the ridge immediately behind the upper teeth. The English stops [t], [d], and [n] are formed by completely blocking the airflow at this place of articulation. The fricatives [s] and [z] are also at this place of articulation, as is the lateral approximant [l].





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The diagram to the right shows the state of the vocal tract during plosive [t] or [d].

Postalveolar

In a postalveolar consonant, the constriction is made immediately behind the alveolar ridge. The constriction can be made with either the tip or the blade of the tongue. The English fricatives [f] and [3] are made at this POA, as are the corresponding affricates [tf] and $[d_3]$.

The diagram to the right shows the state of the vocal tract during the first half (the stop half) of an affricate $[t_j]$ or $[d_3]$.

Retroflex

In a retroflex consonant, the tongue tip is curled backward in the mouth. English [1] is a retroflex approximant -- the tongue tip is curled up toward the postalveolar region (the area immediately behind the alveolar ridge).

The diagram to the right shows a typical English retroflex [1].

Both the sounds we've called "postalveolar" and the sounds we've called

"retroflex" involve the region behind the alveolar ridge. In fact, at least for English, you can think of retroflexes as being a sub-type of postalveolars, specifically, the type of postalveolars that you make by curling your tongue tip backward.

(In fact, the retroflexes and other postalveolars sound so similar that you can usually use either one in English without any noticeable effect on your accent. A substantial minority North American English speakers don't use a retroflex [1], but rather a "bunched" R -- sort of like a tongue-blade [3] with an even wider opening. Similarly, a few people use a curled-up tongue tip rather than their tongue blades in making [f] and [3].)

Palatal





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In a palatal consonant, the body of the tongue approaches or touches the hard palate. English [j] is a palatal approximant -- the tongue body approaches the hard palate, but closely enough to create turbulence in the airstream.

Velar

In a velar consonant, the body of the tongue approaches or touches the soft palate, or velum. English [k], [g], and $[\eta]$ are stops made at this POA. The [x] sound made at the end of the German name *Bach* or the Scottish word *loch* is the voiceless fricative made at the velar POA.



The diagram to the right shows a typical [k] or [g] -- though where exactly on the velum the tongue body hits will vary a lot depending on the surrounding vowels.

As we have seen, one of the two constrictions that form a [w] is a bilabial approximant. The other is a velar approximant: the tongue body approaches the soft palate, but does not get even as close as it does in an [x].

Glottal

The glottis is the opening between the vocal folds. In an [h], this opening is narrow enough to create some turbulence in the airstream flowing past the vocal folds. For this reason, [h] is often classified as a glottal fricative.

1.8.1. Classification of of English consonants

| [p] | voiceles | s bilabial | plosive |
|-----|----------|------------|---------|
| [b] | voiced | bilabial | plosive |
| [t] | voiceles | s alveolar | plosive |

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|-------------------------|------|-----------|----------------|---------------------|--|--|--|--|
| | [d] | voiced | alveolar | plosive | | | | |
| | [k] | voiceless | velar | plosive | | | | |
| | [g] | voiced | velar | plosive | | | | |
| | [tʃ] | voiceless | postalveolar | affricate | | | | |
| | [dʒ] | voiced | postalveolar | affricate | | | | |
| | [m] | voiced | bilabial | nasal | | | | |
| | [n] | voiced | alveolar | nasal | | | | |
| | [ŋ] | voiced | velar | nasal | | | | |
| | [f] | voiceless | labiodental | fricative | | | | |
| | [v] | voiced | labiodental | fricative | | | | |
| | [θ] | voiceless | dental | fricative | | | | |
| | [ð] | voiced | dental | fricative | | | | |
| | [s] | voiceless | alveolar | fricative | | | | |
| | [z] | voiced | alveolar | fricative | | | | |
| | ແ | voiceless | postalveolar | fricative | | | | |
| | [3] | voiced | postalveolar | fricative | | | | |
| | [L] | voiced | retroflex | approximant | | | | |
| | [j] | voiced | palatal | approximant | | | | |
| | [w] | voiced | labial + velar | approximant | | | | |
| | [I] | voiced | alveolar | lateral approximant | | | | |

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[h] voiceless glottal fricative

Consonant charts

It is often useful to display the consonants of a language in the form of a chart. There is a conventional way of doing so:

- Columns show places of articulation, arranged (roughly) from the front of the vocal tract to the back.
- Rows show manners of articulation.
- Within each cell, the symbol for a voiceless sound is shown toward the left of the cell and the symbol for a voiced sound toward the right.

The following is the chart for English consonants:

| | bila | abial | labic | denta | lde | ntal | alve | eolar | posta | lveola | retroflex | palatal | velar | glottal |
|---------------------|------|-------|-------|-------|-----|------|------|-------|-------|--------|-----------|---------|-------|---------|
| plosive | р | b | | | | | t | d | | | | | k g | |
| nasal | | m | | | | | | n | | | | | ŋ | |
| fricative | | | f | v | θ | ð | s | z | ſ | 3 | | | | h |
| approximant | | (w) | | | | | | | | | L | j | (w) | |
| lateral approximant | | | | | | | | 1 | | | | | | |
| affricate | | | | | | | | | t∫ | dʒ | | | | |

1.8.2. CLASSIFICATION OF VOWELS

- Vowels are normally made with the air stream that meets no obstruction in the mouth, pharyngeal and nasal cavities.
- On the articulatory level the description of vowels notes changes:

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- 1. in the stability of articulation
- 2. in the tongue position
- 3. in the lip position
- 4. in their length

The stability of articulation

All English vowels are divided into 3 groups: monophthongs, diphthongs, diphthongoids.

Monophthongs are vowels the articulation of which is almost unchanging.

They are - [i e \acute{a} a: o o: U Λ ə: ə].

In the pronunciation of **diphthongs** the organs of speech glide from one vowel position to another within one syllable. The starting point, the nucleus, is strong and distinct.

They are – [ei ai oi au əu iə ɛə uə]

In the pronunciation of **diphthongoids** the articulation is slightly changing but the difference between the starting point and the end is not so distinct as it is in the case of **diphthongs**.

They are – **[i: u:]**

Tongue Position

The tongue may move forward, backward, up, down, thus changing the quality of vowels.

1. When the tongue is in the front part of the mouth and the front part of the tongue is raised to the hard palate *a front vowel* is pronounced.

They are – [i: e **á**]

2. When the tongue is in the front part of the mouth but slightly retracted and the part of the tongue nearer to the centre than to front is raised, a *front-retracted* vowel is pronounced.

It is – **[i].**

PHONETICS AND PHONOLOGY BAEL (N)-221 **3** When the front of the tongue is raised towards the back part of the hard palate the vowel is called the back part of the back part of

3. When the front of the tongue is raised towards the back part of the hard palate the vowel is called *central*.

They are $- [\Lambda \mathfrak{d}: \mathfrak{d}].$

4. When the tongue is in the back part of the mouth and the back of it is raised towards the soft palate **a** *back* **vowel** is pronounced.

They are – [**a: o o:** u:].

5. When the tongue is in the back part of the mouth but is slightly advanced and the central part of it is raised towards the front part of the soft palate **a** *back-advanced* vowel is pronounced.

It is – [**U**].

Moving **up and down** in the mouth the tongue may be raised to different height towards the roof of the mouth.

1. When the front or the back of the tongue is raised high towards the palate the vowel is called *close*.

They are – [**i: I u u:**].

2. When the front or the back of the tongue is as low as possible in the mouth *open* vowels are pronounced.

They are – [**á a**: **o o**:].

3. When the highest part of the tongue occupies the position intermediate between the close and the open one *mid* vowels are pronounced.

They are $- [e \Lambda \mathfrak{d}: \mathfrak{d}].$

Lip Position

When the lips are neutral or spread the vowels are called *unrounded*.

They are - [i: i e $\mathbf{\acute{e}}$ a: Λ ə: ə].
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When the lips are drawn together so that the opening between them is more or less round the vowel is called *rounded*.

They are – **[o o: u u:].**

Vowel Length

All English vowels are divided into *long* and *short* vowels.

Long vowels are – [i: a: o: u: ə:]

Short vowels are $-[i e o u \Lambda a]$

1.8.3. INTRODUCTION TO IPA SYMBOLS FOR CONSONANTS AND VOWELS

The **International Phonetic Alphabet (IPA)** is a standardized system of symbols used to represent the sounds of spoken language. It was developed by the International Phonetic Association in the late 19th century to provide a consistent, accurate, and universal method for transcribing the sounds of all human languages. Unlike traditional spelling systems, which are often inconsistent or misleading, the IPA offers a **one-to-one correspondence** between a symbol and a sound.

Understanding the IPA is essential for anyone involved in **linguistics**, **language teaching**, **language learning**, or **speech therapy**, as it enables clear and precise communication about pronunciation, phonetic patterns, and sound contrasts.

Why Learn IPA Symbols?

IPA symbols allow linguists and learners to:

- Represent sounds independently of spelling systems
- Accurately transcribe speech from any language
- Identify pronunciation differences between dialects or accents

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- Facilitate better pronunciation in language learning
- Diagnose and treat **speech disorders**

For example, English words like *through*, *though*, and *tough* have very different pronunciations despite similar spellings. IPA can clarify this:

- $through \rightarrow /\theta ru:/$
- $though \rightarrow /\delta o v /$
- $tough \rightarrow /t_{\Lambda}f/$
- 3. Consonants in the IPA

Consonants are speech sounds produced with **some degree of closure or obstruction** in the vocal tract. IPA classifies consonants based on three main features:

- **Voicing**: whether the vocal cords vibrate (/b/ is voiced, /p/ is voiceless)
- Place of articulation: where in the mouth the sound is produced (e.g., bilabial, alveolar)
- Manner of articulation: how the airstream is modified (e.g., stop, fricative, nasal)

Here's a simplified overview of commonly used **IPA consonant symbols**:

| IPA Symbol Sound | | Example Word | Description |
|------------------|-------------------|-------------------------|-------------|
| /p/ | "p" in <i>pen</i> | voiceless bilabial stop | |
| /b/ | "b" in <i>bat</i> | voiced bilabial stop | |
| /t/ | "t" in <i>top</i> | voiceless alveolar stop | |
| /d/ | "d" in <i>dog</i> | voiced alveolar stop | |
| /k/ | "k" in <i>cat</i> | voiceless velar stop | |
| /g/ | "g" in <i>go</i> | voiced velar stop | |

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| IPA Symbol | Sound | Example Word | Description |
|--------------|-----------------------|----------------------------------|-------------|
| /f/ | "f" in <i>fun</i> | voiceless labiodental fricative | |
| /v/ | "v" in <i>van</i> | voiced labiodental fricative | |
| /0/ | "th" in <i>think</i> | voiceless dental fricative | |
| /ð/ | "th" in <i>this</i> | voiced dental fricative | |
| /s/ | "s" in <i>see</i> | voiceless alveolar fricative | |
| / z / | "z" in <i>zoo</i> | voiced alveolar fricative | |
| /ʃ/ | "sh" in <i>ship</i> | voiceless postalveolar fricative | |
| /3/ | "s" in <i>measure</i> | e voiced postalveolar fricative | |
| /h/ | "h" in <i>hat</i> | voiceless glottal fricative | |
| /tʃ/ | "ch" in <i>chair</i> | voiceless affricate | |
| /dʒ/ | "j" in <i>jam</i> | voiced affricate | |
| /m/ | "m" in <i>man</i> | bilabial nasal | |
| /n/ | "n" in <i>no</i> | alveolar nasal | |
| /ŋ/ | "ng" in <i>sing</i> | velar nasal | |
| /1/ | "l" in <i>love</i> | lateral approximant | |
| /r/ or /1/ | "r" in <i>red</i> | alveolar approximant (English) |) |
| /j/ | "y" in <i>yes</i> | palatal approximant | |
| /w/ | "w" in <i>win</i> | labiovelar approximant | |

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Additional symbols are used for **retroflex**, **uvular**, and **glottal** consonants found in non-English languages like Hindi, Tamil, or Arabic.

Vowels in the IPA

Vowels are produced with an **open vocal tract**, and their quality depends on the shape and position of the tongue and lips. IPA categorizes vowels using:

- **Height** (high, mid, low)
- **Backness** (front, central, back)
- Lip rounding (rounded or unrounded)

Here is a simplified chart of English vowel sounds with IPA:

| IPA Symbol | Sound | Example Word | Description |
|------------|------------------------|----------------------------|-------------|
| /i:/ | "ee" in see | high front unrounded vowel | |
| /I/ | "i" in <i>bit</i> | near-high front unrounded | |
| /e/ | "e" in <i>bed</i> | mid front unrounded | |
| /æ/ | "a" in <i>cat</i> | low front unrounded | |
| /Λ/ | "u" in <i>cup</i> | mid central unrounded | |
| /ə/ | "a" in <i>sofa</i> | mid central (schwa) | |
| /u:/ | "oo" in goose | high back rounded | |
| /υ/ | "u" in <i>foot</i> | near-high back rounded | |
| /ɔ:/ | "aw" in though | t mid back rounded | |
| /a:/ | "a" in <i>father</i> | low back unrounded | |
| /ɒ/ | "o" in <i>lot</i> (UK) | low back rounded | |

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Description

| IPA Symbol | Sound | Example Word |
|------------|-----------------------|-------------------|
| /eɪ/ | "ay" in <i>say</i> | diphthong (e + 1) |
| /aɪ/ | "i" in <i>high</i> | diphthong |
| /əʊ/ | "o" in <i>go</i> (UK) | diphthong |
| /au/ | "ow" in <i>now</i> | diphthong |

Note that English contains **diphthongs**—combinations of two vowel sounds in a single syllable—and **r**-colored vowels (e.g., /3/ in American English *bird*).

How to Read an IPA Chart

The full **IPA chart** organizes sounds by articulatory properties. Consonants are displayed in a grid showing **place of articulation** (columns) and **manner of articulation** (rows). Voiceless and voiced pairs are placed side by side.

The **vowel chart** is arranged roughly in the shape of a mouth, representing the position of the tongue. Front vowels are on the left, back vowels on the right; high vowels are at the top, low vowels at the bottom.

Familiarity with this chart helps students quickly locate and understand how different sounds are formed.

Let's transcribe "bad" and break it down:

- IPA: /bæd/
- /b/: voiced bilabial stop
- /æ/: low front unrounded vowel (as in *cat*)
- /d/: voiced alveolar stop

Reading this tells you exactly how to pronounce "bad" regardless of spelling!

1.9. SUMMING UP

Hence, Phonetics, as the scientific study of human speech sounds, plays a foundational role in the fields of linguistics, language acquisition, communication, and speech sciences. Through its systematic examination of how sounds are produced (articulatory phonetics), transmitted (acoustic phonetics), and perceived (auditory phonetics), it provides a deep and objective understanding of spoken language that transcends the limitations of conventional writing systems.

This introductory exploration of phonetics reveals that speech is far more complex than it may initially appear. Each sound we produce is a finely coordinated action involving various parts of the vocal tract, and phonetics equips us with the tools and terminology to analyze and describe these processes accurately. The International Phonetic Alphabet (IPA), in particular, serves as a universal framework that enables linguists, teachers, and learners to transcribe and study the sounds of any language with precision and clarity.

Beyond its academic value, phonetics has practical implications across a wide range of disciplines. In language teaching, it supports clearer pronunciation and comprehension. In speech therapy, it helps diagnose and treat disorders of articulation and phonation. In forensic linguistics and language documentation, phonetic tools assist in identifying speakers and preserving endangered languages. Even in technology—such as voice recognition systems and AI—phonetics plays a crucial role.

In conclusion, an understanding of phonetics is indispensable not only for linguists but also for educators, therapists, performers, and technologists. It allows us to appreciate the subtle nuances of spoken language, navigate multilingual environments with greater ease, and engage more meaningfully with the sounds that shape human expression. As such, phonetics serves not just as a branch of linguistic study, but as a bridge between science, language, and society.

1.10. TERMINAL AND MODEL QUESTIONS

Section A: Basic Comprehension Questions

1. Define phonetics. How is it different from phonology?

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- 2. What are the three main branches of phonetics? Briefly describe each.
- 3. What is the role of the articulatory system in speech production?
- 4. Name and describe three major places of articulation in the human vocal tract.
- 5. Explain the difference between voiced and voiceless sounds with examples.
- 6. What is the International Phonetic Alphabet (IPA)? Why is it important in phonetics?
- 7. What are the main features used to classify vowel sounds?
- 8. How do diphthongs differ from monophthongs? Give two examples.
- 9. What is the difference between a stop consonant and a fricative consonant?
- 10. Give an example of how phonetics can be used in speech therapy or language teaching.

Section B: Application & Analysis Questions

- 1. Transcribe the following words using IPA: "ship," "dog," and "book."
- 2. How can phonetic knowledge improve pronunciation in second language learners?
- 3. Why is acoustic phonetics important in fields like forensic science and AI?
- **4.** Choose a sound in your native language and describe it using phonetic terms (voicing, place, and manner).
- 5. How does auditory phonetics help in understanding speech perception?

Section C: Discussion/Essay Prompts

- 1. Discuss the significance of learning phonetics for language learners and educators.
- 2. In what ways is phonetics relevant beyond linguistics? Provide real-world examples.
- 3. How does phonetics contribute to the preservation of endangered languages?
- **4.** Compare the phonetic systems of English and any Indian language you know. What are the major differences?

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Hence, Phonetics, as the scientific study of human speech sounds, plays a foundational role in the fields

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UNIT 2

SPEECH ORGANS OR VOCAL ORGANS IN PHONETICS

- 2.1. Introduction
- 2.2. Objectives
- 2.3. Organs of Speech
- 2.4 Respiratory system
- 2.5. Phonetary System
- 2.6. Articulatory system
- 2.7. Articulators
 - 2.7.1. Active Articulators
 - 2.7.2. Passive Articulators
- 2.8. Glossary of Important Terms
- 2.9. Summing Up
- 2.10. Terminal and Model Questions
- 2.11. Bibliography and References

2.1 INTRODUCTION

In phonetics, the study of speech sounds begins with understanding the physical structures involved in sound production—collectively known as the **speech organs** or **vocal organs**. These are the anatomical parts of the human body responsible for creating the sounds of spoken language. Speech is produced when air flows from the lungs and is shaped by various articulators—such as the tongue, lips, teeth, palate, and vocal cords—into specific sounds that carry meaning.

Speech organs are typically categorized into **active** and **passive** articulators. Active articulators are those that move, such as the tongue and lips, while passive articulators remain stationary, such as the teeth and hard palate. The coordination of these organs allows for the vast array of sounds found across the world's languages. Each speech organ plays a distinct role in shaping airflow and modifying sound to produce consonants, vowels, and other phonetic features.

Studying the speech organs is fundamental not only for linguists and language teachers but also for speech therapists, singers, actors, and anyone involved in oral communication. Understanding how the human body produces sound provides the foundation for analyzing speech patterns, diagnosing speech disorders, and teaching accurate pronunciation.

2.2 OBJECTIVES

By the end of this UNIT, students will be able to:

- Identify and name the major speech organs involved in phonetic articulation.
- Distinguish between active and passive articulators and describe their functions.
- Explain the role of individual speech organs in producing specific types of sounds (e.g., stops, nasals, fricatives).
- Apply this knowledge to understand phonetic transcriptions and sound classifications.
- Recognize the relevance of speech organs in language learning, speech therapy, and linguistic analysis.

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2.3. ORGANS OF SPEECH

Phonetics is the study of speech sounds. When we produce speech sounds we use the Speech Mechanism which includes certain organs of the body such as the muscles of the chest, vocal cords, lips, teeth, tongue, palates etc as seen in the following tree diagram. The movement of these organs causes some disturbance which passes or goes to the ear of the listener in the form of sound waves. The listener then interprets them/sound waves as sounds.



The parts/organs of the human body which are directly involved in the production of speech are usually called /termed as the organs of speech. When we speak, air comes out through the lungs and it is interfered at various places for the production of sounds. Sounds cannot be produced without air. The following diagram shows the main organs of speech.

The organs of speech are classified into: Active articulators and passive articulators. They have primary functions such as breathing, chewing, tasting, smelling, swallowing etc. but speech is their secondary but important function.

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They can be studied under three systems:

- 1) Respiratory System
- 2) Phonatory System
- 3) Articulatory System.

2.4. RESPIRATORY SYSTEM

This system consists of the lungs, muscles of the chest and wind-pipe or trachea. Of these organs lungs play an important role in this system. The primary function of the lungs as we all know is to enable to breathe or respire. The air- stream expelled from the lungs provides the source of energy for our vocal activity. The basic function of lungs and windpipe in speech is the supply of air- stream as energy.

2.5. PHONETARY SYSTEM

This system deals with the organs like the larynx, the glottis and the vocal cords.

The Larynx:

The upper part of the wind pipe or trachea is called as Larynx.It is situated at the top of the wind pipe. It is commonly known as "Adam's Apple". The air-stream that pushed out of the lungs through the wind pipe enters the larynx. Inside the larynx, from back to front, are the vocal cords. The vocal cords are like

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a pair of lips operating like valves. The opening of the vocal cords can bring about a number of different states of the glottis by their action. Let us have a look at four states of the glottis:

- i) Open glottis (breath/ voiceless state)
- ii) Glottis in vibration (voice state)
- iii) Closed glottis (a state in which a glottal stop is produced)
- iv) Narrowed glottis (whisper state)



FIGURE OF VOCAL CORDS

Open glottis:

When we say that the glottis is open, we mean that the vocal cords are drawn wide apart so that an air – stream can pass through them quite freely. This is the state of the glottis for normal breathing. The sounds produced in this state are called voiceless or breathed. For e.g. / p, t, k, f, θ , S, \int , t \int , h / are voiceless sounds.

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II Glottis in vibration:

By glottis in vibration, we mean that the vocal cords are brought into contact, and blown apart by the force of the pulmonic air – stream flowing through the glottis. At this time the vocal cords vibrate. This vibration of the vocal cords produces voiced sounds. For

e.g. / b, d, g, m, n, η v, ð z, ζ , d ζ , l, r, j, w / are voiced sounds.



III Closed glottis:

The glottis is entirely closed means that the vocal cords are brought together with sufficient firmness to prevent stop the air-stream from forcing them apart. The glottis takes this position for coughs, hiccups.

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IV Narrowed glottis:

When the glottis is narrowed, we mean that the vocal cords brought close together, but not so close that they are set into vibration. This state of glottis produces a soft hissing sound called a whisper.

2.6. ARTICULATORY SYSTEM

This system deals with the articulators such as pharynx, the lips, the teeth, the tongue, the palate (Roof of the Mouth) and the Uvula.

Pharynx:

It is the part that lies from the top of the larynx to the part of the tongue. It is a tube like cavity divided into oral cavity and nasal cavity. In the production of speech sounds, when the lungs air passes out through the mouth, the sounds produced are called oral and when it escapes through the nose, the sounds produced are called nasal.

For oral sounds, the soft palate is raised. Uvula blocks the nasal cavity. But the soft palate is lowered for nasal sounds. Thus the use of the nasal cavity is made only to produce nasal sounds as far as English is concerned otherwise the passage to the nasal cavity is blocked by the soft palate when we speak.

The Lips:

The lips play an important role in the production of speech sounds. They can take various positions and shapes to produce certain sounds. They are spread (unrounded), neutral and rounded. For instance, for

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Bilabial sounds / p, b, m, w /, the lips are brought together. Then labio-dental fricatives /f, v/, are produced when the lower lip is raised towards the upper front teeth.

As far as vowel sounds are concerned, lips can be spread (unrounded), neutral and rounded. For instance, for front vowels, lips are spread, including back/ a: /, for central vowels, the lips are neutral and for back vowels, lips are rounded.



The Tongue:

The tongue lies in the oral cavity and consists largely of muscle, with an outer covering of mucous membrane and a fibrous septum dividing it longitudinally. It is anchored anteriorly by some of its extrinsic muscles to the hyoid bone. Among all the organs of speech situated within the oral cavity, the tongue makes the greatest contribution to changes in the shape and volume of the oral cavity.

For purposes of phonetic description, the tongue is usually divided into four areas or parts namely, the tip, the blade, the front, the back, and the root. The tip of tongue is its extreme point with the blade of tongue lying just behind it. The front part of the tongue lies opposite the hard palate when the tongue is in position of rest. The back of the tongue lies opposite the soft palate when the tongue is at rest. The root of the tongue lies opposite the back wall of pharynx.

Like lips, tongue also plays an important role in the production of speech sounds. It is the most flexible organ of speech because it has greater variety of movement. It is boneless organ. It can assume many different shapes and can take several positions during the production of speech sounds. For the convenience of speech sounds description, Linguist divides the tongue into four parts:

1) Tip or Point 2) blade 3) front 4) back of the tongue.

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The tip of the tongue stands opposite to the teeth ridge, the front of the tongue lies below the hard palate and the back of the tongue lies opposite to the soft palate/ velum.

The Teeth:

Certain consonants are produced with the help of teeth. We have upper teeth and lower teeth. For instance, for Labio-dental fricatives /f, v/, the lower lip is raised towards the upper front teeth and for dental sounds/ θ /,/ δ / the tip of the tongue is raised towards the edge of upper teeth.

The upper jaw is a large area called roof of the mouth. It includes the parts such as alveolar ridge/ teeth ridge, hard palate and soft palate or Velum.

The Palate: (The roof of the mouth):

The part that lies behind the upper teeth is called the palate. It is also called as the roof of the mouth. It is divided into three parts moving backwards from the upper teeth:

- 1. Alveolar ridge/ Teeth ridge,
- 2. Hard palate and
- 3. Soft palate or Velum.

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The Alveolar ridge: It is very hard and bony part of the roof of the mouth lying immediately behind the upper teeth. There are many sounds which are produced at this state. Such sounds are called alveolar sounds. e.g. alveolar plosives /t, d/

The Hard Palate: It is the part that lies against the front of the tongue. It is also hard, bony and concave part. It lies between the teeth ridge and the soft palate. The sounds produced at this state are called palatal. e.g. palatal semi vowel /j/.

The Soft Palate: As compared to the alveolar ridge and hard palate, it is a fleshy, soft, smooth part. It is movable. It can be lowered or raised. The sounds produced at this place are called Velar sounds. e.g. / k, g/.



3 Soft palate in the raised position



Fig. 5 Production of nasalise sounds

The Uvula:

At the very end of the soft palate, there is a small fleshy organ called the Uvula. It is also known as the little tongue.

2.7. ARTICULATORS

Articulation is a process resulting in the production of speech sounds. It consists of a series of movements by a set of organs of speech called the Articulators. The articulators that move during the process of articulation are called active articulators and the articulators which remain relatively motionless are called passive articulators. The points at which the articulator are moving towards or coming into contact with certain other organs are the Place of articulation. The type or the nature of movement made by the articulator is called the Manner of articulation.

Before we talk about the description and classification of speech sounds, it is important for us to know about active and passive articulators and how they differ each other.

The articulators are those vocal organs which are situated along the vocal tract above the glottis.

Active articulators:

The articulators which are located in the lower jaw are called active articulators. They are lower lip, lower teeth, and tongue. It is upper surface of the tongue which is mostly concerned with articulation. There are other organs such as vocal cords which can treated as active articulators. The uvula also is usually included among the active articulators. They are called active because they can move. They are movable articulators.

In the production of speech sounds the active articulators move from their position towards the passive articulators. For example, in the production of / t, d, s,n /sounds, the tip and blade of the tongue move from their position of rest to articulate against the teeth ridge which remain motionless.

Passive articulators:

Passive articulators are those organs of speech that cannot move. They are upper lip, upper teeth, and palate / roof of the mouth and the back wall of the throat or pharynx. They are located in the upper jaw. The soft palate is both an active and a passive articulator. When it is raised to shut off the nasal passage of air for the production of oral sounds it is an active articulator. When the back of the tongue is raised and makes contact with the velum to produce sounds such as the initial consonants in the English words, ' girl' 'goggle' the velum is a passive articulator.

2.8. GLOSSARY OF IMPORTANT TERMS

AFFRICATE: sound produced with full stoppage of the airstream followed im- mediately by constriction.

ALLOPHONE: non-distinctive phonetic variant of a phoneme.

ALVEO-PALATAL: sound produced at the hard palate just behind the alveolar ridge.

ALVEOLAR: sound produced at the alveolar ridge, the bony ridge behind the teeth.

APPROXIMANTS: sounds produced when the articulators approach each other but not so closely as to cause turbulence in the airstream; they include later- als (the tongue touches the top of the mouth but the air is allowed to pass along one or both sides, as in [1]); central (the sides of the tongue are raised so that air flows along the center of the mouth, as in [r]); as well as the la- biovelar [w] and palatal [j].

ASPIRATED: consonant sound released with a puff of air.

ASSIMILATION RULE: phonological rule that makes a sound similar to a nearby sound. e.g., palatalization.

BACK VOWEL: vowel produced with the back of the tongue raised toward the soft palate.

BILABIAL: sound produced with constriction or closure of the lips.

BROAD TRANSCRIPTION: the attempt to record pronunciation without regard to non-contrastive details. See NARROW TRANSCRIPTION.

CENTRAL: vowel—e.g., [G]—produced with the tongue raised at the center of the mouth rather than at the front or back.

CODA: last part of a syllable; follows the nucleus.

COMPLEMENTARY DISTRIBUTION: when the allophones of a phoneme occupy different positions in words.

CONSONANT: sound produced with complete or partial obstruction of the air flow through the mouth. See VOWEL.

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CONTRASTIVE (also DISTINCTIVE): sounds used in a language to signal differ- ences of meaning.

DIACRITIC: phonetic symbols used to represent fine differences in pronuncia- tion, e.g., the [h] that indicates aspiration.

DIPHTHONG: vowel unit that begins with one oral configuration and ends with another. See MONOPHTHONG.

DISTRIBUTION: specific circumstances (ENVIRONMENTS) in which a sound ocCurs, e.g., at the beginning, middle, or end of a word.

FEATURE CHANGING RULE: rule that changes the value of a component feature of a sound, e.g., from stop to fricative, from non-nasal to nasal, or from lax to tense.

FOOT: a rhythmic unit consisting of at least one stressed syllable and 1-2 other syllables, typically unstressed.

FRICATIVE: sound produced with constriction of the airstream, producing friction.

FRONT VOWEL: vowel produced with the front of the tongue raised toward the hard palate.

GLIDES: sounds, e.g., [j] and [w], that are intermediate in openness and so- nority between consonants and vowels. Also called SEMIVOWELS.

GLOTTAL: sound produced by constricting or stopping the airstream at the vocal folds.

HIGH VOWEL: vowel pronounced with the mouth in the least degree of open- ness. See MID VOWEL and LOW VOWEL.

INTERDENTAL: sound produced with the tongue protruding between the teeth.

LABIODENTAL: sound produced with constriction between the bottom lip and top teeth.

LABIOVELAR: sound produced by raising the back of the tongue to or toward the velum and rounding the lips, e.g., [w].

LATERAL: sound produced with the tongue touching the top of the mouth with air allowed to pass along one or both sides, as in [1].

LAX: sound produced with musculature of the mouth relatively relaxed. See

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LOW VOWEL: vowel pronounced with the mouth in the greatest degree of openness. See HIGH VOWEL and MID VOWEL.

MANNER OF ARTICULATION: the kind of closure or constriction used in mak- ing a consonant sound.

METATHESIS RULE: phonological rule that reverses the order of segments in words.

MID VOWEL: vowel pronounced with the mouth in an intermediate degree of openness. See HIGH VOWEL and LOW VOWEL.

MINIMAL PAIR: two words of different meaning that are phonetically the same except for one sound, e.g., pit and bit (used to demonstrate that [p] and [b] contrast with each other).

MONOPHTHONG: vowel unit consisting of a single segment held constant during its pronunciation. See DIPHTHONG.

NARROW TRANSCRIPTION: attempt to record non-contrastive details of pro- nunciation. See BROAD TRANSCRIPTION.

NASAL, NASALIZED: sounds articulated with air flowing through the nasal cav- ity.

NON-CONTRASTIVE (also NON-DISTINCTIVE): sounds not used in a language to signal different meanings.

NUCLEUS: central part of a syllable, i.e., the segment with the highest sonor- ity.

ONSET: initial part of a syllable; precedes the nucleus.

PHONEME: contrastive or distinctive sound category; distinguishes words from each other.

PHONETICS (ARTICULATORY): the study of how speech sounds are produced. PHONOLOGICAL RULE: a general statement about the distribution of a pho- neme's allophones and about other phonological processes.

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PHONOLOGY: the study of the ways in which a given language shapes sounds into distinctive categories of perception and of its rules of pronunciation. PLACE OF ARTICULATION: the area in the mouth at which the consonantal closure or constriction occurs.

RHYME: the nucleus and coda of a syllable.

ROUNDED: vowel sound produced with the lips pursed. See UNROUNDED. SCHWA: a mid central unrounded vowel, represented as [G].

SEGMENT DELETION RULE: phonological rule that eliminates a sound from pronunciation in a word or phrase.

SEMIVOWEL: see GLIDE.

SONORANT: sounds produced with a smooth airflow, allowing for a high de- gree of resonance.

STOP: sound produced with full stoppage of the airstream anywhere in the

oral cavity from the vocal folds to the lips.

TENSE: sound produced with musculature of the mouth relatively tight.

UNROUNDED: vowel produced without lip rounding. See ROUNDED. VELAR: sound produced with constriction at the soft palate.

VOICED: sound produced with the vocal folds vibrating.

VOICELESS: sound produced with the vocal folds not vibrating.

VOWEL: sound produced with smooth, unobstruction air stream through the mouth. See CONSONANT.

2.9. SUMMING UP

Understanding the speech organs, also known as vocal organs, is fundamental to the study of phonetics and the science of spoken language. These anatomical structures—ranging from the lungs and vocal cords to the tongue, lips, teeth, and nasal cavity—work in coordination to produce the full range of human speech sounds. Each organ plays a distinct role in shaping the airflow and modifying sound waves to create vowels, consonants, and other phonetic features found across languages.

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The distinction between active and passive articulators helps us categorize how and where sounds are produced. Active articulators such as the tongue and lips move toward passive ones like the teeth or the hard palate to form specific speech sounds. This process forms the basis of articulatory phonetics, which is critical not only for linguists but also for language teachers, speech therapists, and professionals involved in voice and pronunciation training.

By studying the functions of each speech organ, learners can gain a clearer understanding of how spoken language is physically formed. This knowledge aids in accurate pronunciation, improves phonetic transcription skills, and supports clinical applications such as diagnosing and treating speech disorders.

In sum, the study of speech organs bridges anatomy and linguistics, providing a deeper insight into how human beings transform breath into meaningful communication. Whether you're analyzing a language, teaching pronunciation, or correcting speech impairments, an understanding of the vocal organs remains an indispensable part of phonetic science.

2.10 TERMINAL AND MODEL QUESTION

Section A: Basic Understanding

- 1. What are speech organs, and why are they important in phonetics?
- 2. Differentiate between active and passive articulators with examples.
- 3. Name any five speech organs involved in the production of speech sounds.
- 4. What is the function of the tongue in speech articulation?
- 5. Which organ controls voicing in human speech production?

Section B: Identify and Describe

- 6. Identify whether the following are active or passive articulators:
 - a) Lips
 - b) Teeth
 - c) Alveolar ridge

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d) Tongue

- e) Hard palate
- 7. What sound is produced when the lips come together? Provide an example.
- 8. Describe the role of the soft palate (velum) in nasal and oral sound production.
- 9. Which speech organ is responsible for producing glottal sounds like /h/?
- 10. How does the position of the tongue affect the production of different vowel sounds?

Section C: Applied Questions

- 11. Choose a word in English and describe how at least two speech organs contribute to one of its sounds.
- 12. Why is knowledge of speech organs important for second-language learners and pronunciation training?
- 13. How might a speech therapist use knowledge of vocal organs to help someone with a speech disorder?
- 14. Compare the function of the alveolar ridge and hard palate in articulating consonant sounds.
- 15. In what ways do the nasal cavity and oral cavity influence the quality of sounds?

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UNIT-3

THE SPEECH MECHANISM: PLACE AND MANNER OF ARTICULATION

3.1. Introduction

3.2. Objective

3.3. Manner of Articulation

3.3.1.Stops or Plosives

3.3.2. Fricatives

3.3.3. Affricates

3.3.4. Nasal

3.3.5. Liquid

3.3.6. Glide

3.4. Place of Articulation

3.4.1. Bilabials

3.4.2. Alveolar

3.4, 3.Velar

3.4.4. Labio Dental

3.4.5. Glottal

3.5. Summary

3.6. Terminal Questions

3.7. Bibliography and References

3.1. INTRODUCTION

In the field of articulatory phonetics, the production of speech sounds is analyzed by examining how and where the sounds are formed within the human vocal tract. Two foundational concepts in this analysis are manner of articulation and place of articulation. These parameters allow linguists to describe and categorize the diverse range of consonant sounds found in the world's languages.

Place of articulation refers to the specific point in the vocal tract where the airflow is obstructed or modified. It indicates which articulators—such as the tongue, lips, or velum—are involved in producing a sound. For example, bilabial sounds like /p/ and /b/ are made with both lips, while alveolar sounds like /t/ and /d/ involve the tongue touching the alveolar ridge.

On the other hand, manner of articulation describes how the airstream is affected as it moves through the vocal tract. This includes whether the airflow is completely blocked, partially obstructed, allowed to pass through the nose, or passes freely with minimal obstruction. Categories include stops, fricatives, affricates, nasals, approximants, and laterals.

Together, manner and place of articulation provide a comprehensive framework for identifying and describing consonant sounds across languages. These distinctions are not only crucial for linguistic analysis and phonetic transcription but also have practical applications in language learning, speech therapy, and phonological research. Understanding these articulatory features deepens our insight into the complexity and precision involved in human speech production.

3.2. OBJECTIVES

By the end of this module, learners will be able to:

- Define the terms place of articulation and manner of articulation in the context of articulatory phonetics.
- Identify the primary speech organs involved in the production of different consonant sounds.
- Distinguish between various manners of articulation, such as stops, fricatives, nasals, affricates, and approximants.

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- Classify consonant sounds based on their place of articulation (e.g., bilabial, alveolar, velar).
- Transcribe consonant sounds using appropriate IPA symbols that reflect their place and manner of articulation.
- Analyze the articulatory properties of consonant sounds in different languages, including English and Indian languages.

3.3. MANNER OF ARTICULATION

Manner of Articulation is the "how" of making sounds. When learning our first language, we don't usually think about how we make the sounds we do. We just reproduce what we've heard over the first few years of our lives. We make the sounds without thinking how our mouth tongue, and teeth are doing, unless we need the additional support of speech therapy.

Manner of articulation in second language learning is important, because pronunciation doesn't come as naturally as when learning our first language. It's important to know how sounds are made so that you can pronounce sounds correctly and speak more clearly.

There are six different ways, or manners of articulation, that we will discuss in this UNIT.

3.3.1. STOP OR PLOSIVE

The Plosives are consonants produced by completely blocking the airflow. The articulation of plosives involves three stages:

1) a direct contact between the active and the passive articulators forming a complete obstruction to the airflow;

2) the compression of air behind the obstruction; and

3) the release of the compressed air causing an explosion.

The plosives can be bilabial, alveolar, and velar. There are six plosives in English. They are:

bilabial [p] and [b],

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alveolar [t] and [d], and

velar [k] and [g].

The plosives are briefly discussed below.

Bilabial plosives

The bilabial plosives [p] and [b] are produced with both lips pressed together. The active articulator is the lower lip; the passive articulator is the upper lip. The soft palate is raised and the air coming into the mouth stops for some time and then breaks the obstruction with a slight explosion. The vocal cords vibrate in the case of [b], and therefore it is called a voiced sound. The phonemes [p] and [b] can occur initially, medially and finally, as in the following examples:

[p] pin /pIn/, paper /peipə(r)/, pipe /paip/

[b] bin /bin/, above /ə'bʌv/, hub /hʌb/

Alveolar plosives

The alveolar plosives [t] and [d] are produced with the tip of the tongue firmly pressed against the alveolar ridge. The active articulator is the tip of the tongue and the passive articulator is the alveolar ridge. The tip of the tongue makes a firm contact with the alveolar ridge. The air is trapped for a short time and then breaks the obstruction with a slight explosion. The vocal cords vibrate while articulating [d]. The phonemes [t] and [d] can occur initially, medially and finally, as in the following examples:

[t] time /taɪm/, better /'betə(r)/, cut /kʌt/

[d] date /deit/, madam /'mædəm/, mad /mæd/

Velar plosives

The velar plosives [k] and [g] are articulated with the back of the tongue making a firm contact with the soft palate. The active articulator is the back of the tongue and the passive articulator is the soft palate. The air is trapped for a short time and then breaks the obstruction with a slight explosion. While [k] is a voiceless sound, [g] is voiced. The plosives [k] and [g] can occur initially, medially and finally, as in the following examples:

[k] kind /kaind/, second /sekənd/, take /teik/

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[g] game /geIm/, luggage /'lʌgɪdʒ/, mug /mʌg/

3.3.2. FRICATIVES

We stop part of the air so it can't come through everywhere. It is a stream of air. Imagine a river of water flowing. Then imagine putting a large rock in the center of the river. The flow of the water would change because of the large rock, but the water would still flow around it. This is a strong description of what a fricative sound is formed. There is a flowing river of air, and you partially block it with your tongue, teeth, or lips. Fricative consonants are made by squeezing air between a small gap as it leaves the body. In English pronunciation, there are 9 fricative phonemes: $/f,v,\theta,\delta,s,z,\int,3,h/$ made in 5 positions of the mouth:

Sounds include: $\frac{f}{v} \frac{v}{s} \frac{J}{z} \frac{h}{b} \frac{J}{\delta} \frac{\partial}{\theta}$

The fricative sounds $/v, \partial, z, z/d$ are voiced, they are pronounced with vibration in the vocal cords, whilst the sounds $/f, \theta, s, f, h/d$ are voiceless; produced only with air.

Take a look at fricatives in these words.

Initial Sounds

/f/-four

/v/ – van

/s/-sun

```
/z/-zip
```

/h/ – hello

 $/\int/-ship$

/3/ – This sound does not occur at the beginning of words in English. It usually occurs in the middle of English words.

 $\partial / -$ these

 $\theta / - thin$

PHONETICS AND PHONOLOGY *Final Sounds*

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/f/ – half

/v/ – have

/s/ – pass

/z/ – has

/h/- This sound does not occur at the end of words in English. It occurs in the beginning or middle of English words.

 $/\int / - wash$

 $\frac{3}{-1}$ rouge – This sound at the final position is rare. It usually occurs in the middle of English words.

/ð/ – bathe

 $\theta / - bath$

3.3.3. AFFRICATES

Affricates are a type of consonant sound that start as a plosive and transition smoothly into a fricative sound.

Unlike plosives, which stop air entirely (like /t/ in "top"), or fricatives, which create continuous friction (like /s/ in "snake"), affricates are a seamless combination of both. This unique quality sets them apart.

English has only two affricate sounds:

- 1. /tf/ as in "chat"
- 2. /dʒ/ as in "judge"

While they may seem few in number, these sounds are vital to clear communication in English. Let's examine each in detail.

The /tʃ/ Sound ("ch" as in Chat)

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The /tʃ/ sound is one of the most common affricates in English. You'll hear it in words like "choose," "watch," and "chop." It's voiceless, meaning your vocal cords don't vibrate when you say it.

To articulate the /tf sound:

- 1. Start with a Stop (Plosive): Position your tongue against the alveolar ridge (the bumpy area behind your upper front teeth) and stop the airflow completely.
- 2. Release into a Fricative: Let the air escape while keeping your tongue close to the roof of your mouth to create friction.
- 3. No Vocal Cord Vibration: Keep your vocal cords relaxed to maintain the voiceless quality.

The /tf/ sound is commonly spelled in two ways in English:

- 1. "ch", as in words like "chat," "cheese," and "leech"
- 2. "tch", which you'll find in words such as "witch," "match," and "pitcher."

To practice this English affricate and master the /t f sound, try repeating the tongue twister "Chester chews cheddar cheese."

You can also compare /tf/ with similar sounds, like /f/ ("sh"). For example, practice repeating minimal pairs like "chop" vs. "shop" to refine your pronunciation of affricates versus fricatives.

The /dʒ/ Sound (''j'' as in Judge)

The $/d_3$ / sound is the voiced counterpart to $/t_j$ /, made with exactly the same mouth and tongue positioning. It appears in words like "judge," "joy," and "bridge."

Because it's voiced, your vocal cords vibrate when producing this sound.

To properly pronounce the $/d_3/$ affricate:

- 1. Start with a Stop (Plosive): Just like /tʃ/, position your tongue against the alveolar ridge and stop the airflow.
- 2. Release into a Fricative: Let the air escape with friction, but this time, engage your vocal cords to produce sound.

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3. Feel the Vibration: Place your fingers on your throat to feel the difference when you pronounce $/d_3/$.

The /dʒ/ sound appears in English with a few consistent spelling patterns. Recognizing these can help you identify and practice the sound more effectively:

- 1. "j," common in words like "joy," "judge," and "jungle."
- 2. "ge," found in examples such as "genuine" and "age."
- 3. "dg," often used in words like "edge," "badge," and "fudge."

Practicing words and phrases with $/d_3/$ is a great way to refine your pronunciation. Start with short phrases like "Jack enjoys jam" or "Jen juggles on the bridge."

To master the $/d_3/$ sound, focus on contrasting it with similar sounds, such as /3/ (as in "measure"). Try minimal pairs like "jean" versus "sheen" to fine-tune your ear and pronunciation.

Listening closely to sentences with /dʒ/ and mimicking them can help you achieve a natural sound.

3.3.4. NASAL

A **nasal sound** is produced with a lowered velum, allowing air to flow through the nose. The **velum**, also known as the **soft palate**, is part of the roof of the mouth located behind the hard palate.

If you make a [k] or [g] sound, you can feel the body of your tongue come in contact with your velum. This structure is raised during non-nasal (oral) sounds to block air from coming out of the nose. During nasal sounds, it's lowered to let air flow freely through the nose. If you pay special attention to what's happening in the back of your mouth when you produce a [b] versus a [m] sound, you can feel your velum moving to control airflow through the nasal cavity. There are three nasal consonants in English.

- /m/ -"<u>m</u>ad" and "cla<u>m</u>" oral passage is blocked by closing the lips (bilabial).
- /n/- "<u>n</u>o" and "ma<u>n</u>' oral passage is blocked by pressing tongue tip against the alveolar ridge (alveolar).
- /ŋ/ "going" and "funk" Oral passage is blocked by pressing the the back of your tongue against the soft palate (velar).

3.3.5. LIQUID

We let air stream on the sides of our tongue. Examples include: / J/ /I/

Initial Sounds

/ɹ/ – red

/l/ – light

Final Sounds

/ı/ – dear

/l/ – fill

3.3.6. GLIDE

We move our mouth constantly from a articulation to a vowel sound. Examples include: /w/ and /j/

Initial Sounds

/w/-win

/y/ – yellow

Final Sounds

/w/ – This sound does not usually occur at the end of a word in English. When you see a w at the end of a word, it usually means you bring your lips together in a small circle near the end of the vowel sound that comes before it, but the /w/ sound is not produced.

/y/- This sound does not usually occur at the end of a word in English.

3.4. PLACE OF ARTICULATION

Place of articulation means the study of which organs of speech are involved in the production of speech sounds and what role they play in their pronunciation. Consonants can be classified according to the Place of Articulation, Manner of Articulation and Voicing.

3.4.1. Bilabial

Bilabial sounds are produced by pressing two lips together. For example / p, b, m, w/ are bilabial sounds.

Formed with two (bi-) lips (labials)

/p/ – pop

/b/ – Bob

/m/ – mom

3.4.2. Alveolar

Alveolar sounds are produced by raising the tip & blade of the tongue towards the alveolar ridge. For example, / t, d, n, l, s, z/ are alveolar sounds.

Formed by putting the tongue on the alveolar ridge, which is the gum line above the top teeth

/t/ – Tom /d/ – dad /n/ – none /s/ – sit /z/ – zoo /l/ – lamp /ɹ/ – run

3.4.3. Velar

Velar sounds made by touching the back of the tongue to the soft palate called the velum. For example, /k, g, η / are Velar sounds.

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Formed by putting the back part of the tongue against the soft palate

/k/ – curl

/g/–girl

/ŋ/ – song

3.4.4. Labio- Dental

These sounds are produced when the lower lip is raised towards the upper front teeth. For example, / f, v / are Labio- dental sounds.

Formed with the bottom lip (labio-) and top teeth (dentals)

/f/ – fish

/v/-very

Dental: Dental sounds are produced by touching the tip of the tongue to upper front teeth. For example, $/\theta$, δ / are dental sounds.

Palato – alveolar: These sounds are produced when the tip and blade of the tongue is raised towards the alveolar ridge simultaneously the front of the tongue is raised towards the hard palate. e.g. / \int , J, J, dJ /

Post alveolar: tip of the tongue is raised very close towards the back of alveolar ridge, for e.g /r/

Palatal: The front of the tongue is raised towards hard palate. for e.g /j/

3.4.5. Glottal

The sound is produced at the glottis and the vocal cords are the articulators. for e.g /h/

Following figures show the place of articulation of consonants.
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The Stricture involved in the articulation of speech sounds

The stricture is the technical term used for the position taken up by the active articulator in relation to the passive articulator. It reveals the nature of the air stream passage at a particular point in the vocal tract. Following are different types of strictures involved in the articulation of speech sounds.

Complete Closure and sudden release of the lung air:

The stricture may be one of complete closures. By complete closure we mean that there is a firm contact



Fig. 9 Articulation of the plosive sounds/t,d/. The tip and blade of the tongue in firm contact with the teeth ridge and soft palate in its raised position.



Fig. 10 Articulation of the plosive sounds /p,b/. The two lips are in firm contact and the soft palate is raised.



Fig. 11 Articulation of the plosive sounds /k,g/. The back of the tongue and the soft palate are in firm contact with each other. The soft palate is raised.

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of active articulator with passive articulator and thus prevent the lungs air from escaping through the mouth. There is the blockage of the lung air behind the closure. Sounds produced with the stricture of complete closure are called plosive sounds.

e.g. / p, b, t, d, k, g,/



Fig. 12 Articulation of the nasal consonant /m/. The closure of the lips (oral closure). The soft palate is lowered and the nasal passage is open.

Fig. 13 Articulation of the nasal consonant /n/. The blade of the tongue and the teeth-ridge in firm contact, effecting the oral closure. The soft palate is lowered and the nasal passage is open.

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Fig. 14 Articulation of the nasal sound $/\eta/$. The oral closure is effected by the back of the tongue and the soft palate, which are in firm contact. The soft palate is lowered and the nasal passage is open.

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Complete Closure and slow release of the lung air:

When the active articulator is removed slowly from the passive articulator slight friction is heard.



Fig. 17 Articulation of the lateral sound /1/. The tip and blade of the tongue are in firm contact with the teeth-ridge. Soft palate in its raised position.

Sounds produced with this kind of stricture are called affricates. For example, / t, d3 / .

Complete oral closure:

Sometimes the stricture may be of complete oral closure. By this stricture we mean that the active and passive articulators are in firm contact with each other. For instance, for Nasal sounds, there is a complete oral closure and the soft palate is lowered allowing the air to escape through the nose. e.g. nasal sounds / m/, /n/, /ŋ/.

Partial Closure:

The stricture may one of the partial closures. It is seen when the lungs air escapes along the sides of the tongue without friction as they are lowered. For example lateral /l/.

Close Approximation:

For fricative sounds, there is no closure anywhere but narrowing only e.g. /f/, /v/, /s/, /z/, $/\theta/$, $/\delta/$, /J/, /3/, /h/. In the production these sounds the two articulators are brought very close to each other so that the lungs air escapes a narrow gap with audible friction.

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Fig. 15 Articulation of the fricative sounds that begin the words /s/ and /z/. The velic closure effected by the raised soft palate. The narrow gap between the blade of the tongue and the teeth-ridge.

Fig. 16 Articulation of the fricative consonants /f/ and /w/. The soft palate is raised. The narrow gap between the lower lip and the upper front teeth (the passive articulators).

Open Approximation: Open approximation means that the oral tract is somewhat more open than in close approximation, so that there is no friction. For r/r this kind of stricture is used.



Fig. 18 Articulation of the approximant represented by the Devnagari letter /w/ as in <u>wet</u>. The gap between the lower lip and the upper front teeth.

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We can summaries the classification of consonants as follows:

| Classification | Manner/ Stricture of Articulation | Examples |
|----------------|---|--|
| Plosive / Stop | Complete closure in the mouth and sudden | /p/, /b/, /t/, /d/, /k/, /g/ |
| | release of lung air through the mouth. | r, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, ,, g, |
| Nasal | Complete oral closure in the mouth, the air | /m/, /n/, /ŋ/ |
| | escapes through the nose | |
| Fricative | Narrowing with audible friction, close | /f/, /v/, /s/, /z/, /θ/, /ð/, /ʃ/, |
| | approximation. | /ʒ/, /h/ |
| Affricate | Complete oral closure and slow release of the | /tʃ/, /dʒ/ |
| | lung air. | |
| Frictionless- | No closure but slight narrowing open | / r / |
| continuant | approximation. | |
| Lateral | Partial Closure | /1/ |
| Semi vowel | Slight narrowing but no friction, open | / j, w / |
| | approximation. | |

3.5. SUMMARY

Thus, Understanding how speech sounds are produced involves two essential phonetic concepts: **manner of articulation** and **place of articulation**. These describe how and where in the vocal tract the airflow is shaped to produce different consonant sounds.

Place of articulation refers to the specific location in the vocal tract where the airflow is obstructed. This could involve contact or near-contact between various articulators such as the lips (bilabial), the tongue and the teeth (dental), the tongue and the alveolar ridge (alveolar), or even the vocal cords (glottal). Each place of articulation results in distinctive sound qualities and is critical in distinguishing one sound from another.

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Manner of articulation, on the other hand, describes how the airstream is manipulated as it passes through the vocal tract. Common manners include **stops** (complete closure, as in /p/), **fricatives** (narrow constriction causing friction, as in /f/), **nasals** (air escapes through the nose, as in /m/), **affricates**, **approximants**, and **laterals**. The interaction between manner and place determines the full articulatory description of any consonant.

Together, these two aspects form the basis for the classification and analysis of consonants in all spoken languages. They are fundamental for students of linguistics, speech therapy, language teaching, and phonetic transcription. Mastery of these concepts allows for accurate sound identification, comparison across languages, and improved pronunciation. In sum, manner and place of articulation provide a systematic way to describe the intricate mechanics behind human speech.

3.6. TERMINAL AND MODEL QUESTIONS

Part A: Objective / Multiple Choice Questions

- 1. Which of the following is a bilabial sound?
 - a) /t/
 - b) /k/
 - c) /p/
 - d) /s/
- 2. What is the place of articulation for the sound /d/?
 - a) Velar
 - b) Glottal
 - c) Alveolar
 - d) Labiodental
- 3. Which sound is a nasal consonant?
 - a) /d/
 - b) /f/
 - c) /m/
 - d) /z/
- 4. The sound /ʃ/ as in "ship" is:
 - a) Voiced palatal fricative

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- b) Voiceless postalveolar fricative
- c) Voiceless alveolar plosive
- d) Voiced bilabial nasal
- 5. What is the manner of articulation for /tʃ/?
 - a) Stop
 - b) Fricative
 - c) Affricate
 - d) Nasal

Part B: Short Answer / Descriptive Questions

- 6. Define *place of articulation* with two examples.
- 7. Explain *manner of articulation* with reference to nasal and fricative sounds.
- 8. Classify the following consonants based on place and manner: /b/, /s/, /ŋ/, /l/.
- 9. How is a glottal sound like /h/ produced?
- 10. What is the difference between an alveolar and a palatal sound?

Part C: Analytical / Applied Questions

- 11. Compare the articulatory features of /p/ and /m/.
- 12. Why are place and manner important for language learners and speech therapists?
- 13. Describe how the sound $/d_3/$ is formed and identify its place and manner.
- 14. Create a table with at least 5 consonants classified by both place and manner.
- 15. Discuss how two different manners of articulation affect pronunciation in English or any Indian language.

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UNIT-4

AUDITION, RECEPTION AND PRODUCTION OF SOUNDS

4.1 Introduction

4.2. Objectives

4.3. Speech Production

4.3.1. Respiratory System

4.3.2. Phonatory System

4.3.3. Articulatory system

4.4. Sound Reception (Accoustic Pathways)

4.5. Audition

4.6. Summary

4.7. Terminal and Model Questions

4.8. Bibliography and References

4.1. INTRODUCTION

The process of human communication through spoken language is a remarkable interplay of biological, physical, and cognitive systems. At the core of this process lie three fundamental components: **production**, **reception**, and **audition** of sounds. Together, these stages enable effective speech communication—from the creation of sound by the speaker to its interpretation by the listener.

Speech production involves the coordination of various organs within the respiratory, phonatory, and articulatory systems. Air from the lungs is pushed through the vocal folds in the larynx to generate sound, which is then shaped into meaningful speech by articulators such as the tongue, lips, and palate. This is the focus of **articulatory phonetics**, which studies how speech sounds are formed.

Once produced, these sounds travel through the air as vibrations. The **reception** of these acoustic signals involves their transmission through the medium (usually air) to the listener's ear. This physical aspect of speech—how sound behaves as a wave—is explored through **acoustic phonetics**.

Finally, **audition** refers to the hearing and interpretation of these sound waves. The human auditory system receives the sound through the ear, converts it into neural signals, and processes them in the brain to understand meaning. This perceptual aspect is examined in **auditory phonetics**.

In summary, the triad of production, reception, and audition forms the foundation of spoken language. A clear understanding of these processes is vital for linguists, speech therapists, language teachers, and anyone interested in how human speech functions.

4.2. OBJECTIVES

By the end of this unit, learners will be able to:

- 1. Define the terms *audition*, *reception*, and *production* in the context of speech and phonetics.
- 2. **Describe** the physiological mechanisms involved in speech production, including the respiratory, phonatory, and articulatory systems.
- 3. Explain how sound waves travel through the air during the reception phase of speech.
- 4. Identify the key components of the human auditory system and their roles in perceiving speech.

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- 5. **Distinguish** between articulatory, acoustic, and auditory phonetics and their relevance to each stage of speech.
- 6. **Illustrate** the process of converting physical sound into neural signals during auditory perception.
- 7. **Analyze** how impairments in any of the three stages (production, reception, or audition) can affect communication.
- 8. **Apply** knowledge of the speech chain to real-world contexts, such as speech therapy, language learning, or linguistics research.

4.3. SPEECH PRODUCTION

Speech production is a fundamental aspect of human communication, enabling the transformation of thoughts into audible language. It is a complex, coordinated process involving multiple physiological systems working in harmony to produce spoken words. This process begins in the **brain**, where linguistic and conceptual intentions are formulated. These intentions are then converted into motor commands that activate the **respiratory**, **phonatory**, and **articulatory** systems to produce specific sounds.

The **respiratory system**, primarily the lungs and diaphragm, provides the airflow necessary for speech. Air is expelled from the lungs and directed through the **larynx**, where it passes through the **vocal folds**. The vibration of these folds produces a sound wave, which is shaped and refined in the **vocal tract**. This region, including the **tongue**, **lips**, **teeth**, **palate**, and **nasal cavity**, constitutes the **articulatory system**, responsible for forming distinct speech sounds like vowels and consonants.

Speech production varies depending on the language being spoken, the speaker's anatomical features, and contextual factors like emotion and emphasis. Moreover, it can be studied through various subfields of phonetics: **articulatory phonetics** focuses on how speech sounds are physically made, **acoustic phonetics** examines the sound waves they produce, and **auditory phonetics** investigates how they are perceived.

In essence, speech production is not merely a mechanical function but a sophisticated, dynamic process that bridges thought and expression, forming the basis of verbal human interaction.

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4.3.1. Respiratory System

The Lungs and Respiratory System allow us to breathe. They bring oxygen into our bodies (called inspiration, or inhalation) and send carbon dioxide out (called expiration, or exhalation)¹. The respiratory system of animals is crucial for life as it allows the exchange of gases between an organism and the environment.

This exchange of oxygen and carbon dioxide is called respiration. The human expires an average of 0.35 L of water each day. But the amount varies within the range of 0.3 L to 0.45 L per day due to air temperature, relative humidity, and level of activity¹.

Dysfunction of the respiratory system ultimately leads to hypoxia. Hypoventilation, right-to-left-shunt, V/Q mismatch, and diffusion limitations are four etiology of hypoxia.

Parts of the Respiratory system

The human respiratory system comprises of

- Nose and Mouth: Air enters the respiratory system through the nose or the mouth. If it goes in the nostrils, the air is warmed and humidified. Cilia (tiny hairs) protect the nasal passageways and other parts of the respiratory tract, filtering out dust and other particles that enter the nose through the breathed air.
- **Pharynx (throat):** The nasal cavity and the mouth openings meet at the pharynx at the back of the nose and mouth. The pharynx is part of the digestive system as well as the respiratory system because it carries both food and air. At the bottom of the pharynx, this pathway divides in two, the esophagus, which leads to the stomach and the other for air. The epiglottis, a small flap of tissue, covers the air-only passage when we swallow, keeping food and liquid from going into the lungs.
- Larynx (voice box): This is situated at the top of Trachea. This tube includes a pair of voice cords that vibrate to produce sound.

PHONETICS AND PHONOLOGY BAEL (N)-221 Tracheobronchial tree comprises of a network of alveoli, bronchioles, bronchi and trachea.^{[5][}

- **Trachea:** The walls of the trachea are strengthened by stiff rings of cartilage to keep it open. The trachea is additionally covered with cilia, which remove fluids and foreign particles from the airway and keep them out of the lungs. Endotracheal tube (intubation) and Tracheostomy are two procedure occur at the trachea⁻
- **Carina:** The angle made between the two primary bronchi when they diverge at the tracheal bifurcation; it is richly innervated with sensory nerve endings to respond to the arrival of any aspirated material by initiating a cough reflex; it may be visualised as a ridge within the bronchial tree when using a bronchoscope⁻
- **Bronchi**: At its bottom end, the trachea divides into left and right air tubes called bronchi, which connect to the lungs. Within the lungs, the bronchi branch into smaller bronchi and even smaller tubes called bronchioles.
- Lungs: The respiratory functional units essential for survival (each lung weighs around 1.1 kg). The structure of the lung is well-suited for the efficient exchange of respiratory gases. Through the airway and vascular trees, fresh gases and venous blood are delivered to and removed from a large alveolar capillary surface area.

In an adult, inhaled air enters the trachea and is delivered to the alveoli with a surface area of ~ 140 m2, roughly the size of a tennis court. Similarly, the pulmonary vascular tree begins as the main pulmonary artery and repeatedly bifurcates into arterioles and capillaries that cover 85–95% of the alveolar surface. An exceptionally thin membrane of only 1 µm separates the alveolar gas and blood compartments, allowing gases to diffuse rapidly between them.

Due to the relatively large blood volume within the alveolar capillaries, blood flow slows and the transit time for blood increases, normally to 0.25–0.75 s, allowing more time for gas exchange. The remarkable design that allows for the exchange of gas within the thoracic cavity has been emphasised by likening it to the engineering achievement of folding a letter to fit into a thimble. A variety of pathologies affect the lungs, resulting in a vast range of ailments^[10]. Lungs are affected by a wide range of pathologies that result in a diverse range of illnesses.^[11]

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• Alveoli: Bronchioles end in tiny air sacs called alveoli, where the exchange of oxygen and carbon dioxide actually takes place. Each person has millions of alveoli in their lungs.

The Thorax houses the bronchial tree, lungs, heart, and other structures. The top and sides of the thorax are formed by the ribs joined to the sternum and attached muscles, and the bottom is formed by the diaphragm. The chest walls form a protective cage around the lungs and other contents of the chest cavity.

How does the Respiratory System Work?

The human cells require oxygen to stay alive. Carbon dioxide is a by-product of respiration. The lungs and respiratory system allow oxygen in the air to be taken into the body, while also letting the body get rid of carbon dioxide in the air breathed out.

When you breathe in, the diaphragm moves downward toward the abdomen, and the rib muscles pull the ribs upward and outward (making the chest cavity bigger and pulling air through the nose or mouth into the lungs). See muscles of Respiration.

In exhalation, the diaphragm moves upward and the chest wall muscles relax, which causes the chest cavity to get smaller and push air out of the respiratory system through the nose or mouth. Every inhalation fills a huge fraction of the millions of alveoli. Oxygen diffuses from the alveoli to the blood through the capillaries lining the alveolar walls. Once in the bloodstream, oxygen gets picked up by the hemoglobin in red blood cells. This oxygen-rich blood then flows back to the heart, which pumps it through the arteries to oxygen needy tissues throughout the body.

In the capillaries of the body tissues, oxygen is freed from the hemoglobin and moves into the cells. Carbon dioxide produced moves out of the cells into the capillaries, where most of it dissolves in the plasma of the blood. Blood rich in carbon dioxide then returns to the heart via the veins. This blood circulates from the heart to the lungs, where carbon dioxide moves into the alveoli and is eliminated.

4.3.2. Phonatary System

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The **phonatory system** is central to human speech. It is the biological mechanism responsible for generating voice through the vibration of the vocal folds within the larynx. Also known as the **voice production system**, it bridges the respiratory system and the articulatory system in the speech production chain. Without phonation, humans would lack the vocal energy required for speech and singing. This article explores the anatomical structures, physiological processes, and functional importance of the phonatory system in detail.

1. Overview of the Phonatory System

The phonatory system is composed mainly of the **larynx** (voice box), located in the neck at the top of the trachea. Its primary structures include:

- Vocal folds (or vocal cords)
- Glottis (the space between the folds)
- Laryngeal cartilages (e.g., thyroid, cricoid, arytenoids)
- Muscles controlling tension and movement
- Nerves and membranes aiding control and support

The phonatory system serves three main purposes:

- 1. **Phonation** the generation of voiced sounds.
- 2. Airway protection keeping food and liquids out of the trachea.
- 3. **Pressure regulation** aiding in coughing, lifting, and other bodily functions.

2. The Larynx: Anatomy and Function

The **larynx** is the primary organ of phonation and lies above the trachea. It is made up of **cartilage**, **muscles**, and **ligaments**, and it performs both protective and phonatory functions.

a. Cartilaginous Framework

- **Thyroid cartilage**: The largest, forming the Adam's apple.
- **Cricoid cartilage**: A complete ring below the thyroid cartilage.
- Arytenoid cartilages: Paired cartilages that help move the vocal folds.

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• **Epiglottis**: A leaf-shaped flap that prevents food from entering the windpipe during swallowing.

b. Vocal Folds

The vocal folds are twin bands of muscle and connective tissue. When air from the lungs passes through the **glottis**, it causes the folds to vibrate, creating voiced sound. The **frequency** and **amplitude** of these vibrations determine the **pitch** and **loudness** of the voice.

c. Glottis

The **glottis** is the opening between the vocal folds. It can be open (as in breathing), closed (as in holding breath), or vibrating (as in phonation).

3. The Physiology of Phonation

Phonation begins with **aerodynamic forces** set in motion by the respiratory system. The sequence of events is as follows:

a. Initiation

Air expelled from the lungs travels up through the trachea and into the larynx. The vocal folds are brought close together (adducted) by intrinsic laryngeal muscles.

b. Vibration

As air pressure builds beneath the closed vocal folds (**subglottic pressure**), it eventually forces them apart, allowing air to pass through. The folds then snap back due to **elastic recoil** and the **Bernoulli effect** (a drop in pressure that pulls the folds back together). This cycle repeats rapidly, creating vibrations.

c. Voicing

This vibration modulates the airstream into a sound wave, which is then shaped by the **articulators** (tongue, lips, etc.) into distinct speech sounds. The speed of vibration (measured in Hertz) corresponds to **pitch**. Average adult male vocal folds vibrate around 120 Hz, and female folds around 220 Hz.

PHONETICS AND PHONOLOGY 4. Muscular Control of the Phonatory System

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Muscles in the larynx are crucial in controlling pitch, loudness, and voice quality.

a. Intrinsic Muscles

These muscles control the shape and tension of the vocal folds:

- Thyroarytenoid muscle: Adjusts tension and length.
- Cricothyroid muscle: Increases pitch by stretching the vocal folds.
- **Posterior cricoarytenoid**: Abducts (opens) the folds.
- Lateral cricoarytenoid and interarytenoids: Adduct (close) the folds.

b. Extrinsic Muscles

These attach the larynx to other structures like the hyoid bone and help in elevating or depressing the larynx during swallowing or pitch variation.

5. Pitch, Loudness, and Voice Quality

The **phonatory system** regulates:

- **Pitch**: Controlled by vocal fold tension and length. Greater tension and thinner folds produce higher pitch.
- Loudness: Controlled by subglottic pressure and the force of fold closure.
- Voice Quality: Breathiness, harshness, and hoarseness are influenced by how tightly or loosely the folds come together.

6. Voice Disorders and Clinical Importance

Disorders in the phonatory system can significantly affect speech and quality of life.

Common Disorders:

• Laryngitis: Inflammation of the vocal folds.

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- Vocal nodules or polyps: Benign growths due to overuse.
- **Paralysis**: Often from nerve damage.
- Spasmodic dysphonia: Involuntary spasms of laryngeal muscles.

Clinical Fields:

- Speech-language pathology: Diagnosis and treatment of voice disorders.
- **Otolaryngology** (ENT): Medical management of laryngeal disorders.
- Voice therapy: Used by singers, teachers, and others who rely on their voice professionally.

7. Phonatory System Across Languages

While the biological mechanism remains the same, languages use phonation differently. For example:

- **Tonal languages** (like Mandarin) use pitch to distinguish word meaning.
- Aspirated and unaspirated stops (like /p^h/ and /p/) in Hindi or Bengali rely on voicing and breath timing.
- Glottal stops (e.g., /?/ in Arabic or some varieties of English) involve specific glottal closure.

This variation shows how the phonatory system is both universal and adaptable.

8. Integration with Other Systems

The phonatory system does not function in isolation:

- It works with the **respiratory system** (air supply).
- It precedes the **articulatory system**, where speech is shaped into language-specific sounds.
- It supports **emotional expression**, such as laughter, crying, or anger—often conveyed through vocal tone.

The phonatory system is a vital component of human speech and vocal expression. It transforms airflow into voiced sound through the complex coordination of muscles, cartilages, and soft

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tissues within the larynx. This system allows humans to produce a wide range of speech sounds, modulate tone and pitch, and communicate effectively. Its study not only aids linguists and language learners but is also critical in medical and therapeutic fields. A deeper understanding of the phonatory mechanism reveals the intricate balance of biology and physics that makes spoken language possible.

4.3.3. Articulatory System

Human speech is one of the most sophisticated forms of communication, relying on the precise coordination of various anatomical systems. Among these, the **articulatory system** plays a pivotal role in transforming basic vocal sounds into meaningful speech. While the respiratory system provides the necessary airflow and the phonatory system generates voiced sounds, it is the articulatory system that molds these sounds into the distinct phonemes that comprise human languages. This essay explores the structure, function, and significance of the articulatory system in the context of speech production and phonetics.

What is the Articulatory System?

The **articulatory system** refers to the group of anatomical structures responsible for shaping and modifying the sound produced by the vocal folds into recognizable speech sounds. It consists of both movable and immovable parts of the vocal tract, including the tongue, lips, teeth, alveolar ridge, hard palate, soft palate (velum), uvula, and pharyngeal walls.

In phonetics, the articulatory system is studied in terms of **place of articulation** (where in the vocal tract a sound is produced) and **manner of articulation** (how airflow is modified to produce the sound).

Components of the Articulatory System

1. Oral Cavity

The oral cavity is the primary resonating chamber where many speech sounds are formed. It includes the tongue, teeth, alveolar ridge, hard and soft palate, and lips.

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- **Tongue**: The most versatile articulator, capable of producing a wide range of sounds by varying its position and shape. It is divided into regions: tip, blade, front, back, and root.
- Lips: Responsible for bilabial (/p/, /b/, /m/), labiodental (/f/, /v/), and rounded vowel sounds (/u/, /o/).
- **Teeth**: Used for producing dental sounds like $\theta/(as in "think")$ and $\delta/(as in "this")$.
- Alveolar Ridge: Just behind the upper front teeth; it is involved in alveolar sounds such as /t/, /d/, /s/, /z/, /n/, and /l/.
- Hard Palate: The bony roof of the mouth; sounds like /ʃ/ (as in "shoe") and /ʒ/ (as in "measure") are palatal.
- Soft Palate (Velum): Can raise or lower to direct airflow through the oral or nasal cavity, producing oral or nasal sounds respectively.

2. Nasal Cavity

When the soft palate is lowered, air flows into the nasal cavity, producing nasal consonants like /m/, /n/, and /n/.

3. Pharynx

This cavity connects the oral and nasal cavities to the larynx and esophagus. It also contributes to resonance and vocal timbre.

Movable and Immovable Articulators

• Movable (active) articulators:

- Tongue
- Lower lip
- Soft palate (velum)
- o Uvula
- Glottis (vocal folds, though usually considered part of the phonatory system, are important in articulating glottal sounds)
- Immovable (passive) articulators:
 - Upper teeth

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- Alveolar ridge
- Hard palate

These elements work in coordination to create the enormous variety of speech sounds found in human languages.

Place and Manner of Articulation

a. Place of Articulation

This refers to the location in the vocal tract where the airflow restriction occurs. Common places include:

- **Bilabial**: Both lips (/p/, /b/, /m/)
- **Labiodental**: Lower lip and upper teeth (/f/, /v/)
- **Dental**: Tongue and teeth $(/\theta/, /\delta/)$
- Alveolar: Tongue and alveolar ridge (/t/, /d/, /s/, /z/, /n/)
- **Postalveolar/Palatal**: Tongue just behind alveolar ridge (/f/, /3/, /tf/, /d3/)
- Velar: Tongue and soft palate $(/k/, /g/, /\eta/)$
- **Glottal**: Sound produced at the vocal folds (/h/, /2/)

b. Manner of Articulation

This describes how the airflow is manipulated or obstructed:

- **Stops (Plosives)**: Complete closure and sudden release (/p/, /b/, /t/, /d/, /k/, /g/)
- Fricatives: Air passes through a narrow constriction (/f/, /v/, /s/, /z/, /j/, /3/)
- Affricates: Combination of a stop and a fricative (/tf/, /dz/)
- Nasals: Air escapes through the nose (/m/, /n/, /n/)
- Liquids: Partial closure, air flows around the tongue (/1/, /r/)
- Glides (Semivowels): Slight closure, resembling vowels (/w/, /j/)

Vowel Production

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Though less about "articulation" in the strict sense, vowels are also shaped by articulatory features:

- **Tongue height** (high, mid, low)
- Tongue backness (front, central, back)
- Lip rounding (rounded vs. unrounded)

These factors combine to produce vowels like /i/, /e/, /a/, /o/, /u/.

Importance in Language and Communication

The articulatory system's adaptability allows humans to produce a vast range of speech sounds. This capacity underpins:

- **Phonetic diversity**: Different languages utilize different articulatory configurations. For example, Hindi includes retroflex consonants like /t/ and /d/, which require the tongue to curl back—a feature rare in English.
- **Prosody and intonation**: Tongue and jaw movement contribute to the melody and rhythm of speech.
- Non-verbal sounds: Clicks, ejectives, or even paralinguistic expressions like sighs and laughs.

Speech Disorders Related to the Articulatory System

Damage, delay, or dysfunction in the articulators can lead to:

- Articulation disorders: Difficulty producing specific sounds (e.g., lisps, rhotacism).
- Apraxia of speech: Impaired motor planning for speech.
- **Dysarthria**: Weakness or poor coordination of speech muscles, often due to neurological conditions.
- **Cleft palate**: Structural anomaly affecting velopharyngeal closure.

Speech-language pathologists use knowledge of the articulatory system to diagnose and treat such conditions.

Tools for Studying the Articulatory System

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Modern phonetic research uses several tools to observe and analyze articulation:

- X-ray imaging and MRI: Visualizing internal articulator movement.
- Ultrasound: Real-time tongue movement tracking.
- Electropalatography (EPG): Sensors on a palate plate track tongue contact.
- Palatography: Powder or dye shows contact points in the mouth after sound production.

These technologies provide insight into both normal and disordered speech patterns.

The **articulatory system** is a marvel of biological precision and flexibility. It enables humans to produce the rich variety of sounds that form the basis of language. Through coordinated movement of the tongue, lips, palate, and other structures, the system sculpts raw voice into intelligible and meaningful speech. A thorough understanding of articulation is essential not only for linguists and language teachers but also for speech therapists and anyone interested in the mechanics of human communication. As technology and research evolve, the study of the articulatory system continues to unlock the intricate patterns that define spoken language across cultures.

4.4. SOUND RECEPTION (Accoustic Pathways)

The ability to perceive and interpret sound is fundamental to human communication, survival, and social interaction. Sound reception, also referred to as **auditory perception**, is the process by which the ear captures sound waves and transforms them into neural signals that the brain can interpret. This complex process involves a well-coordinated system of anatomical structures and neural pathways known collectively as the **acoustic pathways**. These pathways begin at the outer ear and culminate in the auditory cortex of the brain. Understanding sound reception and acoustic pathways is essential not only for linguistics and phonetics but also for fields such as audiology, speech-language pathology, and neurobiology.

What is Sound?

Before exploring how sound is received, it's important to define what sound is. Sound is a **mechanical wave** that results from the vibration of particles in a medium (usually air). These vibrations create alternating zones of compression and rarefaction, which propagate as waves and can be detected by the

PHONETICS AND PHONOLOGY BAEL (N)-221 human ear. The basic properties of sound include **frequency** (pitch), **amplitude** (loudness), and **timbre** (quality).

Overview of the Human Auditory System

The human auditory system consists of three main parts:

- 1. Outer Ear
- 2. Middle Ear
- 3. Inner Ear

These anatomical structures play vital roles in capturing, amplifying, and transmitting sound to the brain.

1. Outer Ear: Collecting the Sound

The outer ear consists of:

- **Pinna** (**Auricle**): The visible part of the ear that collects sound waves and funnels them into the auditory canal.
- External Auditory Canal: A tube that channels sound waves toward the eardrum (tympanic membrane).
- **Tympanic Membrane (Eardrum)**: A thin membrane that vibrates in response to sound waves.

The outer ear functions like a natural amplifier, enhancing certain frequencies and aiding in sound localization.

2. Middle Ear: Amplifying the Signal

The **middle ear** contains the **ossicles**, the three smallest bones in the human body:

- Malleus (Hammer)
- Incus (Anvil)
- Stapes (Stirrup)

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These bones are connected in a chain and transmit vibrations from the eardrum to the **oval window** of the inner ear. The middle ear amplifies sound waves approximately 20 times, ensuring that the vibrations are strong enough to be processed by the fluid-filled inner ear.

Additionally, the **Eustachian tube** connects the middle ear to the throat and helps equalize pressure on both sides of the eardrum, which is essential for proper vibration.

3. Inner Ear: Transducing Sound

The inner ear consists of:

- Cochlea: A spiral-shaped, fluid-filled structure that converts mechanical energy into electrical signals.
- Organ of Corti: Located inside the cochlea, this is the sensory organ of hearing. It contains hair cells (mechanoreceptors) that respond to different frequencies.
- **Basilar membrane**: Vibrates at specific locations depending on the sound's frequency, triggering hair cell activation.

High-frequency sounds vibrate the **base** of the cochlea, while low-frequency sounds affect the **apex**. Hair cell movement opens ion channels that create electrical impulses, which are then transmitted via the **auditory nerve (cranial nerve VIII)** to the brain.

Neural Acoustic Pathways: From Ear to Brain

Once the cochlea transduces sound into electrical signals, the information travels through the **central auditory pathways**:

- 1. Auditory Nerve (Cochlear Nerve): Carries the signal from the cochlea to the brainstem.
- 2. Cochlear Nucleus (Medulla): The first relay station for auditory input.
- 3. Superior Olivary Complex (Pons): Involved in binaural hearing and localization of sound.
- 4. Lateral Lemniscus: A tract of axons that transmits information to the next level.
- 5. Inferior Colliculus (Midbrain): Integrates spatial and temporal aspects of sound.
- 6. Medial Geniculate Body (Thalamus): Relays auditory signals to the auditory cortex.

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7. Auditory Cortex (Temporal Lobe): Final processing center where perception and interpretation of sound occur (located in Heschl's gyrus).

This system allows for complex auditory functions such as speech perception, music recognition, and environmental awareness.

Sound Reception and Speech Perception

In linguistic and phonetic contexts, the reception of speech sounds is particularly significant. Humans are capable of perceiving subtle acoustic differences such as:

- Voice onset time (VOT): The time delay between the release of a consonant and the start of vocal cord vibration (e.g., /p/ vs /b/).
- Formants: Resonant frequencies of the vocal tract that determine vowel quality.
- Pitch and intonation: Critical for understanding emotional tone, questions, and stress patterns.

The auditory cortex and surrounding areas (such as Wernicke's area) are specialized to decode these elements rapidly and efficiently.

Factors Affecting Sound Reception

Several factors can influence how sound is received and processed:

- Age: Age-related hearing loss (presbycusis) often affects high frequencies.
- Noise Exposure: Prolonged exposure to loud noise can damage hair cells.
- Hearing Disorders: Conditions like otitis media, auditory processing disorder, or sensorineural hearing loss can impair sound reception.
- Language Experience: Exposure to a particular language shapes auditory perception—e.g., tonal distinctions in Mandarin or retroflex sounds in Hindi.

Technological and Clinical Applications

Knowledge of acoustic pathways is crucial in:

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- Hearing Aids and Cochlear Implants: These devices bypass damaged areas to enhance or restore hearing.
- Audiometry: Tests like pure-tone audiometry assess how sound travels through the auditory system.
- **Speech Therapy**: Understanding how sound is received helps in treating articulation and auditory discrimination issues.
- Linguistic Research: Acoustic phonetics relies on knowledge of sound reception to study how languages encode and perceive sounds.



Step 1: Sound waves enter the ear.

When a sound occurs, it enters the **outer ear**, also referred to as the pinna or auricle. The pinna is the visible portion of your ear, and its funnel-like shape is well-engineered.

As sound hits the pinna, it filters and amplifies sound waves, and chutes them along into the ear canal, Next, sound waves hit the eardrum, or tympanic membrane, setting it in motion. "The eardrum is a

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paper-thin layer of a membrane that essentially vibrates as soon as sound waves hit it—very similar to a drum," Dr. Mehdizadeh says.

Step 2: Sound moves through the middle ear

Behind the eardrum is the **middle ear**. In this part of the ear's anatomy, sound waves are amplified before they are delivered to the inner ear.

Here's how that process unfurls: The eardrum is attached to a chain of three small bones, known as the ossicles. These three bones are the smallest ones in your body. When the eardrum vibrates in response to sound waves, these bones are set into motion as well.

The bone directly attached to the eardrum is the malleus ("the hammer"), which is connected at its other end to the incus ("the anvil"). The incus, in turn, is attached to the stapes (the "stirrup" or "footplate"). The shapes of the ossicles provide inspiration for their nicknames.

This last bone—the stapes—is connected to the oval window, which is a membrane separating the middle ear from the inner ear.

According to Scientific American, the orientation of the three bones allows them to function as a lever, amplifying the sound energy as it moves from the relatively large tympanic membrane to the relatively small oval window.

Step 3: Sound moves through the inner ear (the cochlea)

Vibrations from the stapes push on the oval window, and set up pressure waves in the fluid-filled cochlea, the snail-shaped **inner ear** that contains the organ of Corti. In the organ of Corti, vibrations are finally transformed into electrical energy by cells known as **hair cells** (stereocilia).

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The tiny hair cells lining the cochlea are stimulated by different frequencies. For example, many people with hearing loss have high-frequency hearing loss, making it harder to hear high-pitched sounds. This means the hair cells responsible for detecting high frequencies are damaged. (While less common, some people have low-frequency hearing loss or mid-range hearing loss.)

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You're born with about 16,000 of these hair cells, according to the Centers for Disease Control and Prevention (CDC). These hair cells translate the vibrations from sound waves into electrical impulses that then travel along a complex pathway of nerve fibers to the brain.

Note: Hair cells play a vital role in your hearing. They're also quite fragile: Loud sounds can damage or even destroy them, and once they're destroyed, they can't be repaired—and you'll feel the effects of noise-induced hearing loss. Blasting hair cells with noise is akin to trees in a hurricane, struggling to remain standing.

Step 4: Your brain interprets the signal.



Once sound is converted to electrical signals in the cochlea, these signals travel via a complex circuit of auditory nerve pathways to the auditory cortex and other parts of the brain that regulate awareness and sensory perception. (Some of these pathways shut down to let you sleep at night, for example, even if noise is present).

Sound processing likely occurs in both the cochlea and the brain,. But most of the neurological processing of sound occurs in the brain.Brain cells, known as sensory neurons, transmit the sound

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information to various areas of the brain, including the thalamus, temporal lobe, and auditory cortex, the National Institutes of Health explains. These are known as the auditory pathways.

The auditory pathways process and decode sounds, turning them into something meaningful, like a question, a honking horn, or music. They also help distinguish between nearby, important sounds and less vital background sounds, as well as processing the direction and location of sounds. Many parts of hearing work directly in concert with the vestibular, or balance system, which is located nearby, within the semicircular canals of the inner ear.

4.5. AUDITION

Audition, or the act of hearing, is a vital component in the study of phonetics, particularly within the branch of *auditory phonetics*. While phonetics as a discipline primarily investigates how speech sounds are produced and their physical properties, auditory phonetics specifically focuses on how these sounds are perceived by the human ear and processed by the brain. Understanding audition is crucial in comprehending how listeners recognize, interpret, and discriminate between speech sounds. It is an interdisciplinary domain that draws from physiology, acoustics, psychology, and linguistics to explain how humans receive and process the sounds of speech.

The Role of Audition in Phonetics

Phonetics is commonly divided into three branches: articulatory phonetics (how speech sounds are produced), acoustic phonetics (the physical properties of speech sounds), and auditory phonetics (how sounds are perceived). Audition is central to the latter. It involves not just hearing, but the interpretation and categorization of sounds as meaningful linguistic units (phonemes). Without audition, the communication process would be incomplete, as sound must be both produced and heard to convey language effectively.

Audition in phonetics is especially important for understanding language perception in different contexts—such as in noisy environments, across dialects, or for non-native speakers. It also plays a critical role in the development of speech in children and in the field of speech therapy and audiology.

The Auditory Mechanism: From Ear to Brain

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The process of audition begins with the **outer ear**, which collects sound waves from the environment and channels them through the **auditory canal** to the **eardrum (tympanic membrane)**. Vibrations from the eardrum are transferred to the **ossicles** in the **middle ear**—the **malleus**, **incus**, and **stapes**—which amplify the sound and transmit it to the **inner ear**, specifically to the **cochlea**.

The cochlea is a fluid-filled, spiral-shaped organ that plays a critical role in transforming mechanical vibrations into neural signals. Inside the cochlea lies the **organ of Corti**, which contains hair cells that respond to different frequencies. These hair cells convert mechanical energy into electrical impulses that are carried to the brain by the **auditory nerve**.

The neural signal travels through several relay stations in the brainstem, including the **cochlear nucleus**, **superior olivary complex**, **inferior colliculus**, and **medial geniculate body of the thalamus**, before reaching the **auditory cortex** in the **temporal lobe** of the brain. It is in the auditory cortex that the brain interprets these impulses as recognizable sounds, such as speech, music, or environmental noise.

Perception of Speech Sounds

Speech perception is an incredibly complex process. It involves distinguishing minute differences in acoustic signals and mapping them to known phonemic categories. For example, a listener must be able to differentiate between /b/ and /p/—a distinction based on **voice onset time (VOT)**. The brain learns to identify relevant acoustic cues and ignore irrelevant variations, a skill known as **categorical perception**.

A fundamental aspect of speech audition is the brain's ability to use **top-down processing**, where expectations, linguistic knowledge, and context influence how we interpret incoming sounds. For instance, when hearing speech in a noisy environment, our brain can "fill in" missing information based on familiarity with language patterns.

Another key area of study is **coarticulation**—how sounds influence each other in rapid speech. Listeners are generally unaware of this blending because the auditory system seamlessly processes coarticulated sounds into meaningful speech segments.

Auditory Phonetics and Phonological Processing

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Auditory phonetics is not just about detecting sound, but also about interpreting the phonological significance of that sound. For example, the difference between /t/ and /d/ is not only a matter of auditory perception, but also of understanding how these sounds function within a particular language's phonological system.

Studies in **psycholinguistics** and **cognitive phonetics** have shown that the human auditory system is particularly tuned to detect features relevant to the listener's native language. Infants, for example, are initially capable of distinguishing between a wide range of phonetic contrasts, but this ability becomes specialized to their native language(s) within the first year of life—a process known as **phonemic tuning**.

Cross-Linguistic Variation in Auditory Perception

Audition in phonetics also addresses how listeners perceive sounds across different languages. For instance, English speakers may not distinguish between retroflex and dental stops as used in Hindi, while Hindi speakers easily do so. Likewise, Japanese speakers often struggle with the /l/ and /r/ distinction in English, as this contrast is not phonemic in Japanese.

These cross-linguistic differences highlight how auditory perception is shaped by linguistic experience. Phonetic training and exposure can help listeners develop new perceptual categories, which is essential in second-language acquisition.

Audition and Speech Disorders

Deficits in auditory processing can lead to communication problems. For instance, individuals with **auditory processing disorder (APD)** may have difficulty understanding speech, especially in noisy environments, despite having normal hearing sensitivity. Similarly, **hearing-impaired individuals** may miss important phonetic cues, making it difficult for them to distinguish between similar-sounding words.

In such cases, auditory phonetics plays a vital role in developing therapeutic strategies. Audiologists and speech-language pathologists often rely on insights from auditory phonetics to improve speech

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perception in individuals with hearing or processing challenges. Technologies such as **cochlear implants** and **hearing aids** aim to enhance auditory input and improve speech understanding.

Applications in Technology

With the growth of speech recognition technology, understanding human audition has become increasingly relevant. Systems like **automatic speech recognition** (**ASR**) must be trained to recognize and interpret human speech accurately. Auditory models help improve ASR systems by mimicking how humans process speech sounds.

Similarly, in **text-to-speech** systems and **language learning apps**, auditory phonetics is used to ensure accurate and intelligible pronunciation. Understanding how humans perceive speech sounds aids in the creation of synthetic voices that sound natural and fluent.

Conclusion

Audition in phonetics is a foundational aspect of understanding human communication. It bridges the gap between sound production and linguistic interpretation by focusing on how listeners perceive, decode, and interpret speech sounds. The auditory process involves a remarkable interplay of anatomical structures, acoustic signals, and cognitive processing. From the capture of sound waves by the ear to the intricate decoding in the brain, audition enables us to engage in one of the most sophisticated human behaviors—spoken language.

As linguistic diversity and technological innovation continue to evolve, so too does the importance of understanding how humans hear and make sense of speech. Insights from auditory phonetics contribute not only to theoretical linguistics but also to practical domains such as language learning, audiology, artificial intelligence, and speech therapy. In essence, audition is where the physical reality of sound becomes the lived experience of language.

4.6. SUMMARY

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Hence to sum up we have learnt Speech communication is a complex process involving three interconnected stages: **production**, **reception**, and **audition**. These stages form the foundation of phonetics, enabling the encoding, transmission, and decoding of spoken language.

Speech production begins with the coordination of various anatomical structures known as the **speech organs**, including the lungs, vocal cords, tongue, lips, and palate. Air from the lungs is pushed through the vocal tract, where it is shaped into distinct sounds through articulatory movements—each classified by its place and manner of articulation. This is the realm of **articulatory phonetics**.

Reception refers to the mechanical and physiological processes by which sound waves travel through the air and are received by the human ear. The **outer ear** captures sound, the **middle ear** transmits it via the ossicles, and the **inner ear**, particularly the **cochlea**, converts it into neural signals.

Audition, or auditory perception, is the brain's interpretation of these signals. The auditory nerve carries the information to the brainstem and onward to the **auditory cortex**, where it is processed and understood as speech. **Auditory phonetics** focuses on how these sounds are perceived, including distinctions like pitch, loudness, duration, and phonemic contrasts.

Together, these three components—production, reception, and audition—allow for effective oral communication. Understanding them is essential not only in linguistics but also in fields such as speech therapy, language education, audiology, and artificial intelligence, where precise speech processing is critical.

4.7. TERMINAL QUESTIONS

Objective Questions (MCQs/Fill in the blanks/True or False)

1. Which part of the ear converts sound vibrations into electrical signals? a)Pinna

b)Ossicles

c)Cochlea

d) Eardrum

2. True or False: The vocal cords are located in the pharynx.
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- 3. Fill in the blank: The ______ carries auditory signals from the cochlea to the brain.
- 4. Which branch of phonetics focuses on how speech sounds are perceived? a)Articulatory phonetics
 - b)Acoustic phonetics
 - c)Auditory phonetics
 - d) Descriptive phonetics
- 5. Match the following:
 - $\circ \quad (i) \text{ Lungs} \rightarrow (a) \text{ Reception}$
 - \circ (ii) Eardrum \rightarrow (b) Audition
 - (iii) Temporal lobe \rightarrow (c) Sound production
 - (iv) Cochlear nerve \rightarrow (d) Sound reception

Short Answer Questions

- 1. Define auditory phonetics.
- 2. What is the role of the cochlea in the process of hearing?
- 3. List the three stages involved in speech communication.
- 4. Explain the function of the vocal folds in speech production.
- 5. Differentiate between speech reception and speech audition.

Essay/Descriptive Questions

- 1. Explain the complete process of speech production, from lungs to articulation.
- 2. Describe the auditory pathway from the outer ear to the auditory cortex.
- 3. Discuss the interrelationship between speech production, reception, and audition.
- 4. How do speech production and audition differ between normal and hearing-impaired individuals?
- 5. Illustrate the importance of understanding the auditory process in language learning and speech therapy.

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UNIT-5 SOUNDS OF ENGLISH LANGUAGE

- 5.1 Introduction
- 5.2. Objectives
- 5.3. Spelling and Pronunciation
- 5.4. Correspondence between Sounds and Symbols
- 5.5. Check Your Progress
- 5.6. The Seech Mechanism.
- 5.7. Description of Consonant Sounds

5.7.1. Voiced and Voiceless Sound

5.7.2. Oral and Nasal Sound

5.8. Articulators

5.8.1.Place of Articulation

5.8.2. Manner of Articulation

5.9.Three Term Label

5.10. Check your Progress

5.11. Vowels and Dipthongs

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- 5.12. Check Your progress
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- 5.14. Check Your Progress
- 5.15. Answer to Self Assessement Questions
- 5.16. Summary
- 5.17. References
- 5.18. Suggested Readings
- 5.19. Terminal and Model Questions

5.1. INTRODUCTION

As we know nowadays English is no more considered as a foreign language in our country. It exists like a younger sibling in the 'language family of India'. It is probably the most sought after language due to its utility as a 'link' language both at national and international language. Such a wide and extensive use of English language in everyday life requires the ability to speak impeccable English but it has been still a challenge for most speakers in our country. This problem is not surprising, it arises when the mother tongue effect interferes with the target language as in the case of Indians speakers. They have to make conscious efforts while speaking standard and clear form of English language. As there are scores of regional languages, India has developed several varieties of spoken English due to interference of mother tongue. For example, the speech of a Bengali speaker in English will differ markedly from that of a Punjabi or a Gujrati speaker. In the similar manner our country doesn't have strictly speaking, something called Indian English language in spoken form.

To undertake a systematic study of the speech sounds as it would help you to internalize the rules of standard form of English. It would make your communication more effective and intelligible.

5.2. Objectives

After going through this Unit, you will be able to :

- identify the relationship between spelling and sound
- identify the correct pronunciation by using RP system
- recognize and describe the consonants of English
- draw the difference between pure vowels and vowel glides along with their uses
- use English language in an effective and intelligible manner

5.3. SPELLING AND PRONUNCIATION

In Hindi and other native languages of India , there is one to one correspondence between spelling and sound (pronunciation) but English language does not share the same relationship. In English language same letters of the alphabet may have different pronunciations.

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For example: The letter 'ch' is pronounced in different ways in each of these words – chair, school, machine

In the word 'chair', the letters 'ch' represent / tJ/ $\,$, [$\ensuremath{\overline{\texttt{T}}}\,$] sound in Hindi

In the word 'school', the letters 'ch' represent /k/, [\overline{a}] sound in Hindi

In the word 'machine' the letters 'ch' represents/ \int /, [\Re] sound in Hindi

As you see in the above quoted example that the letters '**ch**' represent three different sounds in the three words. That is why we need a different notation in which one symbol may represent only one sound. For this purpose, the symbols of 'International Phonetic Association' are followed. These symbols are known as (IPA). 'International Phonetic Alphabet' and these symbols are used to transcribe the sounds of any language.

By this point, you might have understood that to attempt a systematic study of sounds, you need to learn the phonetic symbols which represent all the 44 sounds in English language. Let us now take a look at the phonetic symbols comprising vowel and consonant sounds.

Vowels

| Phonetic Symbol | Example |
|-----------------|--|
| | (the letters representing the sound are in bold) |
| / i: / | Feel |
| / I / | Fill |
| / e / | Bed |
| / æ / | Bad |
| / a: / | B a rn |
| / ɒ / | Cot |
| /ɔ:/ | Caught |
| /υ/ | Full |
| / u:/ | Fool |
| / ʌ / | Sun |

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|-------------------------|--------------|
| /3:/ | Burn |
| / ə / | Ago |
| /eɪ / | Pane |
| /aɪ / | Fly |
| /ɔɪ/ | Тоу |
| / 19/ | Fear |
| / eə / | Fare |
| / ʊə / | Tour |
| / ວບ/ | No |
| / av / | Now |

Consonants

| Phonetic Symbol | Example |
|-----------------|--|
| | (the letters representing the sound are in bold) |
| /p/ | Park |
| /b/ | Back |
| /t/ | Tree |
| /d/ | Day |
| /k/ | Calm |
| /g/ | Gift |
| /tʃ/ | Chair |
| /dʒ/ | Jam |
| /f/ | Faint |

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|-------------------------|--------------|
| /v/ | Veil |
| /θ/ | Thank |
| /ð/ | Then |
| /s/ | Slim |
| /z/ | Zero |
| /ʃ / | Shine |
| /3/ | Measure |
| /h/ | Host |
| /m/ | Might |
| /n/ | Night |
| /ŋ/ | Ring |
| /1/ | Lion |
| /r/ | Rat |
| /j/ | Yellow |
| /w/ | Wet |

These symbols are used to indicate the manner in which the words are pronounced. It is a convenient device known as Phonetic transcription. You should always remember that the correct way of writing phonetic symbols is given in the table and put within bars.

To improve pronunciation, you should learn these symbols and try to transcribe a few words every day. This practice will enrich your vocabulary also because for the right pronunciation you will have to check the transcription in dictionary.

5.4. CORRESPONDENCE BETWEEN SOUNDS AND SYMBOLS

English language has 26 letters but 44 sounds which makes it obvious that some letters must account for more than one sound. For your better understanding, there are some other tables which are classified according to letters which correspond with more than one sound.

| Sound | Example |
|-------|---|
| | |
| /æ/ | <u>a</u> pple, <u>a</u> mble, <u>a</u> ccept |
| /1/ | v <u>i</u> llage, bag <u>ga</u> ge, lu <u>gga</u> ge |
| /ə/ | <u>a</u> muse, <u>a</u> mong, <u>a</u> miss |
| /ɔ/ | w <u>a</u> lk, t <u>a</u> lk, w <u>a</u> sh |
| /a:/ | b <u>a</u> rge, b <u>a</u> rk, c <u>a</u> r |
| /ə:/ | $c\underline{a}$ ll, w <u>a</u> ter, b <u>a</u> ll, b <u>a</u> ld |
| /eɪ/ | <u>ga</u> te, r <u>a</u> te, pl <u>a</u> te |
| /eə/ | c <u>a</u> re, r <u>a</u> re, f <u>a</u> re |

The letter **A** corresponds with the following sounds:

The letter **C** corresponds with the following sounds:

| Sound | Example |
|-------|---|
| /k/ | <u>c</u> at, <u>c</u> omputer, <u>c</u> ash |
| /s/ | <u>c</u> ity, <u>c</u> ensor, <u>c</u> eiling |

The letter **D** corresponds with the following sounds:

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| Sound | Example |
|-------|---|
| /d/ | dog, <u>d</u> ebt, <u>d</u> ispute |
| /dʒ/ | e <u>d</u> ucate |
| /t/ | picke <u>d</u> , laughe <u>d</u> , walke <u>d</u> |

The letter \mathbf{E} corresponds with the following sounds:

| Sound | Example |
|-------|---|
| /e/ | b <u>e</u> d, s <u>e</u> nd, <u>e</u> nd |
| /aɪ/ | rem <u>i</u> nd, r <u>e</u> ply |
| /i:/ | m <u>e</u> diocre, comp <u>e</u> te, <u>e</u> conomic |
| /ɪə/ | zero, period, serious |

The letter ${\bf G}$ corresponds with the following sounds:

| Sound | Example |
|-------|-----------------------|
| /g/ | gun, golf, game |
| /dʒ/ | genes, germ, gem |
| /3/ | garage, beige, mirage |

The letter I corresponds with the following sounds:

| Sound | Example |
|-------|---------|
| | |

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| /1/ | p <u>i</u> n, b <u>i</u> t, gl <u>i</u> tter |
|------|--|
| /3-/ | b <u>i</u> rd, b <u>i</u> rth, f <u>i</u> rm |
| /aɪ/ | k <u>i</u> nd, w <u>i</u> se, pr <u>i</u> de |

The letter \mathbf{O} corresponds with the following sounds:

| Sound | Example |
|-------|--|
| | glottal, mop, pod |
| / D/ | |
| /ɔ:/ | gl <u>o</u> ry, m <u>o</u> rning, l <u>o</u> rd |
| /ʊ/ | p <u>u</u> ll, b <u>oo</u> k, f <u>oo</u> t |
| /u:/ | f <u>oo</u> l, p <u>oo</u> l, sch <u>oo</u> l |
| /// | ch <u>u</u> nk, s <u>o</u> n, s <u>o</u> me |
| /əʊ/ | <u>go</u> , n <u>o</u> , d <u>o</u> se |
| /ə/ | c <u>o</u> ncede, c <u>o</u> nfess, c <u>o</u> nsume |

The letter ${\bf S}$ corresponds with the following sounds:

| Sound | Example |
|-------|---|
| /s/ | <u>s</u> um, <u>s</u> poon, <u>s</u> ip |
| /z/ | he <u>s</u> itate, cau <u>s</u> e, vi <u>s</u> it |
| /3/ | leisure, measure, pleasure |
| /ʃ/ | sugar, tension, expression |

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The letter **U** corresponds with the following sounds:

| Sound | Example |
|-------|---|
| | |
| /ʊ/ | p <u>u</u> t, p <u>u</u> ll, b <u>u</u> sh |
| /u:/ | cr <u>u</u> de, bl <u>u</u> e, men <u>u</u> |
| /jʊ/ | c <u>u</u> re, drac <u>u</u> la, form <u>u</u> la |
| /ju:/ | j <u>u</u> te, c <u>u</u> te, d <u>u</u> ty |
| /_/ | c <u>u</u> t, h <u>u</u> t, sh <u>u</u> t |
| /31/ | c <u>u</u> rl, b <u>u</u> rn, n <u>u</u> rse |

The letter \mathbf{X} corresponds with the following sounds:

| Sound | Example |
|-------|---------------------------------------|
| /gz/ | exalt, exam, exaggerate |
| /ks/ | excel, Xmas, excavate, except, excess |
| /z/ | xylem, Xerox, xenon, xenophobia |
| /gʒ/ | luxury |

There are some combinations of letters which correspond to more than one sound. The letter combination **Ch** corresponds with the following sounds:

| Sound | Example |
|-------|--------------------------|
| /k/ | chameleon, chorus, chord |
| /tʃ/ | charity, chase, church |

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/ʃ/ machine, chauffeur, chauvinism

Four lettered combination **ough** corresponds with the following sounds

| Sound | Example |
|-------|------------------------|
| | |
| /əʊ/ | though, dough |
| /ʌf/ | rough, tough |
| /ɒf/ | cough |
| /u:/ | through |
| /ə:/ | bought, sought, fought |

Now, you are familiar with all the 44 phonetic symbols. On the basis of phonetic transcription, you can improve your pronunciation and use the standard form of English effectively in your speech. This practice will make you self-learner and you will save yourself from the embarrassment of using bizarre pronunciation. Here are a few examples of phonetic transcription done for you. Go through each one of them carefully.

| Word | Transcription |
|----------|---------------|
| about | /əbaʊt/ |
| alphabet | /ælfəbet/ |
| apart | /əpa:t/ |
| beauty | /bju:.ti/ |
| behind | /bɪhaɪnd/ |

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|-------------------------|----------------|
| examination | /ɪɡzæmɪneɪʃən/ |
| break | /breik/ |
| country | /kʌntri/ |
| daughter | /dɔ:tə/ |

5.5. CHECK YOUR PROGRESS

Exercise-1

Write the phonetic symbols of all the letter 'a' corresponds with the following words.

- 1. **a**sk / /
- 2. **a**xe / /
- 3. **a**go / /
- 4. **a**ll / /
- 5. **a**im / /

Exercise -2

Some words are given below in phonetic transcription. Read the transcribed words and write them in orthography (ordinary spelling).

/ ə'gəʊ / / ə'krɒs / /bī'treɪ/ /dī'faī n / / rī'mærī / /dīs'tʃa:dʒ/ / rī'leīt / / rī'vaīz/ /kə'lekt / / kə'lekʃ n / /hīs'tɒrīk / /hīs'tɒrīkl/ / ī'senʃəlī / / tek'nīʃn/ /'sīrīəs/ /'ænīmeīt / / kəm'pleīnīŋ/ /'ɔ:rgnaīz / /'klærīfaī / /əd'v3:sətī / /dī'mɒkrəsī /'deməkræt / /'pærəgra:f / /dʒī'ɒlədʒī / / kən'teī n / / mīljə'neə / / kə'rīə //'dentl / / ī'senʃl / / kəm'pleīn / /kən'dʌkt /) / səb'dʒekt / /'rekɔ:d /

5.6. THE SPEECH MECHANISM

Human beings possess the capacity of expressing themselves by producing different sounds. For this purpose, human beings use certain body organs and all organs function as a mechanism to produce

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speech. This mechanism involves mainly three systems and all work as a unified whole. These systems are known as:

- The Respiratory System -The respiratory system comprises the lungs, the bronchial tubes and the windpipe or trachea.
- The Phonatory System- The phonatory system is formed by the larynx and the larynx contains the vocal cords. The opening between the vocal cords is known as the glottis.
- The Articulatory System-The articulatory system consists of the nose, the lips and the mouth.

You must be aware that for English language and most Indian languages all sounds are produced by the egressive pulmonic air-stream mechanism i.e. the air that moves out of the lungs gets modified at many places inside the vocal tract in order to produce different sounds. The given categorization of the speech organs and the related image will impart you more clarity regarding the speech process.



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Source : A Practical Course in English Pronunciation

As you know that English language has 44 sounds and these are divided into two categories:

Consonants- 24

Vowels- Monophthongs - 12

Diphthongs - 08

Since you are well versed with the concept of speech sounds and the phonetic symbols, now turn to the description and classification of consonant sounds.

5.7. DESCRIPTION OF CONSONANT SOUNDS

By this point you must be knowing that for English language, the air is pushed out of the lungs. Consonant sounds are produced when the air-stream moving out of the lungs is obstructed at some or the other point before being released. The description of consonant sounds is based on the following factors:

- 1. the state of the glottis (Voiced or Voiceless)
- 2. the position of the velum or soft palate (Oral and Nasal sound)
- 3. the articulators involved (Place of Articulation)
- 4. the ways in which the air passage is restricted (Manner of Articulation)

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5.7.1 Voiced and Voiceless Sounds

As you noticed in the figure (the organs of speech) two folds of ligaments inside the larynx. These two elastic tissues are known as vocal cords. These may be brought together or parted. The opening between the vocal cords is known as glottis. If the vocal cords are thrown wide apart and the air coming out of lungs doesn't create any vibration in the vocal cords, such sounds are said to be voiceless. In such condition, the glottis is open and this state remains the same while breathing. You can see the difference between the open glottis and glottis in vibration in the given pictures labelled (A) and (B)-



(A) Vocal cords in wide apart -position for breath and during the production of voiceless sounds



(B) Vocal cords loosely held together and in vibrating position during the production of voiced sounds.

Source: Phonetics and Spoken English

In English language, the consonant sounds like /p, t, k, tſ, f, θ , s, ſ, h, / are voiceless whereas the rest others like / b, d, g, m, n, ŋ v, ð z, ʒ, dʒ l, r, j, w / are voiced sounds. In the articulation of voiced sounds, the vocal cords are alternately brought into contact and blown apart by the force of the pulmonic air stream flowing through the glottis. Though the process of closing and opening of vocal cords is a regular process in human beings but the frequency of vibration varies. In man's voice, the frequency remains 100 and 150 times in a second whereas in woman's voice it is between 200 and 325 times in a second. The sounds represented by the Devanagari symbols $\overline{\mathbf{q}}$ [t] $\overline{\mathbf{\pi}}$ [k] and $\overline{\mathbf{u}}$ [k] are also voiceless sounds. The sounds represented by the Devanagri symbols $\overline{\mathbf{q}}$ [d] $\mathbf{\eta}$ [g] and $\overline{\mathbf{q}}$ [gh] are some more examples of voiced sounds.

5.7.2. Oral and Nasal sounds

Another classification of consonant sounds has been done on the basis of the manner of releasing of air and the position of soft palate. In normal breathing the soft palate is lowered so that the air can escape through the nose and the mouth. Bring out the difference in the given pictures-



Source : A Practical Course in English Pronunciation



In the first two pictures, the soft palate is raised up and it shuts off the nasal passage completely. In such condition, the oral sounds are produced. In contrast to the above condition, you can observe the lowered position of soft palate in next two pictures where the nasal passage is open. In this position, the oral passage is closed and the air from lungs moves out only through the nasal passage, thus producing nasal sounds. /m/, /n/ and /ŋ/are nasal sounds and the rest of the consonant sounds are oral sounds.

5.8. ARTICULATORS

Another classification of consonant sounds is done on the basis of the roles played by various articulators in the production of consonant sounds. In every case, one articulator which is called the active ones moves towards the other articulator which is termed as the passive articulator.



The Place of articulation indicates the role of active articulator and passive articulator. The manner of articulation refers to the type of stricture or closure involved in the production of a consonant sound. The stricture is the technical term used for the position taken up by the active articulator in relation to the passive articulator. It reveals the nature of the air stream passage at a particular point in the vocal tract.

5.8.1. Place of Articulation

While studying, if you pay attention to the label used to categorize consonant sounds is an adjective. It is derived from the name of the passive articulator. Some of the important categories are given below.

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- 1. **Bilabial** Bilabial sounds are produced by pressing two lips together. Lower lip is the active articulator while upper lip is the passive articulator. Examples-/p, b, m/are bilabial sounds.
- 2. Labio- Dental: These sounds are produced when the lower lip is raised towards the upper front teeth. Lower lip is the active articulator and upper teeth is the passive articulator. Examples- / f, v / are labio- dental sounds.
- Dental: Dental sounds are produced by touching the tip of the tongue to upper front teeth. Lower lip is the active articulator and upper teeth is the passive articulator. For example, / θ, ð / are dental sounds.
- 4. **Alveolar:** Alveolar sounds are produced by raising the tip & blade of the tongue towards the alveolar ridge. The tip or the blade of the tongue is the active articulator and the teeth-ridge is the passive articulator. Examples-/ t, d, l, n, s, z/ are alveolar sounds.
- 5. **Post alveolar:** In the articulation of post-alveolar, the tip of the tongue is raised very close towards the back of alveolar ridge. The tip of the tongue is the active articulator and the back of the teeth ridge is the passive articulator. /r/ is an example of post-alveolar sound.
- 6. **Palato –alveolar:** These sounds are produced when the tip and blade of the tongue is raised towards the alveolar ridge simultaneously the front of the tongue is raised towards the hard palate. The tip, blade and front of the tongue are the active articulators. The teeth ridge and hard palate are the passive articulators. / \int , 3, t \int , d3 / are examples of palato alveolar.
- 7. **Palatal:** The front of the tongue is raised towards hard palate. The active articulator is the front of the tongue. The passive articulator is the hard palate. /j/is an example of palatal sound.
- Velar: Velar sounds made by touching the back of the tongue to the soft palate called the velum. The back of the tongue is the active articulator and the soft palate is the passive articulator. For example, /k, g, ŋ / are Velar sounds.
- 9. **Glottal:** The sound is produced at the glottis and the vocal cords are the articulators. /h/ is an example of glottal sound.

Above detailed information regarding the place of articulation of consonant sounds can be represented in table form, as given below-

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| Consonant | Active | Passive Articulator | Examples |
|-----------------|--------------------------------------|-------------------------------------|---------------------|
| | Articulator | | |
| Bilabial | Lower lip | Upper lip | / p, b, m / |
| Labio-dental | Lower lip | Upper teeth | / f, v / |
| Dental | Tip of the tongue | Upper teeth | / θ, ð / |
| Alveolar | Blade of tongue | Alveolar ridge | / t, d, l, n, s, z/ |
| Post -alveolar | Tip of tongue | Back of the alveolar ridge | /r/ |
| Palato-alveolar | Blade and the front of the tongue | Alveolar ridge with the hard palate | / ʃ, ʒ, tʃ, dʒ / |
| Palatal | Front of tongue | Hard palate | /j/ |
| Velar | Middle of tongue | Soft palate | /k, g, ŋ / |
| Glottal | Narrowing between the vocal cords | | /h/ |

5.8.2. Manner of Articulation

Depending upon the manner of articulation, consonants can be classified into the following categories:

Plosives – In the production of plosives, there is a simultaneous oral and nasal closure. The active articulator touches the passive articulator forming a complete closure of the air passage and the air is suddenly released with an explosion. Sounds produced with the stricture of complete closure are called plosive sounds e.g. /p/b/t/d/k/ and /g/.

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Affricates – Affricate like plosive shares similar places of articulation. There is one difference between affricate and plosive is that in affricate there is complete closure and slow release, e.g./t \int / and /d $_3$ /.

Nasals – A nasal sound is produced with a complete closure of the oral passage and the soft palate is lowered. Hence, the air passes through the nose, e.g. /m//n /and /n/.

Lateral –A lateral consonant is produced with a closure in the middle of the mouth (center of the vocal tract) and forms partial closure. Then air passes through the sides of the mouth. /1/ is an example of lateral.

Fricatives –In the production of a fricative consonant, the active articulator moves towards the passive ones but does not show a complete closure. The space between the active articulator and the passive articulator is so close that the passage between them is very narrow and the air passes through it with audible friction. Thus, for fricative sounds, there is no closure anywhere but narrowing only e.g. /f/, /v/, $/\theta/$, $/\delta/$, /s/, /z/, /J/, /3/ and /h/.

Frictionless continuant or Open approximation – Open approximation means that the oral tract is somewhat more open than in close approximation, so that there is no friction. For /r/ this kind of stricture is used.

Semi vowels – A semi vowel is a vowel glide functioning as a consonant sound, e.g. /j/and /w/ .

Above detailed information regarding the manner of articulation of consonant sounds can be represented in table form, as given below-

| Consonant | Manner of Articulation | Examples |
|-----------|-------------------------------|-----------------------|
| Plosives | A complete closure of the air | /p/b/t/d/k/ and / g / |

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| | passage and sudden release | |
|-------------------------|---------------------------------|--|
| Affricates | A complete closure of the air | /tʃ/ and /dʒ/ |
| | passage and slow release | |
| Nasals | A complete closure of the air | /m//n /and /ŋ/ |
| | passage and the air passes | |
| | escapes through the nose | |
| Lateral | A closure of the air passage in | /1/ |
| | the middle of the mouth and | |
| | the air escapes through the | |
| | sides | |
| Fricatives | Not a complete closure of the | $/f/, /v/, /\theta/, /\delta/, /s/, /z/, /f/,$ |
| | air passage but so narrow that | /ʒ/and /h/. |
| | friction can be heard when the | |
| | air passes through it | |
| Frictionless continuant | No closure or friction but the | / r / |
| | sound has a consonantal | |
| | function | |
| Semi-Vowels | Vowel glides with a | /j/ and /w/ |
| | consonantal function | |

To make your concept more clear regarding the articulation of consonant sounds , some pictures are given below : Figure (1) shows the articulation of alveolar fricatives /s/ and /z/. the tip and blade of the tongue are very close to the teeth-ridge. The stricture is showing close approximation. The soft palate is in the raised position.

Figure (2)is related to the articulation of alveolar plosives /t/ and /d/ as in tin and din. The soft palate is in its raised position and closing the nasal passage of air. In articulators, the tip and blade of the tongue are making a making a firm contact with the teeth-ridge, forming an oral closure.

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Pigure 1

Arriculation of atventar fricatives I s I & I z I. Note the soft palate in its mixed practice. See also the tip and black of the tangue very close to the terrh-ridge (the structure is one of close approximation).



Figure 2 Articulation of alveolar photoes [t] 4 1 d] as in *in* and stor. Note the set palate in its raised position, abutting off the casal possage of am The tip and black of the tongue make a firm contact with the tech-ridge, resulting in order forage.



To develop your better understanding, observe other figures carefully.

Figure (3) has shown the articulation of bilabial plosives /p/ and /b/. Note the two lips are in firm contact with each other. The soft palate is in its raised position.

In Figure (4) the articulation of alveolar nasal /n/ has been shown. The tip and blade of the tongue has made a firm contact with the alveolar ridge .The oral passage is completely closed and the air passes through nose.

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Pigure 3 Articulation of bilabial plosives (p) & (b). Note the two hps in firm contact with each other and the soft palate in its raised position.





Some more pictures will give you the clear idea of articulation process. See the figure (5) and (6)



Figure (5) is showing the articulation of Hindi (\overline{c} and \overline{s}). You can observe the soft palate in its raised position and the tip of the tongue is curled back. It is making a firm contact behind the teeth -ridge.

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In Figure (6) the articulation of velar nasal $/\eta$ / has been shown. In this image the back of the tongue is making a firm contact with the soft palate. It is in its lowered position and giving way to the nasal passage.

5.9. THREE TERM LABELS

Now you got the detailed description of consonant sounds. To recapitulate the detailed information, we can describe consonant sounds briefly by using three term labels indicating -

- 1. whether the sound is voiced or voiceless
- 2. the place of articulation, and
- 3. the manner of articulation

Some examples are done for you. On the basis of these you can practice-

- /p/ as in **p**ot is described as a **voiceless bilabial plosive.**
- /m/ as in mat is described as a voiced bilabial nasal.
- $/\eta$ / as in sing is described as a voiced velar nasal.
- /z/ as in zoo is described as a voiced alveolar fricative.

5.10. CHECK YOUR PROGRESS

Exercise-3

Q.1. What is the process that deals with the source of air used in the production of sound?

- Q.2. Are vowel sounds voiced or voiceless?
- Q.3. What is another name for soft palate?
- Q.4. Give examples of two consonant sounds that involve both velar and velic closure.

Exercise -4- Give three term labels for the following consonant sounds:

 1. /b/

 2. /t/

 3. /d/

 4. /k/

| 5. | / g/ | |
|-----|---------|--|
| 6. | /m/ | |
| 7. | /f/ | |
| 8. | / 0 / | |
| 9. | /s/ | |
| 10. | . / ð / | |

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5.11 VOWELS AND DIPTHONGS

You are already well familiar with the difference between the articulation of consonants and vowel sounds. It means when the vowel sounds are produced, the air moves out of the lungs freely and not obstructed at any point in the vocal tract. Vowel sounds are produced with an open approximation of the articulators. That is to say, the active articulator which is always the tongue (the front, centre and back) is raised towards the passive articulator which is the roof of the oral cavity (the hard palate, soft palate, or the middle point of the hard palate and soft palate).

Before moving towards the description and classification of vowel sounds, let's pay attention to the different parts of the tongue, roof of the oral cavity and the shape of the lips. All play very important role in the articulation of vowel sound.



Source: A Practical Course in English Pronunciation

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Tongue (the active articulator) can assume different positions to produce different vowel sounds. As you see in the given figure, four different tongue positions are indicated.



(The front, the centre and the back of tongue) Source : *Phonetics and Spoken English*

On the basis of the tongue position (according to the degree to which the tongue is risen) vowels are classified in different categories. Some of them are as follows –

- **'Front' vowels**-'Front' vowels are those which are produced with the front part of the tongue and it is raised in the direction of the hard palate. e.g./i:, I, e, æ/ as in words like feel, fill, set, sat
- **'Back' vowels-**During the articulation of 'back' vowels, the back of the tongue is raised in the direction of the soft palate e.g. /v, u:, p, o:, and a:/ as in words like put, pot, pool, caught, car.
- 'Central' vowels-There is another category of vowel sounds, which are produced when the central part of the tongue is raised towards the meeting point of the hard palate and the soft palate. These vowels are called 'central' vowels e.g. /ə, 3:, Λ/ in words like ago, bird, cut.

I hope by this point, you are familiar with the vowels marked 1 and 4. The classification on the basis of the tongue positions is as follows-



Source: A Practical Course in English Pronunciation

You can see four different tongue positions in the diagram: close, half close, half open and open along with the marking of short vowels and long vowels. The length is marked by two dots (:) after vowel. If there are dots, the sounds are long, if not the sounds are short. e. g. / i: / is a long vowel and / I / is a short vowel.

Shape of the lips: In the articulation of vowel sounds, lips take various positions. e.g unrounded and rounded.

| Vowels | Examples | Shapeofthe |
|----------------|-----------------|------------|
| | | lips |
| Front vowels | /i:, 1, e, æ/ | unrounded |
| Back vowels | /ʊ, u:, ɒ, ɔ: / | rounded |
| Back vowel | / a:/ | unrounded |
| Central vowels | /ə, 3:, A/ | unrounded |

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To recapitulate all the points related to vowel description and their classification, you can use three term labels .e.g.-

| 1. / I / as in bin - front unrounded just between close and half close. | | |
|---|--|--|
| 2. / i: / as in beam - front unrounded just below close. | | |
| 3. / e / as in pet - front unrounded between half close and half open. | | |
| 4. $/ \alpha / as in pat - front unrounded just below half open.$ | | |
| 5. / a : /as in car- back unrounded open. | | |
| 6. / v /as in pot - back rounded open. | | |
| 7. /ɔ:/ as in caught - back rounded between half close and half open. | | |
| 8. $ / \sigma / as in look$ - back rounded between close and half close. | | |
| 9. / u:/as in pool - back rounded close. | | |
| 10. / Λ / as in cut - central unrounded between half -open and open | | |
| 11. / ə /as in about - central unrounded between half- close and half -open | | |
| 12. / 3: /as in turn - central unrounded between half close and half open | | |

5.12. CHECK YOUR PROGRESS

Exercise –5

Choose the appropriate word in the following sentences.

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- 1. Feel/fill this bag with fresh beans/bins.
- 2. He does not want to sleep/slip in his neat/knit suit.
- 3. Was he the one who wanted to steal/still the week/wick.
- 4. I feel/fell off the step/steep.
- 5. Can you guess/geese what I fed/feed the baby with?
- 6. He seed/said he wanted to check/cheek the bread/breed.
- 7. He sat at the **pull /pool** and watched the **fool/full** event.
- 8. The pigeons could/cooed, as the horse was being shoed/should.
- 9. The **shark/shock** was captured by them.
- 10. She worked as a **clerk/cloak** in his office.

5.13. DIPTHONGS OR VOWEL GLIDES

As you know that there are twelve pure vowels or monophthongs and eight vowel glides or diphthongs. As the title itself indicates that in the production of diphthongs vowel glides from one position to another whereas in pure vowels, the tongue takes just one position.

For example, the vowel in 'car' can be prolonged without any change in its quality but vowel in 'cow', changes its quality. In the articulation of the vowel in 'cow' the tongue changes its position. First, the back of the tongue is in the fully open position and the lips are not rounded (as in the vowel sound /a:/). From this position, the back of the tongue moves in the direction of a point which is between close and half close and the lips during the articulation of second vowel sound /u/ becomes rounded. Such a vowel sound which changes its quality is called a diphthong.

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Diphthongs are divided in two categories:



In the articulation of closing diphthongs, the tongue glides to the close vowels e.g. /e1/ in play, /a1/ in fly, / σ 1/ in boil, / σ 0/ in go, /a σ / in now. In the centering diphthongs, the tongue glides to the central vowels e.g. /1 σ / in fear, /e σ / in fare, / σ σ / in poor.

As you studied in consonant and vowel sounds, the 'three term label' for each sound, the diphthongs are given in the similar manner. These are as follows:

1. / e_{I} : In this closing diphthongs, the tongue glides from /e/ front unrounded between half close and half open to / I / centralized front unrounded just above half close as in 'bay'.

2. / **ai** /: In this closing diphthongs, the tongue glides from /a:/ /front unrounded open position to /ai/ centralized front unrounded just above half close as in 'fly'.

3. / \Im I/: The tongue glides from / \Im / back rounded just above open to / I / centralized front spread just above half close as in ' toy'.

4. / $\vartheta \sigma$ /:During the articulation of this closing diphthongs, the tongue glides from / ϑ / central neutral between half close and half open position to / υ / centralized back rounded just above half close as in 'grow'.

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5. /au/: In this closing diphthongs, the tongue glides from / a: / back open unrounded to/ σ / centralized back rounded vowel just below the half close position as in 'cow'.

6. / $I\partial$: In this centering diphthong, the glide takes place from /I/centralized front just unrounded above half close position to the final / ∂ / central unrounded below half open position as in 'tear'.

7. / eə /: In this centering diphthong, the tongue glides from / e/ front spread between half close and half open to the final /ə/ central neutral just below half open as in

8. / $\upsilon \vartheta$ /: In this centering diphthong, the tongue glides from / υ / centralized back rounded just above half close to the final / ϑ / central neutral just below half open as in 'poor'.





3.3 Closing Diphthongs Gliding Towards /1 /

4 Closing Diphthongs Gliding Towards /0/



Centering Diphthongs Gliding Towards / ə

Source: Phonetics and Spoken English

5.14. CHECK YOUR PROGRESS

Exercise -6

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Find words in the given picture that have the same vowel sound as in:

1.Paid /eɪ/

2.fight / aɪ/

3.point/ DI/

5.15. ANSWERS TO SELF - ASSESSMENT QUESTIONS

Exercise -1/a:sk/, /æks/, /əgəʊ/, /o:1/, /eim/

Exercise -2

Ago, across, betray, define, remarry, discharge, relate, revise, collect, collection, historic, historical, essentially, technician, serious, animate, complaining, organize, clarify, adversity, democracy, democrat, paragraph, geology, contain, millionaire, career, dental, essential, complain, conduct, subject, record.

Exercise -3

- 1. The air- stream mechanism
- 2. All vowel sounds are voiced sounds.
- 3. The soft palate is known as velum.

4. /k/ and /g/

Exercise -4

- 1. / b / is a voiced bilabial plosive
- 2. /t / is a voiceless alveolar plosive
- 3. / d / is a voiced alveolar plosive
- 4. / k / is a voiceless velar plosive
- 5. /g/is a voiced velar plosive
- 6. /m/is a voiced bilabial nasal
- 7. / f / is a voiceless labio-dental fricative
- 8. $/\theta$ / is a voiceless dental fricative
- 9. / s / is a voiceless alveolar fricative
- 10. / δ / is a voiced dental fricative

Exercise -5

- 1. fill, beans
- 2. sleep, neat
- 3. steal, wick
- 4. fell, step
- 5. guess, fed
- 6. said, check
- 7. pool, full
- 8. Cooed, shoed
- 9. Shark
- 10.clerk

Exercise -6

- 1. Paid -weighed, trained, stable, faint, prayed
- 2. Plight- slight, might, pride, wide, white
- 3. Point- void, hoist, poised, soiled, boiled

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5.16. SUMMARY

In this Unit your attention was drawn to the fact that there are a number of varieties and accents of English language in our country. To make communication more effective and intelligible in English language we /you need to learn the standard form of English i.e. R.P. You were made aware that there is no one-to -one correspondence between spelling and pronunciation. English language has 26 letters but 44 sounds. There are twenty vowel sounds and twenty-four consonant sounds in English language. The IPA system is used for transcribing the sounds of English language. In this Unit you attempted the study of the speech process and body mechanisms involved in the production of speech. In the description of consonant sounds, three important aspects were discussed in detail such as: the state of the glottis, the manner of articulation and the place of articulation. Difference between voiced and voiceless sounds was explained in detail. In the same Unit the study of the production of vowel sounds was taken up. Three important aspects related to vowels sounds: (a)the position of the tongue (b) the height of the tongue (c) the shape of the lips. You were explained the difference between pure vowels and diphthongs. Diphthongs are vowel glides. In their production vowel glides from one position to another.

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5.19.TERMINAL AND MODEL QUESTIONS

- 1. What is IPA?
- 2. Do you think learning /teaching English pronunciation is important? Give three reasons.
- 3. Name the organs involved in the speech process.
- 4. What are the nasal sounds in English?
- 5. Distinguish between active and passive articulators.
- 6. What is the difference between laterals and fricatives? Explain in detail.
- 7. Describe the consonant sounds on the basis of manner of articulation of articulation.
- 8. Which are voiced and voiceless sounds? Give a detailed description.
- 9. Explain cardinal vowels with examples.
- 10. Write a detailed note on diphthongs.

UNIT-6 CONSONANT CLUSTER

- 6.1 Introduction
- 6.2. Objectives
- 6.3. The Most Common English Consonant Clusters
- 6.4. Diffculties in Articulating Clusters
- 6.5. Remedies to improve the Pronunciation of Consonant Clusters
- 6.6. Check your Progress
- 6.7. Answers to Self Assessement Questions
- 6.8 Summary
- 6,9, References
- 6.10. Suggested Readings
- 6.11. Terminal and Model Questions

6.1 INTRODUCTION

In the earlier Unit you studied the detailed description of speech sounds including consonants and vowels. You are already aware that there are 21 consonant letters in the English language but 24 consonant sounds are produced by these letters. Cluster, as you might have known, is a group of similar things that are placed together. In reference to the Unit 'consonants cluster', is defined as a group of consonant letters that are written and spoken together.

6.2. OBJECTIVES

After reading this Unit, you will:

- understand the concept of consonants cluster
- identify the most common English consonants cluster
- identify the difficulties of Indians in articulating them
- get some suggestions to pronounce the consonants cluster

As pointed out earlier, consonants cluster refer to the occurrence of at least two consonant letters together and no vowel should occur in between them. For example, the word 'black'/blæk/. Here we are getting two consonant sounds /bl/ together. Some phoneticians refer to the consonant clusters as consonant sequences or consonant blending. Thus, in the word 'black'/blæk/ the consonant cluster is written as CC-. Such sequence is called an initial consonant cluster. Other examples of initial clusters are – **pl**ay and **scr**eam. In these words, the sequence of consonant clusters is written as /pl-/ CC-, /skr-/ CCC-.

In the similar manner, if two, three or four consonants occur at the end of a syllable (the basic unit of speech sound) such sequence is called a final consonant cluster. For example, in the word, test /test/, two consonants sounds/ s/ and /t/ are together in the final position. It will be written as -CC.

In the word – tempt / tempt/. The structure of the syllable is as follows-



The sequence of the consonant clusters is written as /- mpt/ -CCC.

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In the word – sixths /sıks θ s/



The sequence of the consonant clusters is $/-ks\theta s/$ -CCCC.

6.3. THE MOST COMMON ENGLISH CONSONANT CLUSTERS

To get more clarity regarding the most common English consonant clusters, go through the following examples in alphabetical order-

- 1. Common Clusters beginning with 'B'
 - B+L = /bl/

Initial clusters- Cc- - Bleed, blur, blue

Final clusters- -cc - Able, noble

• B+R = /br/

Initial clusters- Cc- - Bread, bright, brick

- 2. Consonant clusters beginning with 'Ch' / $t_{\rm s}$ /
 - $C+H = /Ch/t \int /Sometimes$, it can be confused with 'kuh'.

Initial clusters- Cc- - chair, change, child

Final Clusters- -cc - sandwich, ostrich, lunch

• C+L = /kl/

Initial clusters- Cc- - class, clay, claim

Final Clusters- -cc - miracle, pinnacle

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• C+R = /kr/

Initial clusters- Cc- - cross, cry, crawl

- 3. Consonant clusters that start with 'D'
 - D+R = /dr/

Initial clusters- Cc- - draw, dry, drink

- 4. Consonant clusters that start with 'F'
 - F+L = /fl/

It is usually found at the beginning of the words.

Initial clusters- Cc- - fly, floor, flow

• F+R - /fr/

Initial clusters- Cc- - frame, free, friend

- 5. Consonant clusters that start with 'G'
 - G+L = /gl/

/gl/ consonant cluster always uses the /g/ sound not /dʒ/

Initial clusters- Cc- - glad, glory, glow

Final Clusters- -cc - single, mingle, triangle

- 6. Consonant clusters that start with 'P'
 - P+L = /pl/

It is not found in initial cluster form such as –

Initial clusters- Cc- - Play, place, plum

• P+R = /pr/

Initial clusters- Cc- - Present, pray, proud

7. Consonant clusters that start with 'S'

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• S+C+R = /skr/

If there is a cluster of 3 consonants initially in a syllable, the first consonant sound is always /s/.

Initial clusters- Ccc- - Scrap, scroll, screech

• S+T+R = /str/

Initial clusters- Ccc- - Straight, strength

• S+T+U = /stu/

Initial clusters- Ccc- - Student, stupid

- 8. Consonant clusters that start with 'T'
 - T+H+R = /thr/

This consonant is a bit tricky because /th/ sound is sometimes hard to pronounce for non-native speakers.

Initial clusters- Ccc- - Three, thrift

• T+R = /tr/

Initial clusters- Cc- - Tree, trick, tribute

As you already know that the maximum number of consonants clusters that can be present in a word at initial position is three. There can be maximum of four consonants in the final clusters. For example:

-cccc - prompts, texts, sixths, twelfths, sculpts

6.4. DIFFICULTIES IN ARTICULATING CLUSTERS

Some languages do not have many clusters. Sometimes if they have, these are very few and short ones. Speakers of such languages face problems while pronouncing initial and final clusters of English language.

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In India, some speakers find difficulties in pronouncing final clusters like /-ft/, /tʃt/ and /-ɪd/. In such condition, while pronouncing such clusters they drop the final clusters. For example, in words like: laughed - /la:ft/ they drop /t/ and pronounce /la:f/ cold /kəʊld/- spoken as /kəʊl/ and /d/ is dropped.

In some cases, Indians drop the final clusters while in some others, they add a sound. As you might have observed that some Indians add a vowel sound in the beginning of the words which start with /s/ sound such as school /sku:l/ is sometimes pronounced as /isku:l/. In the similar manner the word speech /spi:tʃ/ is pronounced as / ispi:tʃ/.

It shows that Indians tend to break the cluster by adding a vowel sound at the initial position. In that manner, the cluster is broken and it creates bad impression on the part of the speaker. Some Punjabi speakers insert /ə/ after /s/ and pronounce:

school as /səku:l/ station as /səteiʃ/

6.5. REMEDIES TO IMPROVE THE PRONUNCIATION OF CONSONANT CLUSTERS

In order to overcome the problem of pronouncing consonant clusters incorrectly, you must read English text aloud and not quietly. It will improve the pronunciation of consonant clusters.

Tongue twister is a very good practice to improve the pronunciation of consonant clusters. In Hindi language, some tongue twisters are very famous. For example:

खड़क सिंह के खड़कने से खड़कती हैं खिड़कियां,

खिड़कियों के खड़कने से खड़कता है खड़क सिंह

By this point you might have got an idea of tongue twister. A tongue twister is a formation of words which are difficult to say quickly all at once. In a tongue twister, all words in the sentence start with a similar sound. These are somewhat difficult to pronounce even for native speakers, but regular practice can impart good results. In English, the example of tongue twisters are as follows:

i. She sells sea shells by the sea shore.

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ii. Gleeful Glen wears green glasses.

6.7. CHECK YOUR PROGRESS

Exercise 1-Complete the table filling words with initial consonant clusters. The first column is done for you.

| | /r/ | /1/ | /j/ | /w/ |
|-----|---------|-----|-----|-----|
| /p/ | private | | | |
| /b/ | bright | | | |
| /t/ | train | | | |
| /d/ | dry | | | |
| /k/ | crazy | | | |
| /g/ | ground | | | |
| /f/ | fright | | | |
| /θ | throw | | | |

6.8. ANSWERS TO SELF - ASSESSMENT QUESTIONS

| | /r/ | /1/ | /j/ | /w/ |
|-----|---------|-------|--------|---------|
| | | | | |
| /p/ | private | place | pupil | - |
| /b/ | bright | blind | beauty | - |
| /t/ | train | - | tune | twinkle |

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| /d/ | dry | _ | duty | dwell |
|-----|--------|-------|--------|--------|
| /k/ | crazy | class | cure | quick |
| /g/ | ground | glory | - | - |
| /f/ | fright | floor | future | - |
| /0/ | throw | - | - | thwart |

6.9. SUMMARY

In this Unit you studied about the consonant clusters, their structure and examples. Two, three and more consonants can occur in succession. Three Cs can occur in the initial position and four Cs can occur at the final position. Some Indians face difficulty in articulating the initial consonant clusters beginning with /s/.Through reading practice and tongue twisters you can overcome this problem.

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6.12. TERMINAL AND MODEL QUESTIONS

Q. 1 Define consonant clusters and their structure by giving examples.

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Q. 2 Give at least five examples of each of the following consonant clusters.

Initial: CC-

Final: -CC

Q. 3 Discuss the difficulties of Indian speakers in pronouncing consonant clusters in detail.

Q. 4 Suggest the ways by which the consonant clusters can be pronounced clearly.

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UNIT-7 SYLLABLE

- 7.1 Introduction
- 7.2. Objectives
- 7.3. Structure of the Syllable
- 7.4. Check your Progress
- 7.5. Answers to Self Assessement Questions
- 7.6. Summary
- 7.7. References
- 7.8. Suggested Readings
- 7.9. Terminal and Model Questions

7.1 INTRODUCTION

In the earlier Unit you studied the detailed description of speech sounds including consonants and vowels. You are already aware that there are 21 consonant letters in the English language but 24 consonant sounds are produced by these letters. Cluster, as you might have known, is a group of similar things that are placed together. In reference to the Unit 'consonants cluster', is defined as a group of consonant letters that are written and spoken together.

7.2. OBJECTIVES

After reading this Unit, you will:

- understand the notion of the syllable and its structure
- know how the syllable division is marked in words

You already know that words are made up of sounds. For example, the word 'back' /bæk/ has the structure CVC as shown in the diagram:



Thus, the combination of two or more sounds is known as a syllable. It can be defined "as a unit that is next in hierarchy to the individual speech sound". The presence of a deep resonating sound (generally a vowel sound) is mandatory in every syllable. In many words, you get more than one syllable each. For example, the word 'teacher' has two syllables as – teach and er , /ti:tʃ/ and /ə/

/teacher/

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The structure of the word is CVCV and the number of syllables is two.

Apart from the combination of consonant and vowel sounds. There are a few syllables that have just a single sound such as the words, eye /ai/,ah /a:/ and she / \int i:/.

All these examples might have helped you to understand the concept of syllable. For your better understanding, you can get some examples in Hindi language and in your other mother tongue also. As in Hindi the word माली has two syllables. [मा] and [ली]

Though to discern a syllable is not very easy task but native speakers get a clear idea of it by instinct. For example, in Hindi, you can find out easily that there are two syllables in the word 'माली' [ma:l1]

To show the division of syllable, a hyphen (-) mark is used. To divide syllable on the basis of spellings is a difficult and somewhat confusing task. It is always better to transcribe the word and mark the syllable division on the basis of sound. For example:

application / æplikeifn/



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Since the vowel sound is the nucleus of the syllable, thus the syllable division is marked as, a-ppli-cation /a-pli-kei- $\ln/$. It contains four syllables.

There are two theories to define the term 'syllable'. One is based on the phonetic approach and the other one is based on linguistic approach. You will study the phonetic approach because it is closely related to the ongoing discussion. The phonetic approach consists of two theories – the prominence theory and the pulse theory.

The Prominence Theory – While speaking you might have noticed that some sounds are uttered with more prominence than others. The listener can make it out easily. For example, the word 'electricity' / Ilektrisiti/ . Its syllable division shows e-lec-tri-ci-ti. the peaks of prominence are carried by /I, e, I, I, I/. According to the prominence theory, the number of syllables is determined by the number of peaks of prominence while uttering the word. In this case, the word 'electricity' / IlektrisitI/ has five syllables.

The Pulse Theory— This theory is based on experimental method. As you know that in any utterance there are a number of chest pulse accompanied by increase in air pressure. Such pressure determines the number of syllables uttered. This theory suggests that the syllable is a basic unit of speech rather than a sound. The pulse theory implies that consonantal sounds act as the onset (releasing factor) and the closure (arresting factor) of the syllable. You now that vowel sound is nucleus to the syllable and render the chest pulse audible. For example, the word 'seat' /si:t/

/s/ is the releasing consonant

/i:/ is the nucleus

/t/ is the arresting consonant

7.3. STRUCTURE OF THE SYLLABLE

As you know that a syllable is analyzed in terms of its speech sounds, containing consonants and vowels. You were already told that a consonant functions as a marginal element. It means that a consonant occurs at the beginning or at the end of a syllable.

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The vowel is the central part of the syllable. If the consonant sound occurs at the beginning of the syllable it is said to be onset (releasing factor). If it occurs at the end of the syllable it is known as the closure (arresting factor). If we represent it in diagram form, it will be represented as:

Syllable - σ

Consonant-onset

Rhyme is the combination of Nucleus and Coda

Vowel -Nucleus

Consonant –Coda



Closed syllable - A syllable which is arrested by a consonant is called a closed syllable. for example, ill /il/.

Open syllable - In she / $\int i$:/, it is an open syllable because it ends with a vowel sound.

The syllable structure is represented graphically utilizing a tree diagram:

Heat /hI:t/



Example of closed syllable - Hunt /hʌnt/



Example of open syllable -Hi /hai/



These examples have been presented in diagram form to impart you the clarity regarding syllable division. On the basis of the number of syllables, words are categorised in various groups. These are as follows:

Monosyllabic Words – Words which contain one syllable are called monosyllabic.

page - /peɪdʒ/ - CVC train - /trem/ - CCVC

On the basis of syllable structure, monosyllabic words are also divided into different categories. These are as follows-

1. V – Structure

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air - /eə/

are - /a:/

2. CV – Structure

day - /dei/

law - /lɔ:/

3. VC – Structure

us - / Λ s/

eat - /i:t/

4. CVC – Structure

phone - /fəʊn/

gas - /gæs/

Disyllabic words – Words which contain two syllables are called disyllabic.

| paper | - | /рег-рә/ | CV-CV |
|----------|---|------------|---------|
| doctor | - | /dɒk-tə/ | CVC-CV |
| a-bout | - | /əbaot/ | V-CVC |
| eks-pert | - | /eks-p3:t/ | VCC-CVC |

 $\label{eq:transformation} Trisyllabic words - {\it Words} which contain three syllables are called trisyllabic words.$

| re-mem-ber | - | /rī-mem-bə/ | CV-CVC-CV |
|------------|---|---------------|-----------|
| cu-cum-ber | - | /kju:-kʌm-bə/ | CVC-CV |
| develop | - | /di-ve-ləp/ | CV-CV-CVC |

Polysyllabic words– Words which contain more than three syllables are known as polysyllabic words.

| ex-a-mi-na-tion- | /ɪg-zæ-mɪ-neɪ-∫n/ | VC-CV-CV-CV-CC |
|------------------|-------------------|----------------|
| cu-cum-ber - | /kju:-kʌm-bə/ | CCV-CVC-CV |
| develop - | /dɪ-ve-ləp/ | CV-CV-CVC |
| tantalizing - | /tæn-tə-laız-ı / | CVC-CV-CVC-VC |

PHONETICS AND PHONOLOGY Syllabic Consonants-

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Till this point you might have thought that the presence of the vowel sound is mandatory in a syllable. It is interesting to discuss that some syllables do not have vowel sounds. In such syllables, a consonant sound forms the role of the nucleus of the syllable. Such consonant sounds are called syllabic consonants. These are mostly found with /m//n/and /l/.

Now examine the words given below and read them aloud. You will notice that the second syllable of all these words does not have a vowel sounds such as-

| cotton - | /kv-tn/ | CV-CV |
|-----------|----------|-------|
| cattle - | /kæ-tl/ | CV-CV |
| rhythm- | /rɪ-ðm/ | CV-CV |
| bottle - | /bp-tl/ | CV-CV |
| chicken - | /t∫ī-kn/ | CV-CV |
| prison - | /pr1-zn/ | CV-CV |

7.4 CHECK YOUR PROGRESS

Exercise 1 -Transcribe the following words and divide them into syllables with a hyphen:

- 1. busy
- 2. celebrity
- 3. degree
- 4. mistake
- 5. numbers
- 6. master
- 7. compose
- 8. straw
- 9. develop
- 10. linguistics

7.5. ANSWERS TO SELF - ASSESSMENT QUESTIONS

Exercise 1

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| Word | Transcription | Syllable division |
|-----------------|---------------|-------------------|
| 1. busy | /bizi/ | / bi-zi/ |
| 2. celebrity | /səlebrəti/ | /sə-leb-rə-ti/ |
| 3. degree | /dɪ-gri:/ | /dɪ-griː/ |
| 4. mistake | /mɪˈsteɪk/ | /mī-steik/ |
| 5. number | /nʌmbə/ | / пл-твә/ |
| 6. master | /ma:.stə/ | /ma:-stə/ |
| 7. compose | /kəmpəʊz/ | /kəm-pəʊz/ |
| 8. straw | /stro:/ | /stro:/ |
| 9. develop | /dɪveləp/ | /dI-ve-ləp/ |
| 10. linguistics | /lɪŋgwɪstɪks/ | /lɪŋ-gwɪs-tɪks/ |

7.6 SUMMARY

In this Unit you studied that a syllable can be defined as a unit in a speech sound which is next in hierarchy to the individual speech sound. The presence of vowel sound is mandatory in every syllable. Words can be made up of one, two, three or more syllables. Syllabic consonants do not have a vowel sound. In such syllables, a consonant sound takes the role of the nucleus of that syllable.

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7.8. TERMINAL AND MODEL QUESTIONS

- Q. 1 Define the term 'syllable' and explain the process of syllable division in detail.
- Q. 2 What is syllabic consonant? Explain in detail.
- Q. 3 What are the different types of syllabic words? Explain in detail by giving examples for each.

UNIT-8 WORD ACCENT AND WORD STRESS

8.1 Introduction

- 8.2. Objectives
- 8.3. Stress in English
 - 8.3.1. Words with Weak Prefixes
 - 8.3.2. Verbs of Two Syllables
 - 8.3.3. Words ending in -ion
 - 8.3.4. Words Stressed in the Suffix
 - 8.3.5. Stress Shift in Derivation Words
 - 8.3.6. Accent in Compound Words
 - 8.3.7. Functional Shift or stress
- 8.4. Functional Shift or stress
- 8.5. Functional Shift or stress
- 8.6. Functional Shift or stress
- 8.7. References
- 8.8. Suggested Readings
- 8.9. Terminal and Model Questions

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8.1. INTRODUCTION

In the previous Unit you learnt about the syllable and its structure. Since you are well familiar with the process of word formation, this Unit will focus on the rules of word accent or word stress. It is a very important feature of spoken English. You know that sounds are combined to form a syllable and it gives way to the words. It can be represented as:



8.2. OBJECTIVES

After going through this Unit you will:

- understand certain aspects of word stress or accent
- learn certain rules of word accent to make your speech more clear

You already know that words are made up of syllables such as the word 'telephone' is made up of three syllables: te-le-phone. In this word the first syllable **'te'** is stressed as compared to other two syllables. The word 'mountaineer', has three syllables, (moun-tai-neer) the last syllable **'neer'** is stressed.

It shows that if a word has more than one syllable, all syllables do not carry equal degree of stress. One syllable in the word is more prominent than others. The prominent syllable is articulated with a greater breath force and a greater muscular effort. Due to the pressure of breath, the stressed syllable stands out most prominently. The syllable which is articulated with greater prominence is said to be taking the

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primary stress and it is marked with a vertical bar ⁽⁾ above and in front of the syllable to which it refers. For example, in the word 'busy' /'bI-ZI/ and master /'ma:-stə/,primary stress is marked. Secondary stress is marked with a vertical bar

(,) below and in front of the syllable. For example:

After 'noon

Re'present

The primary stress is on the last syllable and the secondary stress is on the first syllable.

In some languages, the stress is placed on a particular syllable. For example, in French language, the stress is always on the last syllable. In Hindi language, stress does not change the meaning of words especially when compared to English.

8.3. STRESS IN ENGLISH

In English language, stress is not bound to a particular syllable. As in the word 'language'/'læŋg-widʒ/, the stress falls on the first syllable but in 'familiar'/fə'miliə(r)/ the stress is on the second syllable. In the word 'understand'/ Andə' stænd/ the primary accent is on the third syllable and the secondary one is on the first syllable.

It shows that the stress in English words is free, i.e. it is not tied to any specific syllable in the chain of syllables constituting the word. Thus, to get clarity regarding stress marking, you have to refer to a dictionary. In case of monosyllabic words, the stress is not marked in dictionary.

There are certain rules of word stress which can help you in locating stress. Regular practice of word stress will help you to internalize rules which will make your pronunciation more correct and clearer.

Rules of Word Stress-

8.3.1. Words with Weak Prefixes

As you know in English language words are formed by adding prefixes and suffixes to the root words. For example:

Unhelpful = un + help + ful

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Word = Prefix + Base Word + Suffix

Prefixes are added in the beginning of the root word. For example: 'go', and 'side' are the root words. By adding prefix 'a-' in the root word 'go', a new word is formed 'ago'. In the similar manner, new word is formed by adding 'be' in the word 'side' such as 'beside'. In case of such words which have weak prefixes (the vowels /a/, /1/ and ə) the accent or the stress is on the root word. Examples:

| Root word | Prefix | Word stress |
|-----------|--------|-------------|
| Count | ac - | Ac'count |
| Mount | a- | A'mount |
| Pose | com- | Com'pose |
| Use | re- | Re'use |

• Verbs of two syllables beginning with the prefix dis- are stressed on the last syllable. Examples:

| Root word | Prefix | Word stress |
|-----------|--------|-------------|
| Grace | dis- | Dis'grace |
| Guise | dis- | Dis'guise |
| Count | dis- | Dis'count |
| Miss | dis- | Dis'miss |

• Prefixes with negative connotations get stressed as well as the root words. Examples:

| Root word | Prefix with neg. | Word stress |
|-----------|------------------|-------------|
| | connotation | |
| Loyal | dis- | 'Dis'loyal |

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|-------------------------|----------|--------------|--------------|
| | Sincere | In- | 'In'sincere |
| | Possible | Im- | 'Im'possible |
| | Like | dis- | Dis'like |

8.3.2. Verbs of Two Syllables

• Verbs of two syllables ending in -ate,- ise/ize and -ct are stressed on the last syllable. Examples:

| -ate | - ise/ize | -ct |
|----------|------------|----------|
| Vib'rate | Com' prise | At'tract |
| De'bate | Cap'size | Con'nect |
| Nar'rate | Bap'tize | De'pict |

• Words consisting of three or four syllables and ending in -ate, -ize / -ise and -ify have the stress on the third syllable from the end.

| -ate | ize / -ise | -ify |
|-------------|------------|----------|
| 'Educate | 'Colonise | 'Satisfy |
| 'Cultivate | 'Realize | 'Gratify |
| A'rticulate | Mo'noplize | 'Certify |

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8.3.3. Words ending in -ion

• Words ending in -ion have the stress on the penultimate (i.e. the last but one syllable).

| Appli'cation | Imagi'nation |
|---------------|----------------|
| Civili'zation | Con'gestion |
| Culti'vation | Intro' duction |
| Contri'bution | Question |

8.3.4. Words Stressed on the Suffix-

Those words which are added at the end of the base word are said to be suffixes.

• Words ending with the suffixes -ain, -aire, -eer, -, -ental, -ese, -ade, -ee, -ete are stressed on the suffix.

| -ain | ob'tain | -ese | Assa'mese |
|--------|-----------------|------|------------|
| -aire | question' naire | -ade | barri'cade |
| -eer | car'eer | -ee | employ'ee |
| -ental | funda'mental | -ete | com'plete |

• Words ending in -ic, -ical, -ically, -ial, -ially, -ian, have the stress on the syllable preceding the suffix.

| -ic | -ical | -ically |
|-------------|----------------|-----------------|
| | | |
| Apolo'getic | Apolo' getical | Apolo'getically |
| E'lectric | E'lectrical | 'Graphically |

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| Pho'netic | El'liptical | Enthusi'astically |
|-----------|-------------|-------------------|
| | | |

• -ial, -ially, -ian - the stress on the syllable preceding the suffix.

| -ial | -ially | -ian |
|---------------|-----------------|--------------|
| 'special | specially | Lib'rarian |
| Of 'ficial | Of 'ficially | Elec'trician |
| Es 'sential | Es' sentially | Mu'sician |
| Super' ficial | Super' ficially | Poli'tician |

• Words ending in –graph, -graphy, -meter, -logy have the stress on the ante- penultimate syllable (i.e. third from the end)

| -graph | -graphy | -meter | -logy |
|---------------|----------------|---------------|------------|
| 'Photograph | Pho'tography | Ther' mometer | So'ciology |
| 'Spectrograph | Spec'trography | Lac'tometer | Bi'ology |
| 'Biograph | Bi'ography | Di'ameter | Zo'ology |

8.3.5. Stress Shift in Derivation Words

Stress shift is very common factor in derivatives. Derivation words are the words which are formed from an existing word by adding, changing and removing the prefix or suffix. With the formation of new words and the change in their structure, word accent also varies. Accent shifts from the first syllable to the second, third or the fourth syllable as longer words are derived from smaller words. It is called stress shift.

| A'cademy | Aca 'demic | Acade 'mician |
|----------|------------|----------------|
| 'Final | Fi 'nality | Finali 'zation |

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| 'Photograph | Pho'tographer | Photo' graphic |
|-------------|---------------|----------------|
| 'Legal | Le'gality | Legali 'zation |
| 'Politics | Po 'litical | Poli 'tician |

• **Derivational Suffixes-** Derivational suffixes change the part of speech of the word such as:-ance, -er, -hood, -less, -ness, -ship, --ful, -ive, -ish, -ment. Their addition to the base words do not normally affect the word accent.

| Base Word | Derivational Suffix | Word accent |
|-----------|---------------------|--------------|
| 'Child | -hood | 'Childhood |
| 'Friend | -ship | 'Friendship |
| 'Aim | -less | 'Aimless |
| 'Bitter | -ness | 'Bitterness |
| Ap'point | -ment | Ap'pointment |
| At'tract | -ive | At'tractive |
| 'Fool | -ish | 'Foolish |

• Inflectional Suffixes – Inflectional suffixes change the number (singular or plural) and tense of a base word such as: -ed, -es, and -ing. They do not affect accent. Examples:

| Inflectional suffixes | Base Word | Word with suffix |
|-----------------------|-----------|------------------|
| -ed | 'Want | 'Wanted |
| -es | 'Match | 'Matches |
| -er | 'Write | 'Writer |

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| -ing | 'Begin | Beginning |
|------|--------|-----------|
| | | |

CHECK YOUR PROGRESS

Exercise 1. – Mark the accent in the following words.

| 1. | Hypocrite | Hypocrisy | Hypocritical |
|----|-----------|-------------|-----------------|
| 2. | Legal | Legality | Legalization |
| 3. | Mobile | Mobility | Mobilization |
| 4. | National | Nationality | Nationalization |
| 5. | Monotone | Monotony | Monotonic |

8.3.6. Accent in Compound Words -

As you know that compound words are made up of two words such as blackboard, afternoon, absentminded and others. These words may be written as one word and sometimes with a hyphen.

• Most compound words have the primary stress on the first element. For example:

'Blacksmith

'Tea-party

'Dining-room

• Some compound words which are formed with adding –ever and –self. In such compound words which have the stress on the second element. For example-

How 'ever

When 'ever

Him' self

Her'self

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• Sometimes both elements are stressed, but the primary stress is on the second element. For example:

Old-'fashioned Absent-'minded After 'noon

• Words of Three Elements-

In words of three elements the primary stress is on the second element. For example:

Hot 'water bottle

Waste 'paper basket

8.3.7. Functional Shift of Stress-

There are a number of words of two syllables in which the accentual pattern depends on whatever the word is used as a noun or adjective, the stress falls on the first syllable.

• If the word is used as a verb, the stress is on the second syllable. Examples-

| Noun/Adjective | Verb |
|----------------|------------|
| | |
| 'Absent | Ab'sent |
| 'Subject | Sub'ject |
| 'Progress | Pro 'gress |
| 'Present | Pre 'sent |
| 'Produce | Pro 'duce |
| 'Convict | Con 'vict |

You can understand the use of words as a noun/ adjective and verb on the basis of the following sentences:

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- 1. This is a beautiful '**<u>object</u>**. (used as a noun)
- 2. Arun may **<u>ob'ject</u>** to this arrangement. (used as a verb)
- 3. Phonetics is an interesting 'subject. (used as a noun)
- 4. Don't **<u>sub</u>** ject him to this torture.

8.4. CHECK YOUR PROGRESS

Exercise 2. - Read the following sentences aloud and mark stress on the following underlined words according to their function.

- 1. I gave him a present on his birthday.
- 2. Neena was present in the class.
- 3. The sales have shown an <u>increase</u> this month.
- 4. Rachel asked the tailor to increase the length of the dress.
- 5. The industrial <u>refuse</u> is dumped in this lake.
- 6. Varun <u>refused</u> to join us for dinner.
- 7. Aruna gifted a record of Hindi songs to Karuna.
- 8. The teacher did not record the daily progress of the students.
- 9. Aviral's progress is remarkable.
- 10. He did not progress as expected in the financial sector.

Exercise 3- Choose the correct pattern of the word accent on the following words:

| A. 'Personality | B. Persona'lity | C. Perso'nality | D. | Per'sonality |
|------------------|------------------|-----------------|----|----------------|
| A. 'Hesitate | B. He'sitate | C.Hesi'tate | D. | Hesita'te |
| A. 'University | B. Uni'versity | C. Univer' sity | D. | U'niversity |
| A. Pho'tographic | B. 'Photographic | C.Photogra'phic | D. | Photo' graphic |
| A. Op'erations | B. O'perations | C. 'Operations | D. | Opera'tions |

8.5. ANSWERS TO SELF ASSESSMENT QUESTIONS

Exercise 1. – Mark the accent in the following words.

| 1. Hy pocrite | Hy'pocrisy | Hypo'critical |
|---------------|--------------|------------------|
| 2.'Legal | Le'gality | Legali'zation |
| 3.'Mobile | Mo'bility | Mobili'zation |
| 4. 'National | Natio'nality | Nationali'zation |
| 5. Monotone | Mo'notony | Mono'tonic |

Exercise 2. - Read the following sentences aloud and mark stress on the following underlined words according to their function.

1. I gave him a 'present on his birthday.

2. Neena was pre'sent in the class.

3. The sales have shown an '<u>increase</u> this month.

4. Rachel asked the tailor to <u>in crease</u> the length of the dress.

5. The industrial '<u>refuse</u> is dumped in this lake.

6. Varun re'fused to join us for dinner.

7. Aruna gifted a 'record of Hindi songs to Karuna.

8. The teacher did not <u>re'cord</u> the daily progress of the students.

9. Aviral's 'progress is remarkable.

10. He did not pro'gress as expected in the financial sector.

Exercise 3- Choose the correct pattern of word accentuation for the following word:

1. (C) 2. (A) 3. (A) 4. (D) 5. (A)

8.6. SUMMARY

This unit defines the concept of word accent in detail. As you know a word is composed of one or more syllable. In the words of English language only one syllable stands out most prominently (if the word

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has more than one syllable). The stressed syllable is articulated with a greater breath force and a greater muscular effort. Some rules are also discussed in detail which are really useful for you to pronounce the English words correctly.

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8.9. TERMINAL AND MODEL QUESTIONS

Q 1. Define the concept of word accent in detail.

Q 2. Discuss the rules of placing stress in word with prefixes.

Q 3. What are the inflectional and the derivational suffixes? In what way they affect the stress pattern in words? Explain with examples.

Q. What is the functional shift of stress? Mention some examples to support your answer.

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UNIT-9 INTONATIONS

- 9.1 Introduction
- 9.2. Objectives
- 9.3. Pitch
- 9.4. Tone Group
- 9.5. The Tonic Syllable or the Nucleus
- 9.6. The Falling Tone
- 9.7. The Rising Tone
- 9.8. Check Your Progress
- 9.9. The Falling-Rising Tone
- 9.10. Check Your Progress
- 9.11. Answer to Self Assessement Question
- 9.12. Summary
- 9.13. References
- 9.14. Suggested Readings
- 9.15. Terminal and Model Questions

9.1. INTRODUCTION

In the previous Units you studied the speech sounds, concept of syllable and word accent. In these Units the emphasis was on sounds and words, but the concept of intonation is applicable to a group of words or sentences. It is an important element of the speech process because the communication takes place in a group of words or sentences, not in single words. During the process of communication, the speaker's voice does not remain constant but the pitch of the voice continuously undergoes a change. Intonation refers to the variation of the pitch of the voice which results into the creation of melody of speech.

9.2. OBJECTIVES

After completing this Unit you will:

- identify the use of tones in speech
- understand the attitude of the speaker in a better way
- be able to express yourself in a clear and effective manner

To make the communication understandable and meaningful, the concept of intonation plays a very significant role. You might have noticed in the speech that same group of words can convey different meanings if they are expressed with variation in pitch. The element of pitch generally conveys the speaker's attitude and emotion. The pattern of variation of pitch, as earlier discussed, constitutes the intonation of language

9.3. Pitch

In Unit 5, you studied about the role of the vocal cords. It is the main factor that creates difference between voiced and voiceless sounds. In the speech process, vocal cords are brought together or held wide apart. The opening and closing of vocal cords is known as the vibration. The rate at which the vocal cords vibrate forms a pattern and determines the pitch of the voice. These patterns of the pitch include the falling, rising and the falling-rising tone.

9.4. Tone Groups

As stated earlier, communication takes place in the group of words or sentences. You might have observed that short sentences can be expressed without taking pause. For example:

- 1. Thank you.
- 2. Do you like it?
- 3. I'm leaving tomorrow.

Such sentences are said to be in a single tone group. If the utterance is long, one needs to take pause. For example:

- 1. // In Delhi, / I stayed in a hotel. //
- 2. //Fortunately/ the weather is pleasant. //

In such sentences as you noticed that short pauses are marked by a single [/] bar. In the beginning and ending of the sentences you notice double bars [//]. These are used to show the sentence boundary. Since the sentence is long that is why to divide the sentence into tone group is necessary. Besides tone group, the marking of the nucleus is also necessary in the connected speech.

9.5. The Tonic Syllable or the Nucleus

- Every tone group must have a nucleus i.e. the syllable on which a pitch movement is initiated. It is called the nucleus of the utterance. For example:

//I'm 'leaving for 'Mumbai to`morrow morning. // (Speaker's emphasis is on the day i.e. not today)

The middle syllable of the word **tomorrow** is the nucleus.

 //I'm 'leaving for `Mumbai to morrow morning. //(Speaker's emphasis is on the place i.e. not for any other city)

The first syllable of the word **Mumbai** is the nucleus.

//I'm `leaving for 'Mumbai to morrow morning. //(Speaker's emphasis is on the plan i.e. not staying)

The first syllable of the word **leaving** is the nucleus.
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4. I'm 'leaving for 'Mumbai to morrow `morning. // (Speaker's emphasis is on time i.e. not evening)

The first syllable of the word **morning** is the nucleus.

You noticed that on the basis of structure, all sentences are same but the placing of nucleus on different word in each sentence is giving a different meaning to the utterance. The tone of the speech is also associated with the most important word in a sentence. The importance to the word is conveyed by the attitude of the speaker. For more clarity, go through the next example:

Which is the train for Delhi, please?

In the given sentence, the words 'which', 'train', 'Delhi' and 'please' are more important as compared to 'is', 'the' and 'for'. Important words for conveying meaning in the sentence decide the shape of the tone.

There are many tones that English speakers use in their speech. The inclusion of all tones in the present study is not possible, that's why some basic tones have been described that you must know. There are three types of tones-

```
The Falling tone – [`]
The Rising tone – [,]
The Falling rising tone- [`]
```

9.6. The Falling Tone

In the falling tone, the pitch of the voice moves from a high level to a low level. It is known as the glide- down tone. The falling tone is marked as [`]. It is normally used for statements, wh-questions asked in a neutral manner, tag questions asking for the listener's agreement, commands and exclamatory sentences.

Read the following sentences with a falling tone.

• Positive sentences, e.g.:

- 1. // She is `beautiful. //
- 2. // It was 'quite `good. //
- Wh- questions asked in a neutral way, e.g.:
 - 1. // 'What's the `matter?//
 - 2. // 'Where are you `going?//
- Question tags: When the speaker expects agreement from the listener e.g.:
 - 1. // It's `pleasant today, / `isn't it?//
 - 2. // She was `angry/ `wasn't she?//
- Commands, e.g.:
 - 1. // 'Put it `down.//
 - 2. // 'Take it a`way. //
- Exclamations, e.g.:
 - 1. // `Splendid ! //
 - 2. // A`las //

9.7. The Rising Tone

The rising tone is known as the glide-up. In this tone, the pitch of the voice moves from a low level to a high level. It is marked as [,]. The rising tone is generally used for incomplete statements, yes-no type questions, polite requests, wh- questions expressing the speaker's concern. Apart from these, the rising tone includes various kinds of questions, enumeration and other emotions expressing statements.

Read the following sentences with a rising tone.

- Incomplete statements, e.g.:
 - 1. //It's 'seven o ,clock. // (and she hasn't got up as yet.)
 - 2. //I'll 'buy you a ,dress.// (if I go there.)
- Yes-no types of questions, e.g.:
 - 1. // 'Is she 'looking for ,me?//
 - 2. // Are you ,coming?//
- Polite requests, e.g.:
 - 1. // 'Go and 'open the ,window.//

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- 2. //'Take it a ,way.//
- Wh- questions expressing warmth and personal interest ,e.g.:
 - 1. // 'How's your ,daughter?//
 - 2. //'Where is your ,son?//
- Repetition questions, e.g.:

(John told me to do it)

- 1. //,Who told you?//
- Alternative questions, e.g.:
 - 1.//Do you like, tea, ,coffee or `coke?//
 - 2.//'Shall we ,drive or go by `train?//
- Enumeration ,e.g.:
 - , One, ,two, ,three, , four, ,five
- Greetings, partings, apologies, e.g.:
 - 1. //Hel,lo //
 - 2. //I'm ,sorry.//
 - 3. //Good ,bye .//

9.8 CHECK YOUR PROGRESS

Exercise.1- Read the following sentences and mark the tones as you perceive them.

- 1. //Do you think she'll say no.//
- 2. //How's your wife?//
- 3. //The movie was good/ wasn't it?//
- 4. //We must object to the proposal.//
- 5. //Was your dress expensive?//
- 6. //When are you going to London?//
- 7. //Pass me the salt.//
- 8. //Fantastic//
- 9. //Shut the door.//
- 10. //Your mother is a teacher /isn't she ?//

9.9. The Falling-Rising Tone

This tone is sometimes referred to as the dive. It moves with a fall from high to low level and then a rise to the middle of the voice. It is generally used to express reservation on the part of the speaker, reproach,

warning, sarcasm, concern etc. It is marked as [`].

Read the following sentences with a falling-rising tone.

- Reservation on the part of the speaker, e.g.:
 - 1. //She is 'beautiful // (but not intelligent)
 - 2. //The coffee was `hot// (but not tasty)
- To convey special implications and reproach/warning, e.g.:
 - 1. //If you don't work `hard// (You'll fail in the examination.)
 - 2. //I saw you at the `cinema // (You said you had to study.)
 - 3. // Careful// (otherwise you'll fall.)
 - 4. //Come 'home `soon// (It's not very safe outside.)
 - 5.

9.10. CHECK YOUR PROGRESS

Exercise 2 – Name the tone and mark intonation in the following sentences.

- 1. //'Wear something warm.// (Concern)
- 2. //He didn't do it/ did he?// (for information)
- 3. //How's your son?// (warmth)
- 4. //Is he looking for me?// (yes-no question)
- 5. //If you don't return on Monday.// (Warning)
- 6. //Do it now.// (Command)S
- 7. //What a pretty dress!// (Exclamation)
- 8. //You are a gardener/aren't you?//(Question tag : option of disagreement)
- 9. // The houses are nice. //(Special implication)

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10. // Are they coming?//

9.11. ANSWERS TO SELF - ASSESSMENT QUESTIONS

Exercise. 1-Read the following sentences and mark the tones as you perceive them.

- 1. //Do you 'think she'll say ,no.//
- 2. //How's your ,wife?//
- 3. //The movie was `good/ `wasn't it?//
- 4. //We must ob'ject to the pro`posal.//
- 5. //Was your 'dress ex ,pensive?//
- 6. //'When are you going to `London?//
- 7. //'Pass me the `salt.//
- 8. //`Fantastic//
- 9. //'Shut the `door.//
- 10.//Your 'mother is a 'teacher / ,isn't she ?//

Exercise 2 - Name the tone and mark intonation in the following sentences.

1. //Wear something warm.// (Concern) The Falling-Rising Tone

2. //He didn't `do it /,did he?// (for information) The Rising Tone

3. //'How's your ,son?// (warmth) The Rising Tone

4. //'Is he lo, oking for me?// (yes-no question) The Rising Tone

5. //If you don't re ` turn on 'Monday// (Warning) The Falling-Rising Tone

6. //'Do it `now.// (Command) The Falling Tone

7. //'What a `pretty 'dress!// (Exclamation) The Falling Tone

 //You are a `gardener/ ,aren't you?//(Question tag : option of disagreement) <u>The Rising Tone</u>

9. //The 'houses are ` nice.// (Special implication) The Falling-Rising Tone

10.//'Are you coming?// (yes-no question) The Rising Tone

9.12. SUMMARY

In this Unit we discussed the role of intonation in speech and focused on the related aspects of intonation. Intonation refers to pitch variation in voice which adds melody to the speech. Pitch variation is a common characteristic of all languages. It is not a random fluctuation but follows a well-defined pattern. Intonation is a very significant element of speech which imparts clarity and relevance to the utterance.

Long utterances are divided into tone groups. Within each tone group, a major change in the pitch direction is initiated on a syllable which is the most prominent word in the utterance. This syllable is known as the 'nucleus'. The tone may be of different kinds such as falling tone, rising and falling- rising tone. The selection of the particular tone represents your intention and emotion. In day to day life you can notice meticulously that your tone faithfully reflects your intention.

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9.15.TERMINAL AND MODEL QUESTIONS

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Q- Attempt short notes on the following terms:

- 1. Tonic syllable
- 2. Tone group
- 3. Tone
- 4. Pitch

Q- What kinds of utterances require the use of falling tone in speech? Explain with examples.

Q- Discuss the concept of rising tone in speech. Focus on its uses by giving examples.

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UNIT 10

THE DESCRIPTION & CLASSIFICATION OF CONSONANTS AND VOWEL SOUNDS

10.2. Objectives

10.3. Speech Sounds Meaning and Definition

10.4. English Phonemes

10.5. The Consonants

10.5.1 Articulators

10.6.. Classification of Consonants Sound

10.6.1. Voicing

10.6.2. Voiced and Voiceless Consonants

10.6.3. Place of Articulation

10.6.4 Manner of Articulation

10.6.5. The Consonant Chart

10.7. Consonant Cluster

10.8. Syllabically Uncertain rElationship with Speech Sound

10.9. Summing Up

10.10. Self Assesement Questions

10.11. Vowel Sound

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- 10.12. Classification of Vowels
- 10.13. Dipthongs
- 10.14. Types of Vowel Sound
- 10.15. Summing Up
- 10.16. References
- 10.17 Terminal and Model Questions

10.1. INTRODUCTION

Speech sounds form the foundation of any spoken language. Among these, consonants and vowels play a crucial role in shaping the phonological structure of words. Understanding how these sounds are produced, described, and classified is essential for the study of phonetics and linguistics. This module introduces learners to the articulatory features of consonants and vowels, exploring the physiological mechanisms involved in their production and the parameters used to describe and categorize them. By examining how different sounds function within language systems, students gain deeper insight into the building blocks of spoken communication

10.2. OBJECTIVES

After reading this unit you will be able to

- Explain the key articulatory differences between consonants and vowels.
- Identify and describe the major articulatory features used to classify consonants, including place and manner of articulation, and voicing.
- Classify vowels based on tongue height, tongue backness, lip rounding, and tenseness.
- Interpret and use Consonants and Vowels
- Vowel Sounds and how to improve pronounciation

10.3. SPEECH SOUNDS: MEANING AND DEFINITION

Sounds are described not by how they sound to the ear, but rather how they are produced in the vocal tract tract. Sounds are produced my moving the articulators (things that can be moved) within the vocal tract (lips, tongue, etc). Speech involves producing sounds from the voice box. In English, there are no one-to -one relation between the system of writing and the system of pronunciation. The alphabet, which we use to write English, has 26 letters but in English speech sounds are approximately 44. The number of speech sounds in English varies from dialect to dialect.

To represent the full spectrum of sounds without using different orthographic systems, a universal alphabet of sounds has been developed. Let's not forget that Phonemes in oral languages are not

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physical sounds, but mental abstractions of speech sounds. A phoneme is a family of speech sounds (phones) that the speakers of a language think of as being, and usually hear as, the same sound. A perfect alphabet is the one that has one symbol for each phoneme. The IPA or International Phonetic Alphabet uses a single symbol for each specific sound. Sometimes these symbols match the letters in English, which represent these sounds. Sometimes they do not.

10.4. ENGLISH PHONEMES

Now you will study, in detail, elements that make up drama and theatre. This will help you understand the grandiosity of this genre. Also, you will find out what do you miss while analyzing a theatrical piece.

Infants begin making sounds at birth; those early sounds in the form of cries can be easily recognized. As the infant continues to mature, cooing and babbling noises develop into consonants and vowel sounds. These early pre-consonants and pre vowel sounds gradually become shaped into words. But phoneme development in neonates for purpose of speech generally begins between the first and second birthdays.

Phoneme is the basic linguistic unit, denoted by a character enclosed with forward slashes or square braces (e.g. the symbol /i/ represents the vowel sound heard in the word team). Phonemes may be classified and described according to a number of criteria. They may be divided, for example, into vowels and consonants. In a language the number of phonemes is fixed. Meaning depends heavily on the inter- relationship of phonemes and morphemes. That's why modern linguistics studies language as a system. It studies phonemes at the lowest level and sentences at the highest level through syllables, morphemes, words and phrases.

10.5 THE CONSONANTS

Consonant is a term used to refer to the letters of the English alphabet other than the five vowels (a, e, i, o, u). They include letters that are pronounced by obstructing the flow of air in the vocal tract. The Oxford Learner's Dictionary defines a consonant as "a speech sound made by completely or partly stopping the flow of air through the mouth or nose".

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Like vowels, consonants can also be better perceived by learning their sounds. A consonant sound is a speech sound that is produced by the partial or complete obstruction of air by the lips, teeth, tongue or throat. The Collins Dictionary defines a consonant sound as "a sound such as 'p', 'f', 'n', or 't' which you pronounce by stopping the air flowing freely through your mouth". There are 44 speech sounds in total in the English language. Among them, 24 are consonant sounds. Let us look at what they are and how they are classified.

In PHONETICS, consonants are discussed in terms of three anatomical and physiological factors:

- 1. The state of the glottis (whether or not there is VOICE or vibration in the larynx),
- 2. The place of articulation (that part of the vocal apparatus with which the sound is most closely associated),
- 3. And the manner of articulation (how the sound is produced).

10.5.1. Articulators

All the sounds we make when we speak are the result of muscles contracting. The muscles in the chest that we use for breathing produce the flow of air that is needed for almost all speech sounds; muscles in the larynx produce many different modifications in the flow of air from the chest to the mouth. After passing through the larynx, the air goes through what we call the vocal tract, which ends at the mouth and nostrils; we call the part comprising the mouth the oral cavity and the part that leads to the nostrils the nasal cavity. Here the air from the lungs escapes into the atmosphere. We have a large and complex set of muscles that can produce changes in the shape of the vocal tract, and in order to learn how the sounds of speech are produced it is necessary to become familiar with the different parts of the vocal tract. These different parts are called articulators, and the study of them is called articulatory phonetics.



i) The pharynx is a tube, which begins just above the larynx. It is about 7 cm long in women and about 8 cm in men, and at its top end it is divided into two, one part being the back of the oral cavity and the other being the beginning of the way through the nasal cavity. If you look in your mirror with your mouth open, you can see the back of the pharynx.

ii) The soft palate or velum is in a position that allows $\operatorname{air}_{\operatorname{SEP}}^{\operatorname{TT}}$ to pass through the nose and through the mouth. Often in speech it is raised so that air cannot escape through the nose. The other important thing about the soft palate is that it is one of the articulators that can be touched by the tongue. While making the sounds k, À the tongue is in contact with the lower side of the soft palate, and we call these velar consonants.

iii) The hard palate is often called the "roof of the mouth". Its smooth curved surface can be felt with the tongue. A consonant made with the tongue close to the hard palate is called palatal. The sound j in 'yes' is palatal.

iv) The alveolar ridge is between the top front teeth and the hard palate. Its shape can be felt with the tongue. These can be only seen by dentists with the help of a very small mirror used by them. Sounds made with the tongue touching here (such as t, d, n) are called alveolar.

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v) The tongue is a very important articulator and it can be moved into many different places and different shapes. It is usual to divide the tongue into different parts, though there are no clear dividing lines within its structure: tip, blade, front, back and root. (This use of the word "front" often seems rather strange at first.)

vi) The teeth (upper and lower) are shown at the front of the mouth, immediately behind the lips. The tongue is in contact with the upper side teeth for most speech sounds. Sounds made with the tongue touching the front teeth, such as English are called dental.

Vii.The lips are important in speech. They can be pressed together (when we produce the sounds p, b), brought into contact with the teeth (as in f, v), or rounded to produce the lip-shape for vowels like uà. Sounds in which the lips are in contact with each other are called bilabial, while those with lip-to-teethcontact are called labiodental.

10.6. Classification of Consonant Sound

Consonant sounds are described by 3 things:

- 1. Is the sound voiced or voiceless? VOICING
- 2. Where is the sound constricted? PLACE OF ARTICULATION
- 3. How is the airstream constricted? MANNER OF ARTICULATION

10.6.1. Voicing

. **Step 1:** The first thing to state in describing a consonant is to indicate whether the sound is **VOICED or VOICELESS**

- voice sounds = vocal folds vibrate
- Voiceless sounds = vocal folds do not vibrate (try this: put your hand on your throat when you pronounce the sound. If you feel a vibration, the sound is voiced.)

Step 2: The second thing is to tell where in the vocal tract the sound is articulated (the place of articulation)

PHONETICS AND PHONOLOGYBAEL (N)-221Step 3: The third thing is to say how the air stream is modified by the vocal tract to produce thesound (manner of articulation)

10.6.2.. Voiced and Unvoiced Consonants:

- Voiced consonants: Vocal cords vibrate (e.g., /b/, /d/, /g/, /v/, /z/, /ʒ/, /m/, /n/, /l/, /r/).
- Voiceless consonants: Vocal cords do not vibrate (e.g., /p/, /t/, /k/, /f/, /s/, /ʃ/).

Consonants may also involve vibration of the vocal folds, as in the phoneme /v/, heard in the word *voice*. Such consonants are called voiced consonants, while consonants such as the /f/ of the word *fish* are referred to as unvoiced, since the vocal folds are simply held open during the production of these sounds.

The consonants may also be divided along a number of lines. Fricative consonants, or spirants, such as the aforementioned /f/ of *fish* and /s/ of *sit*, are marked by a steady, turbulent flow of air at a constriction created somewhere in the vocal tract other than at the vocal chords. Stop consonants, or plosives, on the other hand, such as the /p/ of *push* or the /g/ of *goat*, are produced by the build-up and sudden, explosive release of air pressure at some point in the vocal tract. Fricatives and stop consonants may be either voiced or unvoiced. Certain terms used in the description of speech sounds may be applied to both vowels and consonants.

Nasal sounds are those in which the nasal cavity plays a role in the transmission and broadcast of the vocal sound, whereas non-nasal sounds occur when the nasal cavity is cut off from the vocal tract by the velum during sound production. Continuants are those speech sounds that involve the continuous, steady flow of air from lungs to the environment, while stops involve the complete closure or obstruction of the vocal cavities at some point in the production of the sound.

Finally, there are some classes of phonemes that do not fit neatly into the vowel- consonant classification scheme described above. The sounds /l/, /r/, /m/, /n/, and /ng/, for example, though often thought of as consonants, are referred to as liquids or semi- vowels. The sounds /w/, /y/, and /h/ are referred to as transitionals in [Fletcher 1953]. Speech sounds referred to as affricates consist of a plosive or stop consonant immediately followed by a fricative or spirant, such as the German .

10.6.3. Place of Articulation

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- Bilabial the upper lip and lower lip come in complete contact with each other.
- Dental the tip of the tongue touches the teeth mildly.
- Labio-dental the lower lip and the upper teeth come in contact with each other.
- Palatal the body of the tongue touches the hard palate.
- Alveolar the tip or blade of the tongue touches the alveolar ridge.
- Palato-alveolar the blade/tip of the tongue touches the alveolar ridge, and the body of the tongue approaches the hard palate.
- Velar the body of the tongue comes in contact with the soft palate (also called the velum).
- Glottal the vocal cords come into contact and produce friction.

10.6.4. Manner of Articulation

- Plosive a sound produced by the air being blocked inside the vocal tract followed by the release of air from the mouth.
- Fricative a sound produced by positioning the mouth in a particular manner so as to partially block the air coming out of the mouth.
- Affricate a combination of a plosive and fricative manner, in which sound is produced by the blocking of air and finally releasing it through a partial passage. An affricate is a consonant which begins as a stop (plosive), characterized by a complete obstruction of the outgoing airstream by the articulators, a buildup of air pressure in the mouth, and finally releases as a fricative, a sound produced by forcing air through a constricted space, which produces turbulence when the air is forced through a smaller opening. Depending on which parts of the vocal tract are used to constrict the airflow, that turbulence causes the sound produced to have a specific character (compare pita with pizza, the only difference is the release in /t/ and /ts/). There are two types of affricate in English. For an interactive example of each sound (including descriptive animation and video), click this link, then in the window that opens, click affricate, and select the appropriate sound.
- Nasal a sound produced when the air passes and escapes through the nose.
- Lateral a sound produced by the air escaping from the mouth and sides of the tongue.

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• Approximant – a sound produced when the tip of the tongue slightly touches the alveolar ridge, and the air escapes through the gap between the tongue and the alveolar ridge.

10.6.5. THE CONSONANT CHART

The 24 Consonant Sounds in English

| Consonant Sounds | Place of | Manner of Articulation | Examples | |
|------------------|-----------------|------------------------|----------------------------------|--|
| | Articulation | | | |
| /p/ | Bilabial | Plosive | pet, top | |
| /b/ | Bilabial | Plosive | b at, tu b | |
| /m/ | Bilabial | Nasal | m at, pal m | |
| /w/ | Bilabial | Approximant | wind, always | |
| /f/ | Labio-dental | Fricative | front, leaf | |
| /v/ | Labio-dental | Fricative | vase, advise | |
| /0/ | Dental | Fricative | think, teeth | |
| /ð/ | Dental | Fricative | this, with | |
| /t/ | Alveolar | Fricative | trunk, what | |
| /d/ | Alveolar | Fricative | dose, ward | |
| /s/ | Alveolar | Fricative | save, case | |
| /z/ | Alveolar | Fricative | zest, doze | |
| /n/ | Alveolar | Nasal | neat, win | |
| /\/ | Alveolar | Lateral | like, will | |
| /r/ | Alveolar | Approximant | rest, torch | |
| /ʃ/ | Palato-alveolar | Fricative | shoes, cushion | |
| /3/ | Palato-alveolar | Fricative | bei ge , mea s ure | |
| /tʃ/ | Palato-alveolar | Affricate | catch, patch | |
| /dʒ/ | Palato-alveolar | Affricate | ba dge , ju dge | |
| /j/ | Palatal | Approximant | y oke, y onder | |
| /k/ | Velar | Plosive | keep, poke | |
| /g/ | Velar | Plosive | g ame, ba g | |

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|-----------------|-----------|-----------|-----------------------------|
| /ŋ/ | Velar | Plosive | si ng , wi ng |
| /h/ | Glottal | Fricative | heap, cohort |

10.7. Consonant Cluster

"A cluster is when two or more consonants of different places of articulation are produced together in the same syllable." (Source: Linda I. House – Introductory Phonetics and Phonology) Note that clusters are determined based on the sounds, not the letters of the words. Initial clusters are usually formed by combining various consonants with the /s/, /r/, or /l/ phonemes. Examples: sleep [sli:p], green [gri:n], blue [blu:]

Medial clusters usually appear at the beginning of a second or third syllable in a multisyllabic word. Examples: regret [rɪgret], apply [əplaɪ], approve [əpru:v]• Final clusters are usually composed of a variety of phonemes including/sk/, /mp/, /ns/, /st/, and /ŋk/.Examples:desk [desk], camp [kæmp], mince [mɪns], fast [fɑ:st],bank [bæŋk].Clusters can appear in the initial, medial, or final positions of words.

10.8. Syllabically Uncertain Relationship with Speech Sounds

In this section, you will learn about some genres of theatre that are different from the

We can notice 'l' in apple, 'm' in spasm, 'n' in isn't, 'r' in centre. In such positions, they are often pronounced with a schwa preceding their consonant value. Most consonant letters are sometimes 'silent': that is, used with no sound value (some having lost it, others inserted but never pronounced); b in numb, c in scythe; comparably with handsome, foreign, honest, knee, talk, mnemonic, damn, psychology,

island, hutch, wrong, prix, key, laissez-faire. In general, consonant letters in English have an uncertain relationship with speech sounds.

10.9. SUMMING UP

• Consonant is a speech sound produced by completely or partly stopping the air being breathed out through the mouth. (Hornby: Oxford Advanced Learner's Dictionary).

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- Consonant is a speech sound which is pronounced by stopping the air from flowing easily through the mouth, especially by closing the lips or touching the teeth with the tongue. (Cambridge University Press.: Cambridge Advanced Learner's Dictionary).
- English consonants are described by the IPA (International Phonetics Alphabets) based on: A. Voicing;
 B. Place of articulation; and C. Manner of articulation.
- Voicing: The aspects of voicing are: voiced consonants (those created by the vibration of the vocal cords during production); and voiceless consonants (those created by the absence of vibration of the vocal cords during production).
- In phonetic chart of the English consonants, where symbols appear in pairs, the one to the right represents a voiced consonant.
- Place of Articulation: Place of articulation refers to the places where the air stream from the lungs or the sound stream from the larynx is constricted (limited) by the articulators.
- Manner of Articulation: Manner of articulation refers to how the air stream from the lungs is directed to the mouth and modified by the various structures to produce a consonant phoneme.
- The Description of Manner of Articulation: Plosive Produced by the obstruction of air stream from the lungs followed by a release of the air stream. Such as: [p, b, t, d, k, g]
- Nasal Produced by the release of the air through the nasal cavity. Such as: $[m, n, \eta]$
- Fricative Produced by the release of a "friction like noise" created by the airstream escaping through a variant of narrow gaps in the mouth. Such as: [f, v, θ, ð, s, z, ∫, 3, h]
- Lateral Approximant Produced by the obstruction of the air stream at a point along the center of the oral track, with incomplete closure between one or both sides of the tongue and the roof of the tongue. Such as: [1]
- Approximant Produced by proximity (closeness) of two articulators without turbulence (hard movement and friction like noise).Such as: [w, 1 (r), j]

Affricate Produced by involving more than one of those manners of articulation. Firstly, produce the sounds in the alveolar ridge, then followed by or combined with fricative sounds. Such as: [tf, dg] Thus the description of a consonant will include five kinds of information : (1) the nature of the air-stream mechanism; (2) the state of the glottis; (3) the position of soft palate (velum); (4) the articulators involved; and (5) the nature of the 'stricture'.

10.10. SELF ASSESSMENT QUESTIONS

Type 1- General

Q1. What is a consonant?

Q2. How are consonants different from vowels?

Q3. What are the main features used to describe consonants?

Type 2- Classification Based

Q5.What is the role of the following in classifying consonants:

A.Place of articulation?

- B. Manner of articulation?
- C. Voicing?

Q6.How are consonants classified based on place of articulation?

(e.g., bilabial, dental, alveolar, velar, glottal)

Q7. How are consonants classified based on manner of articulation?

(e.g., plosives, fricatives, affricates, nasals, laterals, glides)

Q8.What does it mean for a consonant to be voiced or voiceless?

(e.g., /b/ vs /p/)

Q9.Can you give examples of consonants for each classification type?

Type 3- Application based

Q10. What are some examples of consonants that are similar in manner but different in place of articulation?

Q11. How do English consonants differ from those in another language (e.g., Arabic, Spanish, French)?

PHONETICS AND PHONOLOGY BAEL (N)-221 Q12. Why is it important to understand consonant classification in language learning and speech therapy?

Q13. What are the IPA (International Phonetic Alphabet) symbols for common English consonants?

Q14. How does the classification of consonants help in phonological analysis?

10.11. VOWEL SOUND: INTRODUCTION

The term 'vowel' is used to refer to letters used to represent vowel sounds. In the English language five letters among the twenty-six letters of the English alphabet are called vowels. They are a, e, i, o, and u. The Oxford Learner's Dictionary defines a vowel as "a letter that represents a vowel sound". Now, let us find out what a vowel sound is.

A vowel sound is a speech sound that is pronounced without the lips, tongue, teeth or throat blocking the air produced when uttering the letter. According to the Oxford Learner's Dictionary, a vowel sound is "a speech sound in which the mouth is open, and the tongue is not touching the top of the mouth, the teeth, etc., so that the flow of air is not limited". There are only five vowels in the English language, but there are twenty vowel sounds in total. Out of the twenty, eight of them are called diphthongs. Let us look at the following lists of vowel sounds and diphthongs to have a clearer idea.

10.12. CLASSIFICATION OF VOWELS

Vowels can be defined as speech sounds produced without obstruction or audible friction of the lung air passing through the oral passage. The tongue and the lips can produce various resonating chambers by assuming different shapes. Vowels, thus, result from various resonating cavities formed by these articulators.

Vowel sounds are classified into certain sets basing on the following main factors.

i. <u>The Shape of the Lips</u>:

The lips can assume **spread**, **neutral** or **rounded** positions. Those vowels in the production of which the lips assume a rounded shape are called **rounded** vowels. The vowels in 'do', 'shoe', and 'fruit' are, for example, rounded vowels. The vowels produced with a spread or neutral shape of the lips are called **unrounded** vowels. The vowels in 'tree', 'egg', 'friend', 'come' are examples of unrounded vowels.

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ii. <u>The Raising of the Tongue:</u>

The tongue can assume different shapes because of its flexibility. Every change in its shape results in a different vowel sound. Such changes are determined by two factors: (a) **the part of the tongue that is raised**, and (b) **how high it is raised**. The parts of the tongue which produce the vowels are called **the front**, **the back**, and **the central**. These are imaginary divisions of the tongue. These parts again can be raised or lowered to produce certain sound effects. The raising or lowering, however, remains restricted to a certain degree. The highest point to which the tongue can be raised is called **the close position**. The lowest point to which it can be brought down is called an open position.

Two more intermediate imaginary positions are also demarcated to describe the raising of the tongue. They are the **half-close** and the **half-open** positions. These divisions and heights can be shown with the help of the following diagram.



All the English vowels are voiced, meaning that the vocal cords vibrate to produce them. Altogether there are twenty vowels in English. Twelve of these them are monophthongs and the remaining eight are diphthongs. Of the twelve monophthongs, seven are short vowels and five are long vowels. The monophthongs are also called pure vowels since they do not change in their quality. Vowels which

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involve a gliding movement from one quality to another are called diphthongs. The glide, however, takes place within the same syllable.

Vowels are classified into two - pure vowels and diphthongs.

2.7. Pure Vowels

Vowels which have a single vowel sound when pronounced are called pure vowels. The twelve vowel sounds we have mentioned earlier are pure vowels. Words such as announce(a), fret(a), sun(A), tick(I), please(i:), dot(b), foot(c), food(u:), word(a:), warm(a:), arm(a:) and pant(a) come under this category.

Pure vowels are further classified into two – checked vowels and free vowels. Read on to learn what they are.

Checked Vowels

Among the 12 vowel sounds, 7 of them are considered checked vowels. They are Λ , e, ϑ , υ , ι , æ and υ . These vowels cannot occur at the end of open syllables.

Free Vowels

The five vowel sounds u:, i:, 3:, a: and 5: are considered free vowels. These vowels can be used at the end of open syllables.

List of Pure Vowels with Examples

The 12 vowel sounds in English have been provided below with examples to help you understand. Check them out.

| Vowel sounds | Examples |
|--------------|-------------------------------|
| /// | c u t, b u tter |
| /a:/ | p ar k, f ar |
| /æ/ | bat, fan |
| /ɒ/ | goggles, fog |

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| /ɔː/ | m or e, w ar n |
|------|----------------------------------|
| /3:/ | b ir d, w or m |
| /e/ | pet, ten |
| /ə/ | vend or , monit or |
| /I/ | sit, pin |
| /i:/ | theme, fleet |
| /ʊ/ | cook, put |
| /u:/ | fl u te, b oo n |

10.13. DIPTHONGS

Diphthongs are speech sounds formed by the combination of two vowel sounds. They do not resemble the speech sound of either vowel sound, instead form an entirely new speech sound.

The vowel sounds in the words boy, by, and how involves a change in the shape of the mouth as the vowel is being produced. The vowel of toy begins with approximately the mid back vowel [O] and finishes with ap- proximately the high front lax vowel [I] (or the palatal glide [j]). The vowel of by begins with approximately the low back vowel [a] (a low back vowel slightly more f approximately [I] (or [j]). The vowel of cow begins with approximately [a] and finishes with approximately the high lax rounded vowel [U] (or the labio-velar glide [w]). We represent these diphthongs as [OI], [aI], and [aU], respectively (though many linguists use [Oj], [aj], and [aw]).

A second set of English diphthongs is not as clearly notable as the first, chiefly because we tend to observe them as simple vowels. However, in a precise (narrow) phonetic transcription they must be characterized as diphthongs. The tense front vowel [e] is diphthongized. The vowel of boat is actually pronounced [oU]. So, the front tense vowel is diphthongized by the addition of a front vowel and the

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back tense vowel is diphthongized by the addition of a back vowel. We can express this pattern as a rule: Mid and high tense vowels are diphthongized by the addition of a high lax vowel that matches the original vowel in front or back.

Diphthongization of these vowels is a feature of English rather than a universal feature of natural language. Spanish and German language, do not diphthongize their corresponding vowels. The tendency to diphthongize these vowels is one characteristic of the "foreign accent" that betrays English speakers when they begin to learn these languages.

The first of these is the vowel /1ə/ as it appears in British pronunciations of the word near. From the IPA symbol used to represent this vowel, it can be seen that the vowel begins with an articulation of the mid-high front unrounded vowel /1/ followed by a smooth transition towards the vowel /ə/.

The second diphthong begins with the mid-low front unrounded vowel $\langle \epsilon \rangle$ before moving towards $\langle \vartheta \rangle$. The diphthong created by this rapid and smooth movement is, therefore, transcribed as $\langle \epsilon \vartheta \rangle$. This is the vowel sound that occurs in the word square.

The third, and final, diphthong in this group begins with the mid-high back rounded vowel $/\upsilon/$. The resultant diphthong is transcribed as $/\upsilon_2/$. It occurs in British pronunciations of cure.

Standard Lexical Sets introduced by the linguist John C. Wells in 1982.It is useful to consider the pronunciation of vowel sounds in English through the idea of Standard Lexical Sets, introduced by the linguist John C. Wells in 1982. Wells defined one lexical set on the basis of the pronunciation of words in the reference accent Received Pronunciation (RP) for the English spoken in England. English has five vowels in its alphabet: a, e, i ,o u. However, there are many more ways of pronouncing the vowels than the five sounds given by a,e,i,o,u. /a/ can be pronounced as a 'short' sound as in the word

 kad>, or pronunciations common in the North of England, such as <grass> and
 kath>. It can also represent a 'long' sound, as in the word <laugh>, or
 kath>, and <grass>. The sound represented by /o/ can also be spelt in different ways, such as in the word
or in <cough>.

List of Diphthongs with Examples

Given below is a table with the eight diphthongs in the English language. Go through the examples given for each diphthong to clearly understand what the phoneme sounds like.

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| Diphthongs | Examples |
|------------|--------------------------------|
| /aɪ/ | fight, write |
| /aʊ/ | pl ough , c ow |
| /eə/ | th eir , ch air |
| /əʊ/ | s oa k, r o dent |
| /eɪ/ | f a te, p ai n |
| /ɪə/ | h ere , ch eer |
| /ʊə/ | p oor , s ure |
| /1c/ | t oy , expl oi t |



10.14.. TYPES OF VOWEL SOUNDS

Diphthongs are speech sounds formed by the combination of two vowel sounds. They do not resemble the speech sound of either vowel sound, instead form an entirely new speech sound.

Vowels/vowel sounds are categorised into two based on the length of the vowel sound and the number of vowels. They are

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- Short vowels
- Long vowels

Let us look at each of them in detail.

Short Vowels

Short vowels are those that appear individually in words. These words normally end with consonants. They can, in no way, appear at the end of the last syllable of a word.

Here are a few examples.

- 'a' in 'pan'
- 'e' in 'rent'
- 'i' in 'p**i**t'
- 'o' in 'c**o**t'
- 'u' in 'tr**u**ck'

Long Vowels

The term 'long vowels' is used to refer to two or more vowels that appear in words. Words with long vowels can start/end with vowels. Take a look at the following examples to understand.

- 'a' in 'fake'
- 'e' in 'tedious''
- 'i' in 'blind'
- 'o' in 'rote'
- 'u' in 'cumin'

The categorisation of vowel sounds as long and short would not be the same. There is a difference. They would include words with diphthongs as well. Let us look at the following examples to comprehend how it works.

PHONETICS AND PHONOLOGY Short Vowel Sounds

- 'a' in 'braid', 'falcon', 'steak'
- 'e' in 'furry', 'tread', 'says'
- 'i' in 'women', 'eject', 'houses'
- 'o' in 'entrepreneur', 'cause', 'flaw'
- 'u' in 'flood', 'done', 'son'

Long Vowel Sounds

- 'a' in 'faint', 'weight', 'dainty'
- 'e' in 'receive', 'weak', 'encyclopaedia'
- 'i' in 'tight', 'ice', 'eye'
- 'o' in 'blow', 'road', 'door'
- 'u' in 'new', 'queue', 'vacuum'

Is 'Y' a Vowel?

The letter 'y' is a consonant, but it can be considered a vowel sound. Why is it so? Have you ever noticed the pronunciation of the letter 'y' when placed in different positions in words? Analyse the words given below.

| | You | Ву | Fly | Play | Нарру |
|---|-----|----|-----|------|-------|
| I | | | | | |

Except for the first word, the consonant sound /j/ is not pronounced in any of the other words. So, it can be said that 'y' can be considered as both a consonant and vowel sound because of its specific function.

10.15 SUMMING UP

All English vowels are voiced. To depict the vowel sound we must indicate whether it is open or close, halfclose or half-open, front or back or central, long or short, whether the tongue is tense or relax while the vowel is being pronounced, and whether lips are spread, neutral, open rounded, or close rounded.

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From the point of view of their quality, vowel sounds are of two types: monophthong and diphthong. Monophthongs are pure vowels and diphthongs are gliding vowels. 'A vowel that does not change in quality' may be called a monophthong; and a vowel sound with a continually changing quality may be called a diphthong.



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10.17. TERMINAL AND MODEL QUESTIONS

Basic Understanding

- 1. What is a vowel?
- 2. How are vowels produced differently from consonants?
- 3. What is the difference between monophthongs and diphthongs?
- 4. What are the three main criteria used to classify vowels?

Classification Criteria

- 5. What does "height" refer to in vowel classification? Provide examples.
- 6. What is meant by "backness" in vowels?
- 7. How does "lip rounding" affect vowel quality?
- 8. Give examples of front, central, and back vowels.
- 9. Which vowels are high, mid, and low in terms of tongue height?
- 10. How is the vowel /i/ described in terms of height, backness, and rounding?
- 11. Describe the vowel /a/ using phonetic classification terms.
- 12. What is the International Phonetic Alphabet (IPA), and how is it used to represent vowels?

Diphthongs and Vowel Systems

- 13. What are closing and centering diphthongs? Give examples.
- 14. How do vowel systems differ between languages like English and Spanish?
- 15. What role do vowels play in syllable structure and stress?

Advanced/Applied

- 16. How can vowel classification help in learning foreign languages or accents?
- 17. Describe how vowel sounds can shift in different dialects (e.g., the Northern Cities Vowel Shift).
- 18. How are vowels affected by phonological processes such as assimilation or vowel reduction?

UNIT 11 PHONETIC TRANSCRIPTIONS AND PHONOLOGY

- 11.1. Introduction
- 11.2. Objectives
- 11.3. Introduction to Phonetics and Phonology
 - 11.3.1. Definition of Phonetics
 - 11.3.2. Definition of phonology
- 11.4. The International Phonetic Alphabet (IPA)
 - 11.4.1. Purpose of IPA
 - 11.4.2. The IPA Chart
 - 11.4.3. Consonant and Vowel Charts
- 11.5. Phonetic Transcription
 - 11.5.1. Narrow Transcription
 - 11.5.2. Broad Transcription
- 11.6. Phonemes and Allophones
 - 11.6.1. Phoneme
 - 11.6.2. Allophones
 - 11.6.3. Minimal Pairs
- 11.7. Summing Up
- 11.8. Answers to Self-Assessment-Questions

11.10. Terminal and Model Questions

11.1. INTRODUCTION

Phonetic transcription and phonology are essential areas in the study of language and linguistics. **Phonetic transcription** is the visual representation of speech sounds using symbols from the **International Phonetic Alphabet (IPA)**. It allows us to accurately record how words are pronounced, regardless of spelling or accent, making it a valuable tool for language learners, teachers, and linguists.

Phonology, on the other hand, focuses on the abstract, systematic organization of sounds in a particular language. It studies how sounds function, interact, and form patterns, including concepts like **phonemes** (distinctive sound units), **allophones** (sound variants), and **phonological rules** that govern pronunciation changes in different contexts.

Together, phonetic transcription and phonology help us understand the sounds of language both in their physical form and their mental organization, bridging the gap between how we speak and how we think about speech.

11.2. OBJECTIVES

By the end of this unit, students should be able to:

- Understand the distinction between phonetics and phonology.
- Accurately use phonetic symbols to transcribe speech sounds.
- Identify and describe phonemes and allophones.
- Analyze basic phonological patterns and rules in English and other languages

11.3. INTRODUCTION TO PHONETICS AND PHONOLOGY

Phonetics and Phonology are both concerned with the same subject matter or aspect of language i.e. **speech sounds**, but they are concerned with them from different point of view. Phonetics is the study of

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speech sounds of a language in general i.e. without reference to a particular language while phonology is the study of speech sounds of a **particular** language. For example, the study of English speech sounds.

11.3.1. Definition of Phonetics

Phonetics is the study of production, transmission and reception of speech sounds. It is studied under three branches:

<u>1. Articulatory Phonetics</u>: This system deals with production of speech sounds with the help of organs of speech. It studies the articulators such as pharynx, the lips, the teeth, the tongue, the palate (Roof of the Mouth) and the Uvula. The organs of speech are classified into: Active articulators and passive articulators.

The articulators which are located in the lower jaw are called active articulators. They are lower lip, lower teeth, tongue, soft palate and vocal cords. Passive articulators are located in the upper jaw. They are upper lip, upper teeth, and palate / roof of the mouth and the pharynx.

Consonants are classified according to *Place of articulation*, *Manner of articulation* and *voicing*.

Place of Articulation:

Place of articulation means the study of which organs of speech are involved in the production of speech sounds and what role they play in their pronunciation. Consonants sounds can be classified according to the place of articulation as follows.

- I) Bilabial: Bilabial sounds are produced by pressing the two lips together e.g. / p, b, m, w/.
- II) Alveolar: Alveolar sounds are made by raising the tip & blade of the tongue towards the alveolar ridge e.g. / t, d, n, l, s, z/
- III) Velar: Velar sounds made by touching the back of the tongue to the soft palate called the velum. e.g. /k, g, ŋ /
- IV) Labio- Dental: These sounds are produced when the lower lip is raised towards the upper front teeth. e.g. / f, v /
- V) **Dental:** Dental sounds are produced by touching the tip of the tongue to upper front teeth. e.g. / θ , δ /
- VI) Palato alveolar: These sounds are produced when the tip and blade of the tongue is raised

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towards the alveolar ridge simultaneously the front of the tongue is raised towards the hard palate. e.g. / \int , \Im , \Im , \Im , \Im /

V) Post alveolar: tip of the tongue is raised very close towards the back of alveolar ridge,

for e.g /r/

- VI) **Palatal:** The front of the tongue is raised towards hard palate. for e.g /j/
- IX) Glottal: The sound is produced at the glottis and the vocal cords are the articulators. For e.g /h

Manner of Articulation:

Consonants can be classified according to the manner of articulation as given in the table:

| Classification | Examples | | |
|------------------|------------------------------------|--|--|
| Plosives / Stops | /p/, /b/, /t/, /d/, /k/, /g/ | | |
| Nasals | /m/, /n/, /ŋ/ | | |
| Fricatives | /f/, /v/, /s/, /z/, /θ/, /ð/, /ʃ/, | | |
| | /ʒ/, /h/ | | |
| Affricates | /tʃ/, /dʒ/ | | |
| Frictionless- | / r / | | |
| continuant | | | |
| Lateral | /1/ | | |
| Semi vowels | / j, w / | | |

Voicing:

On the basis of voicing, sounds can be classified into voiced and voiceless sounds. For example,

/ p, t, k, f, θ , S, $\int t f$, h, / are voiceless sounds whereas all vowels and consonant sounds like / b, d, g, m, n, η v, δ z, 3, d3 l, r, j, w / are voiced sounds.

2. Acoustic Phonetics: It deals with the sound waves and transmission of speech sounds.

<u>3 Auditory Phonetics</u>: It deals with the reception of speech sounds and hearing act.

While studying Phonetics, it can be observed that Phonetics is one and the same for all languages of the world. It considers speech sounds independently. In this way phonetics is descriptive and classificatory. Phonetic transcription is written in square brackets e.g [p^hIt] as in 'pit'.

11.3.2. Definition of Phonology

While phonetics is the study of the ways in which speech sounds are pro- duced, phonology is the study of (1) how the speech sounds of a language are used in that language to distinguish meaningful units (such as words) from each other, and (2) how sounds are patterned in a language. Conse- quently, the study of phonology requires us to take meaning into consider- ation, while phonetics does not.

Phonetics and Phonology are both concerned with the same subject matter or aspect of language i.e. speech sounds, but they are concerned with them from different point of view. Phonetics is the study of speech sounds of a language in general i.e. without reference to a particular language while phonology is the study of speech sounds of a particular language. For example, the study of English speech sounds.

Phonology studies the function, selection and organization of speech sounds of a language. It deals with the study of phonemes and their variants (allophones) in a particular language and suprasegmental features such as stress and intonation. For example, English phonology considers 44 phonemes, their organization and function.
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Phonology of one language differs from the phonology of another language. For example, English phonology considers 44 phonemes and Marathi language 48. Phonology describes the sounds of a particular language. In this way phonology is functional and is different from language to language. Phonemic transcription is written in two slant lines .e.g /p/

| Sr. No | Phonetics | Phonology |
|--------|--|---|
| 1 | Phonetics is the study of speech sounds of a language in general i.e. without reference to a particular language. | Phonology is the study of speech sounds of a particular language. For example, the study of English speech sounds. |
| 2 | Phonetics is the study of production, transmission and reception of speech sounds. It is studied under three branches: 1) Articulatory Phonetics: It deals with production of speech sounds with the help of organs of speech. 2) Acoustic Phonetics: It deals with the sound waves and transmission of speech sounds. 3) Auditory Phonetics: It deals with the reception of speech sounds and hearing act. | Phonology studies the function, selection and organization of speech sounds of a language. It deals with the study of phonemes and their variants (allophones) in a particular language and <u>suprasegmental</u> features such as stress and intonation. For example, English phonology considers 44 phonemes, their organization and function. |
| 3 | Phonetics is one and the same for all languages of the world. | Phonology of one language differs from the phonology of another language. For example, English phonology considers 44 phonemes and Marathi language 48. |
| 4 | Phonetics considers speech sounds independently. | Whereas Phonology describes the sounds of a particular language. |
| 5 | In this way phonetics is descriptive and classificatory. | while phonology is functional and is different from language to language. |
| 6 | Phonetic transcription is written in square brackets $e.g [p^hIt]$ as in' pit'. | Phonemic transcription is written in two slant lines .e.g /p/ |

Difference between Phonetics and Phonology

11.4. THE INTERNATIONAL PHONETIC ALPHABET (IPA)

The **International Phonetic Alphabet** (**IPA**) is an alphabetic system of phonetic notation based primarily on the Latin script. It was devised by the International Phonetic Association in the late 19th century as a standard written representation for the sounds of speech. The IPA is used by linguists, lexicographers, foreign language students and

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teachers, speech-language pathologists, singers, actors, constructed language creators, and translators.

The IPA is designed to represent those qualities of speech that are part of lexical (and, to a limited extent, prosodic) sounds in oral language: phones, intonation and the separation of syllables. To represent additional qualities of speech – such as tooth gnashing, lisping, and sounds made with a cleft palate – an extended set of symbols may be used.

Occasionally, letters or diacritics are added, removed, or modified by the International Phonetic Association. As of the most recent change in 2005,^[4] there are 107 segmental letters, an indefinitely large number of suprasegmental letters, 44 diacritics (not counting composites), and four extra-lexical prosodic marks in the IPA. These are illustrated in the current IPA chart.

11.4.1. Background AND Purpose of IPA

The IPA was first introduced in the late 1800s by a group of French and English language teachers and linguists, led by Paul Passy. It was based on previous efforts to come up with a better system of representing spoken language in writing. These language specialists were aiming to solve three major issues that arise when you work with languages: letters don't always correspond to the same sounds, even within the same language; writing systems across languages vary a lot; and they're limited in what they can tell you about a language's sounds.Purpose is-

To represent speech sounds clearly and unambiguously.

To assist in language teaching, speech therapy, linguistics, and dictionary pronunciation guides.

To overcome irregular spelling patterns found in many languages (e.g., *enough* vs *through* vs *cough*).

11.4.2. THE IPA CHART

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THE INTERNATIONAL PHONETIC ALPHABET (revised to 2020)

| CONSONANT | CONSONANTS (PULMONIC) © © © 2020 IPA | | | | | | | | | | | | | | | | | | | | | |
|----------------------|--------------------------------------|----|---------|------|-----|------|------|--------------|-------|--------|------|-------|-----|------|----|-----|----|--------------|-------|--------|-----|-------|
| | Bilabi | al | Labiode | ntal | Der | ntal | Alve | eolar | Posta | veolar | Retr | oflex | Pal | atal | Ve | lar | Uv | ular | Phary | /ngeal | Glo | ottal |
| Plosive | рł |) | | | | | t | d | | | t | d | с | J | k | g | q | G | | | 3 | |
| Nasal | n | n | r | ŋ | | | | n | | | | η | | ր | | ŋ | | Ν | | | | |
| Trill | I | 3 | | | | | | r | | | | | | | | | | \mathbf{R} | | | | |
| Tap or Flap | | | | v | | | | ſ | | | | Ľ | | | | | | | | | | |
| Fricative | φſ | 3 | f | v | θ | ð | s | \mathbf{Z} | ſ | 3 | ş | z | ç | j | х | y | χ | R | ħ | ſ | h | ĥ |
| Lateral fricative | | | | | | | ł | ß | | | | | | | | | | | | | | |
| Approximant | | | 1 | υ | | | | r | | | | ſ | | j | | щ | | | | | | |
| Lateral approximant | | | | | | | | l | | | | l | | λ | | L | | | | | | |

Symbols to the right in a cell are voiced, to the left are voiceless. Shaded areas denote articulations judged impossible.

VOWELS

Close-mid

Open-mid

Open

ts kp

Close

Front

i• v

ΙY

ε∖œ

æ

e∢ø

Central

i•u

a∙œ

Where symbols appear in pairs, the one to the right represents a rounded vowel.

ө∳е

ə

348 e

Back

u • u

γ¢ο

A∳ Э

α∙́p

υ

CONSONANTS (NON-PULMONIC)

| Clicks | Voiced implosives | Ejectives |
|------------------|--------------------------------|----------------------------------|
| 🛈 Bilabial | 6 Bilabial | ? Examples: |
| Dental | d Dental/alveolar | ${ m p'}$ Bilabial |
| (Post)alveolar | ∱ Palatal | t^{\prime} Dental/alveolar |
| + Palatoalveolar | g _{Velar} | k' velar |
| Alveolar lateral | $\mathbf{G}^{\mathrm{Uvular}}$ | \mathbf{S}' Alveolar fricative |

OTHER SYMBOLS

- CZ Alveolo-palatal fricatives M Voiceless labial-velar fricative J Voiced alveolar lateral flap
- W Voiced labial-velar approximant
- U Voiced labial-palatal approximant fj
- H Voiceless epiglottal fricative
- ♀ Voiced epiglottal fricative
- 2 Epiglottal plosive

DIACRITICS

| 0 | Voiceless | ņď | | Breathy voiced | p. | ä | | Dental | ţ | ď |
|---|-----------------|----------------------|---|--------------------|---------------------------|---------------------------|------|----------------------|------|-------|
| Ŷ | Voiced | şţ | ~ | Creaky voiced | þ | å | | Apical | ţ | g |
| h | Aspirated | $t^{\rm h}d^{\rm h}$ | | Linguolabial | ţ | ď | | Laminal | ţ | ď |
| , | More rounded | ş | w | Labialized | $\mathbf{t}^{\mathbf{w}}$ | d^{w} | ~ | Nasalized | | ẽ |
| c | Less rounded | ş | j | Palatalized | t^j | d^{j} | n | Nasal release | | d^n |
| + | Advanced | ų | ¥ | Velarized | $\mathbf{t}^{\mathbf{y}}$ | d^{γ} | 1 | Lateral release | | d^1 |
| _ | Retracted | ē | ß | Pharyngealized | \mathbf{t}^{s} | $\mathbf{q}_{\mathbf{c}}$ | ٦ | No audible releas | e | d |
| | Centralized | ë | ~ | Velarized or phary | yngeali | zed | ł | | | |
| х | Mid-centralized | ě | T | Raised | ę | (I = | voic | ed alveolar fricativ | e) | |
| | Syllabic | ņ | т | Lowered | ę | $(\beta = 1)$ | voic | ed bilabial approxi | mant | i) |
| ~ | Non-syllabic | ĕ | - | Advanced Tongue | Root | ę | | | | |
| r | Rhoticity | or ar | F | Retracted Tongue | Root | ę | | | | |

Simultaneous \int and X

Affricates and double articulations

can be represented by two symbols joined by a tie bar if necessary.

| SUP | RASEGMENTA | LS | |
|-----|-------------------|------------|------------------|
| I | Primary stress | foundtifon | |
| ı | Secondary stress | 5 | 10019 cilen |
| I | Long | | er |
| ٠ | Half-long | | e. |
| 0 | Extra-short | | ĕ |
| | Minor (foot) gro | up | |
| | Major (intonatio | n) grou | ıp |
| | Syllable break | | .ii.ækt |
| _ | Linking (absenc | e of a t | reak) |
| | TONES AND W | ORD / | ACCENTS |
| | LEVEL | 0 | CONTOUR |
| ő | or CExtra high | ě ∝ | / Rising |
| é | ⊢ High | ê | V Falling |
| ē | - Mid | ĕ | 1 High rising |
| è | Low | è | I Low rising |

↓ Downstep ∕ Global rise ↑ Upstep Global fall

ê

→ Rising falling

_ Extra low

ë

Some diacritics may be placed above a symbol with a descender, e.g. $\check{\eta}$

How do you read the Chart

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So, as we've seen, every language has a different way of using the same letters, even if they appear to be identical. One of the best uses for the IPA as a language learner (or actor, or singer!) is that it enables you to quickly see how things are pronounced. This supports pronunciation learning and allows you to figure out new pronunciations faster. You don't need to learn the whole IPA to do this! But learning the symbols and sounds of your first language as well as the one you're learning can really help from a comparison perspective.

In fact, the IPA represents 107 different consonants and vowels—but no language uses all of those! In English, just about 44 of those sounds are used, while Spanish has comparatively fewer, only using about 24.

The IPA chart is broken down into several sub-charts. At the top are the *pulmonic* consonants, meaning consonants made with air that flows from your lungs (this includes all of the consonants used in English). This chart is cleverly organized in a way that makes it clear how each sound should be pronounced: the leftmost column is labeled with the *manner* in which a consonant is pronounced (for instance, if it's made with a buzzy vibration against a part of the mouth, it's a fricative, like /s/ or /z/), and the topmost row is labeled with the *place* (for instance, bilabial means the sound is made using both lips).

In addition, sounds are listed in pairs: the sound to the right is *voiced*, meaning the vocal folds vibrate when it's pronounced, while one on the left (if there is one!) is voiceless, meaning the vocal folds don't vibrate to make it. (Yup, that means that /s/ and /z/ are produced exactly the same way, in the same location, and the only difference is their voicing! Say each one while putting your hands to the front of your neck to feel your vocal folds turning on and off to feel the difference.)

Then, you have a sub-chart for the IPA vowels. This part of the chart is also broken down in a way that represents where the sound is made in your mouth. At the top, "high" or "close" vowels are produced with the tongue higher in the mouth (like /i/ in "bead" we saw earlier), while the "low" or "open" vowels (like /æ/ as in bat) are pronounced with the tongue lower and mouth open wider. Likewise, "front" vowels are pronounced with the tongue closer to the front of the mouth, and—you guessed it—"back" vowels with it placed toward the back!

There are many, many more interesting and important features of the IPA beyond just pulmonic consonants and vowels. These include the non-pulmonic consonants, like the click consonants that form important parts of languages like Zulu and Xhosa, or

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the *ejectives* (consonants pronounced just using air in the mouth, in a quick burst) found in languages like Quechua and Aymara. Three other important categories are:

- *Tone markers:* these show the tones that distinguish words in many languages like Chinese, Vietnamese, Punjabi, and Cherokee
- *Diacritics:* these are smaller marks that provide further information about how a letter is pronounced, like the little table under the first /d/ in Spanish ['de.ðo]
- *Suprasegmentals:* these are used to show important aspects of pronunciation like stress, where syllables begin and end, and the length of a vowel

11.4.3. IPA CONSONANT AND VOWEL CHARTS (SIMPLIFIED)

International Phonetic Alphabet Sounds In Everyday Speech

Short Vowels

| IPA Symbol | Word examples |
|------------|--------------------------------------|
| e | Went, intend, send, letter. |
| æ | Cat, hand, nap, flat, have. |
| ٨ | Fun, love, money, one, London, come. |
| ប | Put, look, should, cook, book, look. |
| α | Rob, top, watch, squat, sausage. |
| Ð | Alive, again, mother. |

Long Vowels

| IPA Symbol | Word examples |
|------------|---------------------------------------|
| i: | Need, beat, team |
| 3: | Nurse, heard, third, turn. |
| э: | Talk, law, bored, yawn, jaw. |
| u: | Few, boot, lose, gloomy, fruit, chew. |
| α: | Fast, car, hard, bath. |

Dipthong Vowels

| IPA Symbol | Word examples |
|------------|------------------------------------|
| IƏ | Near, ear, clear, tear, beer, fear |

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| eə | Hair, there, care, stairs, pear . |
|----|-----------------------------------|
| eı | Face, space, rain , case, eight . |
| IC | Joy, employ, toy, coil, oyster. |
| aı | My, sight, pride, kind, flight . |
| ອນ | No, don't, stones, alone, hole |
| ລບ | Mouth, house, brown, cow, out |

Consonants Sounds: Fricatives

| IPA Symbol | Word examples |
|------------|---------------------------------|
| f | Full, Friday, fish, knife. |
| v | Vest, village, view, cave. |
| θ | Thought, think, Bath |
| ð | There, those, brothers, others. |
| Z | Zoo, crazy, lazy, zigzag, nose |
| ſ | Shirt, rush, shop, cash. |
| 3 | Television, delusion, casual |
| h | High, help, hello. |

Consonants Sounds: Plosives

| IPA Symbol | Word examples |
|------------|-------------------------------|
| р | Pin, cap, purpose, pause. |
| b | Bag, bubble, build, robe. |
| t | Time, train, tow, late. |
| d | Door, day, drive, down, feed. |
| k | Cash, quick, cricket, sock. |
| g | Girl, green, grass, flag |

Consonants Sounds: Affricates

| IPA Symbol | Word examples |
|------------|--------------------------------|
| ť | Choose, cheese, church, watch. |
| dʒ | Joy, juggle, juice, stage. |

| IPA Symbol | Word examples |
|------------|------------------------------|
| m | Room, mother, mad, more. |
| n | Now, nobody, knew, turn |
| ŋ | King, thing, song, swimming. |

Consonants Sounds: Approximants

| IPA Symbol | Word examples |
|--------------------|---|
| r | Road, roses, river, ring, ride. |
| j | Yellow, usual, tune, yesterday, yard. |
| W | Wall, walk, wine, world. |
| I and I | Law, lots, leap, long, pill, cold, chill, melt. |

11.5. PHONETIC TRANSCRIPTION

Researchers in the language sciences often study aspects of spoken language and wish to report their findings to a broad audience which may include speakers of different languages. For that purpose they need to transform spoken words in the language into a written form that represents the way these words are pronounced. This representation is called phonetic transcription.

In order to make phonetic transcription effective, we need some kind of standard system to represent the pronunciation of spoken words. Such a system is called a phonetic alphabet. It is a set of phonetic symbols – symbols that represent speech sounds (speech sounds are also known as phones or segments). The most important requirement of the phonetic alphabet is that the phonetic symbols will be unambiguous. In other words, every phonetic symbol should represent a single sound, and different sounds should be represented by different symbols. In addition, the phonetic alphabet should be elaborate and flexible enough to allow for the representation of (potentially) all the speech sounds used in any human language.1

The requirements listed above make it clear why we need to use a specialized system instead of the conventional writing system (orthography) of some language, such as English. Obviously, the orthography of any given language was designed to represent the sounds of that particular language and not the sounds used in other languages. Consider, for example,

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the Latin script. It serves as the basis of the writing systems of numerous languages of different language families. However, since languages vary considerably in terms of their sound inventories, the Latin script is used differently in different languages. For example, the letter(j) represents different sounds in Standard European English, French, and Spanish (as in the names Jacob, Jacques, and Juan in the respective languages). In particular, the sound of $\langle j \rangle$ in each of these languages is not used (or used marginally) in the other two languages. In addition, even within the same language, a given letter may represent different sounds (e.g., the sound of $\langle u \rangle$ in the words put and but).

Moreover, since many languages that use the Latin script have more sounds than distinct letters, the script had to be adapted for each individual language to allow for a more faithful representation of its spoken form. Such adaptations are typically made by adding diacritical marks above and below letters (e.g., á, ç, ñ), or by assigning a special phonetic value to certain letter sequences (e.g., the sound of the sequence $\langle sh \rangle$ in the word shine is not the same as the sequence of sounds of the individual letters $\langle s \rangle + \langle h \rangle$).

One problem with these adaptations is that they are not done consistently across languages, or even within the same language. For example, in Hungarian, acute accent placed over $\langle u \rangle$ (i.e., $\langle \dot{u} \rangle$) indicates a long [u] sound, but when placed over $\langle a \rangle$ (i.e., $\langle \dot{a} \rangle$), the accent changes not only the length of the vowel but also its quality.2 In other languages, accent markers can indicate different phenomena as stress and tone. Thus, there is a need for a standard system to represent, in a consistent manner, the various sound categories used in all human languages, the number of which is in the order of several thousand! (Moran & McCloy, 2019

2.1. Transcription systems

Various phonetic alphabets are being used in linguistic research. This book adopts the International Phonetic Alphabet (IPA), published by the International Phonetic Association (also IPA), which is one of the most popular ones (among phoneticians, at least). The full IPA chart can be found at the beginning of this book, and will be described in detail in the following parts of this book. Among other transcription systems, one notable alternative is the [North] Americanist Phonetic Alphabet (APA, or NAPA), especially popular in linguistic domains such as syntax and semantics. Table 2.1 describes some common notation differences between IPA and APA (see full APA chart in Pullum & Ladusaw, 1996).

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Table 2.1 Common notation differences between IPA and APA

| IPA | | APA | Description |
|--------|----------|--|---|
| dĵ | j | The sound of $\langle j \rangle$ in jacket | |
| j | у | The sound of $\langle y \rangle$ in yard | |
| ſ | š | The sound of (sh) in shine | |
| fs | c | The sequence of sounds of $\langle t \rangle + \langle s \rangle$ in languages that treat it as a single | |
| conson | ant, e.g | , the sound of | (z) in German words like zwei 'two' |
| ſſ | | | |
| | č | The sound of | (ch) in check |
| У | ü | A rounded hig | th front vowel, e.g., the sound of $\langle u \rangle$ in French sur 'on, upon' |
| 3 | ž | The sound of | (s) in pleasure |

In addition, it is noteworthy that many languages has some kind of "r-like" sound. IPA has several symbols that indicate different pronunciations of this sound (e.g., [r], [ʁ], [ɪ]), while APA uses [r] to represent all these variants (at least to the extent that there are no two contrastive r-like sounds in the same language).

11.5.1 NARROW TRANSCRIPTION

The idea of phonetic transcription is to represent the way words are pronounced. While this may sound simple, doing phonetic transcription is actually not a very well-defined task. In principle, there is an infinite number of ways to pronounce any given word (see more in Chapter 14). For example, any change in the position and shape of the tongue during speech affects the quality of the produced sound to some extent. This means that, in theory, there is an infinite number of ways to transcribe a word (see also a note on this issue in Section 3.5).

In practice, human transcribers (or humans in general) cannot perceive every tiny change in the pronunciation of words and speech sounds. Fortunately, most pronunciation variations are

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not meaningful for linguistic research. Thus, one can set an upper limit to the level of precision of phonetic transcription, according to the research goals.

In general, we distinguish two approaches to phonetic transcription. **Narrow (allophonic) transcription** captures as many aspects of a specific pronunciation as possible (as long as they are perceivable and relevant to the research goals). For example, some possible allophonic transcriptions of *emphatic* are [emfærrk] and [emfæthrk]; where [m] represents the pronunciation of (m) before (f), (v) and (ph); [r] and [th] represent the pronunciation of (t) between vowels in some American and British dialects of English, respectively.

11.5.2. BROAD TRANSCRIPTION

By contrast, **broad (phonemic) transcription** captures only aspects of the pronunciation that are enough to differentiate the word from other words in the language. $\underline{3}$ For example, phonemic transcription of *emphatic* would be something like [emfæt1k]. Here, we transcribed

 $\langle m \rangle$ and $\langle t \rangle$ as [m] and [t], respectively, since the different pronunciations of $\langle m \rangle$ and $\langle t \rangle$ are not contrastive in English, and the [t] and [m] symbols are more available than [m], [r] and [^h]. On the other hand, we have less freedom with the transcription of vowels because of the various contrastive pronunciations of English vowel letters (though people often use less accurate phonetic transcriptions of vowels, such as [e] instead of [ε], for the sake of convenience).

Narrow and broad transcription are general approaches. There is no one standard way of doing either kind. Ultimately, the choice of transcription method depends on the research needs (and also on the available resources), but one is advised to establish explicit transcription criteria and follow them consistently.

2.3. Reliability and accuracy of phonetic transcription

As explained in Section 2.2, the outcome of phonetic transcription tends to be variable, when prepared by different transcribers and for different purposes. When preparing phonetic transcriptions, one should be as explicit as possible regarding the conventions used and the qualifications of the transcribers. Moreover, when consulting published transcriptions, one should be aware of potential factors of variability and inaccuracy, which may, or may not, be acknowledged by the authors. Below, I list some of these factors.

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First, different authors use different transcription systems. Some, typically in general linguistics, adhere to standard general systems such as IPA and APA. Other linguists, who focus on the descriptive grammar of specific language families (e.g., Semitic linguistics), often use a standard transcription system developed for the specific language family. Yet, some authors develop ad hoc phonetic alphabets for their research (this is probably more common in old texts). Furthermore, while some authors make explicit reference to their transcription conventions, others may not. This is crucial, since many symbols represent different entities in different systems (see, for example, Table 2.1). Thus, when reading texts that contain phonetic transcriptions, it is important to identify the conventions used in the transcriptions.

Second, the accuracy of transcriptions is largely affected by the competence of the transcribers. This point is especially relevant for accounts of indigenous languages made by outsider researchers. Often, these were missionaries who learned the language-in-question during their mission. Being non-native speakers and, perhaps, lacking formal training in phonetics, these researchers produced transcriptions whose quality depended on their phonological awareness and aptitude, as well as on the amount of exposure to the ambient language.

Third, typographical constraints also contribute to variability of transcriptions across texts. This is especially true for texts published before the digital era when, e.g., diacritical marks were not easily produced in print.

Fourth, variability of transcriptions may reflect different language variations, such as dialect and period. Phonology textbooks, in particular, do not always specify when and where a given dataset was collected (or even if the informants were native speakers of the languagein-question). Thus, a language label (e.g., "Spanish") attached to a dataset may be misleading without additional specifications.

Finally, phonological data listed in textbooks was often altered deliberately, for pedagogical reasons. Occasionally, the authors of such textbooks acknowledge that the data

was altered, but do not provide reference to the unaltered data. In other cases, authors do not disclose this fact, and one can only learn that the data was altered by comparing it to other sources or by consulting with native speakers of the language-in-question. Moreover, some

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datasets are often copied from one textbook to another (possibly with additional changes made in each transition) such that their integrity becomes more obscure with time.

In this book, I use phonological datasets from many resources. For the sake of transparency, I always provide a reference to the original source (except for transcriptions of Modern Hebrew, which I have prepared myself). I refrain from making any changes to the transcriptions other than adapting them uniformly to IPA. Finally, I made an effort to use only datasets that seemed authentic to me, though I cannot guarantee that all the data in this book is accurate.

2.4. Using IPA symbols on the computer

While the Latin script is the source of many phonetic symbols, the IPA charts include many additional symbols that are not readily available on standard keyboards. This section provides some practical information for doing phonetic transcription on the computer.

Fonts installed on the computer

With only a few exceptions, most IPA symbols can be found in many standard character sets (e.g., Times New Roman). Latin letters (e.g., b) found on standard western keyboards are included in the 'Basic Latin' section of the character set. Additional symbols used in various writing systems can be found in the 'Latin-1 Supplement' (e.g., α), 'Latin Extended' (e.g., η), and 'Greek' (e.g., θ) sections. Some standard character sets come with a built-in 'IPA Extensions section', which include special phonetic letters not included in other sections. Finally, various diacritical marks are included in the 'Spacing Modifier Letters' and the 'Combining Diacritical Marks' section.

In addition to standard fonts included in many systems, there are also fonts especially designed for phonetic transcription. Two such popular fonts are Charis SIL and Doulos SIL. To use these fonts, download and install them according to the instructions.

To use phonetic symbols in Microsoft Office apps go to the 'Insert' menu and select 'Symbol'. Select the desired symbol in the following dialog:

Figure 2.1 Inserting IPA symbols to Microsoft Office documents

Virtual IPA keyboard in apps and websites

Some websites and apps include a virtual IPA keyboard that facilitates the process of phonetic transcription. For example, you can type in IPA symbols with the virtual keyboard found in: ipa.typeit.org/full, then copy-and-paste them to your document

2.5. Practical phonetic transcription

This section describes some basic practical principles of phonetic transcription. The principles are demonstrated using a simplified version of transcription guidelines for English words.

Principles of phonetic transcription

The main principle of phonetic transcription is that transcription should reflect pronunciation rather than orthography. This principle has several practical consequences. First, symbols should be used according to their definition in the phonetic alphabet, not according to how they are used in the written language. In particular, if a letter is pronounced differently in different words, it will be represented by different symbols in the phonetic transcription. For example, the pronunciation of $\langle c \rangle$ is different between the words cat and nice. Thus, [c] cannot be used in the phonetic transcriptions of both words (in fact, we will use [k] and [s] to represent the pronunciation of $\langle c \rangle$ in cat and nice, respectively).

The second consequence is that silent letters should not be transcribed at all. This includes cases like $\langle c \rangle$ in $\langle ck \rangle$ sequences (e.g., [bæk] 'back'), the sequence $\langle gh \rangle$ in certain words (e.g., [nat] 'night'), double letters pronounced as a single short sound (e.g., $\langle nn \rangle$ in dinner [dɪnə]), and so on. Third, "non-combinatorial" letter combinations should be transcribed according to

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the phonetic convention – one symbol per sound, rather than one symbol per letter (e.g., $\langle sh \rangle$ is transcribed as $[\int]$ in [fam] 'shine'). An "exception" to the last rule applies when diacritics are used. In particular, a tie-bar can be used to combine two phonetic letters

when the combination represents a single sound in the language. For example, the sequence of letters $\langle ch \rangle$ in chair is transcribed in IPA as [ff].

Finally, the pronunciation of certain letters changes from context to context due to phonological processes. In principle, as explained in Section 2.2, there could be numerous different pronunciations for each letter. In practice, we will take into account only alternative pronunciations that are perceptible and consistent enough. One common example of this principle is voicing assimilation. For example, the $\langle -s \rangle$ plural suffix in English is pronounced as [s] after voiceless consonants (e.g., [kæts] 'cats') and as [z] after voiced consonants and vowels (e.g., [dɔgz] 'dogs').

Simplified transcription of English

1. Many English letters representing consonants are used in IPA (more-or-less) in the same way they are used in English orthography. Note, however, that some English letters have more than one possible pronunciation (for many reasons, see for example paragraph 4 below), while the corresponding IPA symbol has one fixed pronunciation. Table 2.2 lists IPA symbols that are more-or-less equivalent to English consonant letters, together with some representative English words demonstrating the usage of these symbols.

Table 2.2 IPA symbols equivalent to English letters

fan. leaf

| IPA | Examples |
|-----|---------------------|
| b | buy, cab |
| d | dog, head, ladder f |
| g | goat, bag |
| | |

h high, ahead

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k sky

l lie, fly, nail

m my, smile, jam

- n night, snake, can p pie, spy, cap
- s sing, grass
- t tie, stick, cat, latter v vine, leave
- w wine, swim
- z zoo
 - Some English consonants are represented by IPA symbols that are not English letters or that are used differently in English. The IPA symbols are listed on <u>Table 2.3</u> together with some representative English words demonstrating the usage of these symbols.

Table 2.3 IPA symbols that are not used, or used differently than the English letters

IPA Examples

- j **y**es, hallelu**j**ah
- ð **th**is, brea**the**, fa**th**er
- θ **th**ink, ma**th**
- \int shine, cash, emotion
- 3 pleasure, garage
- I/I ray, try, very
- ff chair, catch
- d₃ giant, badge, jacket

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<u>n</u> si**n**g, sink

3. Some IPA symbols are English letters but represent sounds that are not used in most dialects of English (or, in other words, the usage of these symbols in English is different from their IPA denotations). Therefore, these letters should NOT be used in IPA transcription of English words: c, q, x, y.

4. Phonological processes: as mentioned above, the pronunciation of speech sounds can change in the context of certain sounds due to phonological processes (see more in Part IV of this book). Phonological processes can alter the common pronunciation of some letters, such that the pronunciation of a certain letter may be represented by different IPA symbols in different words. Some notable examples of such phonological processes include:

Voicing assimilation of the /-d/ past suffix and the /-s/ plural suffix to the preceding consonant (e.g., [wa:kt] 'walked' vs. [4Abd] 'rubbed', [dɔgz] 'dogs' vs. [kæts] 'cats').

Place assimilation of /n/: the pronunciation of /n/ changes to $[\eta]$ before the consonants [g] and [k] (e.g., $[I\eta gli \int [SI\eta k]$, $[SI\eta k]$, $[SI\eta k]$).

5. English vowels letters ($\langle a \rangle$, $\langle e \rangle$, $\langle i \rangle$, $\langle o \rangle$, $\langle u \rangle$) are less compatible with their IPA definitions. Because the transcription of English vowels is a complicated issue, I do not focus on it in this book. There are only a few principles that I insist on regarding the transcription of English vowels. First, unpronounced letters should not be transcribed. For example, word-final $\langle e \rangle$ in words like cake and while is not pronounced (presumably) in any English dialect. Second, a single phonetic letter should be used to transcribe a single vowel quality (e.g., eat can be transcribed as [i:t] or [it] but not as [eat]).4 Third, as mentioned in paragraph 3 above, [y] should not be used in the transcription of English words. When $\langle y \rangle$ is used as a vowel in English words, it should be transcribed with [i] (e.g., in really and biology) or [a1] (e.g., in shy). The IPA usage of [y] (see Chapter 7) is not compatible with the use of the English letter $\langle y \rangle$.

With that said, to give the reader some "taste" of the vowel system of English, I list below IPA symbols representing vowels used in various dialects of English. The list is based on

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General American English pronunciation (Peterson & Barney, 1952). Some complementary information regarding dialectal variations was obtained from Wiktionary (https://en.wiktionary.org)

Table 2.4 IPA symbols for English vowels

| IPA | Examples | Dialects |
|-----|-----------|-----------|
| iː | heed | |
| Ι | hid | |
| ε | head | |
| Э | ahead | |
| æ | had | |
| a | father | GenAm, RP |
| э | dog, ball | GenAm |
| ΰ | dog | RP |
| υ | hood | |
| uː | who | |
| Λ | hut | |
| 3: | heard | RP |
| 3~ | heard | GenAm |

11.6. PHONEMES AND ALLOPHONES

Each and every language has the sound system. In that sound system there are sound units. Such sound units and are called phonemes. In English there are 44 phonemes or basic speech sounds. All these sounds are used in English language. Thus any speech sound is a phone.

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Phonemes are significant sounds in a specified language. So they are called languagespecific. There are no universal phonemes. Each language has its own set of phonemes or speech sounds (in its sound system). For instance English has 44 phonemes in its sound system. Marathi has 48, Hindi 48, Tamil 41 and Kannada 47 etc.

11.6.1 PHONEME

- 1) The **smallest unit** at the level of **sound** is called a phoneme.
- Leonard Bloomfield defines phoneme as, 'the minimal distinctive sound unit of a language.' In other words, phoneme is defined as 'the smallest contrastive sound unit of a language.' e.g. / p /, / t /, / k / in English.

CHARACTERISTICS OF PHONEMES:

Phonemes have the following characteristics.

1. Contrastive sound units:

Phonemes are contrastive or distinctive sound units. For instance, if we use one phoneme in place of another in a word, the meaning of that word changes..e.g. 'bat' is a word with three phonemes. They are / b /, / a /, / t /. But when we use the phoneme / m / in place of / b /, the meaning of that word changes and the word 'bat' becomes 'mat'.

It means the substitution of one of the phonemes (in the word) for the other gives us a new word For example, in the word '**son**' we replace each phoneme by the other phonemes and get new words. For example, '**r**un', 'sun and 'su**m**'. So they are different phonemes. In this sense we call phoneme as the distinctive or contrastive sound unit of a language.

2. Minimal or Smallest sound units: Phonemes are the minimal or the smallest sound units. They cannot be sub divided. For example, we can divide the word 'fat' as / f /, / æ /, / t/ into three phonemes. But we can't divide each Phoneme further.

3. Minimal pair technique:

We can identify the phonemes in a particular language by the technique called the minimal pairs. For example:

The pair 'bit' and 'sit' shows / b / and / s / are different sounds.

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The pair 'bat' and 'bet' shows / α / and / e / are different sounds and The pair 'but' and 'bun' shows / t /and / n / are different sounds.

4. Slant lines // are used to indicate phonemes) or

Phonemes are written in two slant lines / t /.

11.6.2. ALLOPHONES

Now listen to the vowels in the words cat and cad. Are they identical or dif- ferent? We hope you said "different." Can you now say how they differ? We hope you said that one was longer than the other. Now listen to the conso- nants after the vowels. Are these the same or different? Again, we hope you said different, and that you know that [t] is voiceless and [d] is voiced. Now, which vowel, the longer or the shorter, precedes [d] and which precedes [t]? We hope you said that the longer vowel precedes the voiced consonant.

Are the two vowels similar in any way? Again, we hope you said that they seem to be longer and shorter versions of the same vowel, [æ]. Let's use [:] to indicate extra length. So, the vowel before voiceless [t] is just [æ], but the one before voiced [d] is [æ:].

Now let's listen to some more word pairs like cat and cad:

root rood moat mode leaf leave gape Gabe

Listen to the vowels in each pair. You should hear that the vowel in the sec- ond word in each pair is a little longer than the vowel in the first.

Now determine the similarities and differences between the consonants after the vowels in each word pair. You should find that the consonant in the first word is the voiceless version of the consonant in the second word.

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Turning our attention again to the vowels in each word pair: how are they related? We hope you said that they were very similar vowels, specifi- cally, short and long versions of the same vowel.

You should now be able to determine a very general rule of English.

When are vowels lengthened and when are they not lengthened?

Your answer should be something along the lines of: English vowels are lengthened when they occur before a voiced consonant; otherwise they are not lengthened.

So far we've seen [æ] and [æ:], [u] and [u:], [o] and [o:], [i] and [i:], and

[e] and [e:]; in each case the longer vowel occurs before a voiced consonant. We've also noted that the vowels are otherwise virtually identical—they dif- fer only in length. So it makes good sense to regard these pairs of vowel sounds as slightly different pronunciations of the same vowel, and that whether the vowel is lengthened or not depends on whether the consonant that follows it is voiced or not.

Importantly, the long and short pairs of vowels do not contrast with each other: English contains no pairs of words that are identical except that where one contains a short version of a vowel, the other contains the longer version of the same vowel. Consequently, the long and short versions of vowels do not represent separate phonemes.

Let's now turn our attention to some consonants. For example, English speakers pronounce the [t] in toll differently from that in stole. The [t] of toll is breathier than the [t] of stole. The former is said to be aspirated, and the latter unaspirated. We represent the aspirated [t] as [th], with the diacritic

[h] indicating aspiration. We represent the unaspirated [t] as [t] with no dia- critic. The important point here is that English speakers do not signal any difference in meaning with the difference between [th] and [t]. They treat the two sounds as variant ways of pronouncing the "the same sound." Sub- stituting one of these sounds for the other would not affect the meaning of a word, but it would create an odd and perhaps non-native pronunciation of the word. No pair of English words is distinguished solely by the difference between [t] and [th]. You can satisfy yourself that this is so by trying to find a minimal pair of English words differentiated solely by the fact that where one has an aspirated consonant the other has an unaspirated version of that same consonant. (Don't spend too long trying!)

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Let's now look at a different pair of English sounds. If we replace the

[t] in [rat] (rot) with [d], then we get the sequence of sounds [rad] (rod), which, of course, is quite distinct in meaning from rot. Clearly, English speakers treat the difference between [d] and [t] differently from the way they treat the difference between [th] and [t] and between longer and shorter versions of vowels. In the case of [t] and [d], the difference can signal a difference in meaning; in the other cases it cannot. Differences in sound that signal differences in meaning are said to be phonemic, distinctive, or contrastive. Differences in sound that do not signal meaning differences are non-distinctive or non-contrastive. One objective of phonology is to identify which sound differences are contrastive and which are not. As we have seen, the contrastive sound units are called phonemes.

11.6.3 MINIMAL PAIRS

Minimal pairs are **pairs of words** in a language that differ by **only one sound (phoneme)** in the same position and have **different meanings**.

Example:

• **pin** /pin/ vs **bin** /bin/ \rightarrow only the first sound differs: /p/ vs /b/

Minimal pairs are important tools in **phonology**, as they help identify which sounds are **distinct phonemes** in a language.

2. Purpose of Studying Minimal Pairs

- To distinguish **phonemes** (contrastive sounds).
- To improve **pronunciation and listening** skills.
- To identify **sound patterns** in a language.
- To support **second language learning** by training learners to hear differences in sounds that may not exist in their native language.

3. Structure of Minimal Pairs

- Must differ by one and only one phoneme (not spelling).
- The difference can occur in:

- **Initial position**: *bat* vs *pat*
- **Medial position**: *bit* vs *bet*
- **Final position**: *cap* vs *cab*

4. Examples of English Minimal Pairs

A. Consonant Minimal Pairs

| Pair | Phonemes | Туре |
|--------------------------|-------------|---------|
| pat /pæt/ – bat /bæt/ | /p/ vs /b/ | Initial |
| sip /sıp/ – zip /zıp/ | /s/ vs /z/ | Initial |
| ship /ʃɪp/ – chip /tʃɪp/ | /ʃ/ vs /tʃ/ | Initial |
| lit /lɪt/ – lid /lɪd/ | /t/ vs /d/ | Final |

B. Vowel Minimal Pairs

| Pair | Phonemes | Description |
|--------------------------------------|-------------|------------------------|
| bit /bɪt/ – beat /biːt/ | /I/ vs /i:/ | short vs long vowel |
| full /fol/ – fool /fu:l/ | /ʊ/ vs /uː/ | near-close vs close |
| cup /kʌp/ – cap /kæp/ | /ʌ/ vs /æ/ | central vs front vowel |
| $\cot /k p t / - cut /k \Lambda t /$ | /ɒ/ vs /ʌ/ | back vs central vowel |

5. Minimal Pairs vs Near-Minimal Pairs

- **Minimal pair**: Differ by *one sound* only.
 - \circ cat vs bat \rightarrow /k/ vs /b/
- Near-minimal pair: Differ by one main phoneme, but also include other differences like stress or vowel length.
 - record (noun) vs record (verb)

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11.8. TERMINAL AND MODEL QUESTIONS

Short Answer Questions

- 1. What is phonetic transcription?
- 2. What is the purpose of using the International Phonetic Alphabet (IPA)?
- 3. How does phonology differ from phonetics?
- 4. Define a phoneme.
- 5. Give one example of a minimal pair and explain why it qualifies as one.
- 6. What symbols are used to indicate phonemic transcription and phonetic transcription?
- 7. What is an allophone? Provide an example.
- 8. Write the IPA transcription of the word "cat".
- 9. What does the symbol /9 represent in phonetics?

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10. Which branch of phonetics deals with how sounds are physically produced?

Discussion / Essay Questions

- 1. Explain the importance of phonetic transcription for English language learners.
- 2. Discuss the key differences between articulatory, acoustic, and auditory phonetics.
- 3. Why is it important to distinguish between phonemes and allophones in phonology?
- 4. How does the IPA help overcome the inconsistencies of English spelling?
- 5. Describe how minimal pairs can be used to teach pronunciation.

Unit 12 INDIA AS A SOCIOLINGUISTIC AREA

12.1. Introduction

- 12.2. Objectives
- 12.3. Understanding Sociolinguistic
- 12.4. Distinction between Linguistic and Sociolinguistic areas
- 12.5. Understanding Sociolinguistic in Indian Language
- 12.6. India as a Sociolinguistic Area

12.6.1. Historical Foundations of Linguistic Diversity

12.6.2. The Constitutional Framework and Language Policy

12.6.3. Language Families and Geographic Distribution

12.6.4. Multilingualism and Language Use

12.6.5. Language and Identity

12.6.6. Language and Power

12.6.7. Language Endangerment and Preservation

12.6.8. Language and Education

12.6.9. Government Policies and Language Planning

12.7. Factors Influencing Sociolinguistics in India

12.8. Conclusion

12.9. Self Help Questions

12.10. Further Readings and Bibliography

12.1 INTRODUCTION

English happens to be the most widely used language around the world. The spread of English over the past four hundred years has led to the emergence of transplanted varieties of English in variegated socio-cultural and linguistic contexts. Many different regional varieties of English or 'Englishes' existing around the globe are slowly but steadily gaining recognition and Indian English is one of them. It has been repeatedly attempted to abolish the former colonial language but English continues to be one of the most acceptable language in India.

English enjoys a perquisite position in the whole world because of the geographicalhistorical, and socio- cultural aspects (Crystal 1997, 2003). In the recent years it has become the formula of *'lingua franca'*, a symbol of globalization, diversification, progress, identity and change. It has now attained the position of a global language and is also referred to as 'Global English' (Crystal 1997, 2003). This revolution of English language gestates to be the most remarkable event in the late twentieth century (Crystal 2004). This was the time when English started spreading its wings to envelope the world. It was the time when many commentators pointed out at the possible risks of English being a global language (Crystal 2003). Possibly because the rising status of English among other languages can put the vernacular languages at an inferior position and people might end up learning only one language i.e. 'English', thus leading to monolingual speech community.

12.2. OBJECTIVES

By the end of this module, students will be able to:

- Understand the concept of a sociolinguistic area and how it applies to India.
- Identify key linguistic features shared across Indian languages.
- Analyze sociolinguistic dynamics such as multilingualism, diglossia, and language contact.
- Examine the influence of social factors such as caste, religion, and regionalism on language use.
- Critically engage with language policy and planning in India.

12.3. UNDERSTANDING SOCIOLINGUISTIC

Sociolinguistics is the study of the intricate relationship between language and society, exploring how language functions within diverse social contexts and how it reflects and shapes social identities (Clark, 2013; Wardhaugh, 1986). It transcends the mere description of linguistic codes, delving into the complexities of speech and communication in real-life situations (Badarna, 2021). Sociolinguistics investigates the social functions of language, examining how language use varies across different social groups, communities, and situations. It analyzes how social factors such as class, gender, ethnicity, age, and geographical location influence language variation and change, and how language, in turn, impacts social structures and power dynamics (Labaree, 2009). The field recognizes that language is not a homogeneous entity but rather a collection of diverse varieties, each carrying social meaning and reflecting the social identities of its speakers (LaDousa, 2002). Sociolinguistics explores the dynamics of language contact, including phenomena like codeswitching, borrowing, and language shift, which are particularly relevant in multilingual societies. It examines the role of language in constructing and negotiating social identities, as individuals use language to signal their affiliation with particular groups and to differentiate themselves from others (Singh, 2023). Moreover, sociolinguistics considers the impact of language attitudes and ideologies on language use, exploring how societal beliefs about language varieties influence speakers' choices and contribute to social stratification (Wardhaugh, 1986).

12.4. DISTINCTION BETWEEN LINGUISTIC AND SOCIOLINGUISTIC AREA

The study of how languages interact across geographical and social spaces has been a central concern in both historical and contemporary linguistics. Among the major frameworks developed to understand this phenomenon are the concepts of **linguistic areas** and **sociolinguistic areas**. While the former deals primarily with the structural convergence of languages due to geographical proximity and language contact, the latter encompasses the social functions, norms, and patterns of language use in a particular region. Though interrelated, these two concepts operate on distinct axes: one structural and historical, the other functional and social.

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Here we will explore the origins, definitions, key features, examples, and theoretical implications of **linguistic areas** and **sociolinguistic areas**, highlighting their distinctions while also examining points of overlap.we will ultimately notice that while both are products of sustained language contact, their analytical focus and implications differ in fundamental ways.

I. Defining Linguistic Areas

Origin and Conceptualization

The notion of a **linguistic area**—also called a *Sprachbund*—was formally introduced into linguistics in the early 20th century, notably by Nikolai Trubetzkoy and later developed by scholars such as Murray Emeneau. The term refers to a **geographical region where languages from different genetic families share structural features due to prolonged contact.**

Emeneau's South Asian Model

Emeneau's (1956) paper, *India as a Linguistic Area*, remains foundational. He proposed that languages of the Indo-Aryan, Dravidian, Austroasiatic, and Tibeto-Burman families in South Asia share a set of features—such as retroflex consonants, dative subjects, compound verbs, and echo formations—not because of common ancestry, but due to areal diffusion. This idea illustrated that **linguistic change and convergence** can occur horizontally (through contact) rather than vertically (through inheritance).

Diagnostic Features of Linguistic Areas

To qualify as a linguistic area, certain structural features must be:

- Shared across multiple languages in the area
- Not explainable by genetic inheritance
- **Persistent over time**, indicating deep contact

Common features studied include:

- Phonological elements (e.g., tone systems, retroflex consonants)
- Morphosyntactic traits (e.g., postpositions, case alignment)

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• Lexical borrowing and calques

Notable Examples of Linguistic Areas

- **Balkan Sprachbund**: Includes Albanian, Romanian, Greek, and Bulgarian, sharing features like postposed articles and periphrastic verb forms.
- South Asia: Emeneau's example, with extensive structural convergence.
- Mesoamerican Area: Involving languages such as Nahuatl, Zapotec, and Mayan.

II. Defining Sociolinguistic Areas

Emergence of the Concept

The concept of a **sociolinguistic area** is relatively recent and less canonized than that of a linguistic area. It arises from the broader field of **sociolinguistics**, which studies how language functions in society. A sociolinguistic area can be defined as a **geographically bounded region characterized by shared patterns of language use, multilingualism, language attitudes, identity construction, and language ideologies**, regardless of genetic or typological similarities.

Key Dimensions of a Sociolinguistic Area

A sociolinguistic area is identified based on:

- Patterns of multilingualism and code-switching
- Sociolinguistic norms (e.g., honorifics, politeness conventions)
- Language functions across domains (home, market, education, media)
- Language ideologies and attitudes
- Role of language in identity (ethnic, caste, regional)

These aspects are more about language use, status, and function than about structure.

Examples of Sociolinguistic Areas

• South Asia (again) is also a sociolinguistic area, where multilingualism is widespread, and languages are used hierarchically based on region, class, caste, and religion.

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- The Arab World: Characterized by *diglossia*, where Modern Standard Arabic coexists with regional dialects.
- **Sub-Saharan Africa**: Notable for societal multilingualism, code-mixing, and fluid language boundaries.

Methodologies for Study

Unlike linguistic areas that rely on comparative-historical linguistics, sociolinguistic areas are analyzed using:

- Ethnographic fieldwork
- Language surveys
- Discourse analysis
- Interviews and attitudinal studies

This makes sociolinguistic areas more dynamic and temporally sensitive than linguistic areas.

Comparative Analysis: Linguistic vs Sociolinguistic Areas

| Feature | Linguistic Area | Sociolinguistic Area |
|------------------------|-------------------------------------|---|
| Focus | Structural convergence | Functional convergence |
| Basis of Comparison | Phonology, syntax, morphology | Language use, norms, ideologies |
| Causality | Long-term contact and diffusion | Social interaction, bilingualism, mobility |
| Stability | Often diachronic and stable | More dynamic and context-dependent |
| Methodology | Historical linguistics, typology | Ethnography, discourse analysis |
| Examples | South Asia, Balkans, Mesoamerica | South Asia, Arab World, West Africa |
| Goal | Identify shared structural traits | Understand shared social-linguistic behaviors |

12.5. Understanding Indian Languages in Sociolinguistics

India is home to a staggering number of languages, with over 1,600 spoken across its vast landscape. This linguistic diversity reflects the country's rich cultural tapestry and historical complexities. Each language carries unique nuances that convey not just words but also emotions, traditions, and identities. Understanding Indian languages through the lens of sociolinguistics reveals how intertwined language is with social structures.

Each region in India boasts distinct dialects and variations that are influenced by geography and history. For instance, Hindi might be prevalent in northern states while Tamil thrives down south. These regional differences highlight how language serves as both a marker of identity and a vehicle for cultural expression. People often take pride in their local dialects; these become integral parts of who they are.

Sociolinguistics emphasizes context when examining any language phenomenon. In India, factors like caste systems or economic status can significantly shape one's linguistic choices. A person may switch between formal speech at work and informal chat at home based on their audience's expectations or societal norms. This ability to adapt one's speech style demonstrates the fluidity inherent in Indian communicative practices.

Gender dynamics also play an essential role in shaping how individuals use language within various contexts. Women may experience different conversational styles compared to men due to traditional roles assigned by society—this could influence everything from word choice to body language during interactions. Such variances showcase how deeply entrenched beliefs about gender can manifest through everyday communication.

The rise of technology has added another layer to this complex scene as well—particularly among younger generations fluent in multiple languages thanks to digital platforms like social media or instant messaging apps. English often becomes a bridging tool fostering connections between diverse groups while simultaneously sparking debates about linguistic purity versus practicality.

In educational settings too, the impact of sociolinguistics comes into play when discussing mediumof-instruction policies or multilingual education approaches aimed at promoting inclusivity without marginalizing native tongues like Kannada or Bengali along the way.

12.6. INDIA AS A SOCIOLINGUISTIC AREA

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India represents one of the most linguistically diverse countries in the world. With a population exceeding 1.4 billion and more than 19,500 languages or dialects spoken as mother tongues, India stands as a prime example of a sociolinguistic mosaic. This diversity is enshrined not only in its Constitution, which recognizes 22 languages under the Eighth Schedule, but also in the day-to-day interactions of its people across different regions, ethnicities, religions, and social strata. Understanding India's sociolinguistic landscape involves analyzing the interplay between language, society, identity, power, and culture.

Let's explore the linguistic complexity of India by examining historical trajectories, social and political dynamics, language use in various domains, and the issues arising from multilingualism. It further investigates how languages construct and reflect identities and social hierarchies, and how government policies attempt to manage this diversity.

12.6.1. Historical Foundations of Linguistic Diversity

India's linguistic diversity has deep historical roots. The subcontinent has been a crossroads of migration, conquest, and cultural exchange for millennia. Ancient India was home to several classical languages, such as Sanskrit, Prakrits, Pali, and Tamil. The arrival of Persian, Arabic, Turkish, and later, English, added new layers to the linguistic landscape.

Colonial rule had a significant impact on language hierarchies. The British institutionalized English in administration and education, creating a class of English-educated elites. Post-independence, India had to navigate the legacy of colonial language policies and the realities of its multilingual population.

12.6.2. The Constitutional Framework and Language Policy

The Indian Constitution provides a framework for linguistic pluralism. It does not declare a single national language. Instead, it recognizes:

- 22 scheduled languages under the Eighth Schedule
- Hindi and English as official languages of the Union
- State-level autonomy to adopt any language for official purposes

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Language policy in India attempts to balance national unity with regional autonomy. However, it has also been a source of tension, as seen in the anti-Hindi agitations in Tamil Nadu and other southern states. The "three-language formula" introduced in education policy sought to promote multilingualism by encouraging the learning of a regional language, Hindi, and English. Yet its uneven implementation reflects socio-political challenges.

12.6.3. Language Families and Geographic Distribution

India's languages belong primarily to four major language families:

- 1. **Indo-Aryan** (spoken by nearly 78% of the population): Hindi, Bengali, Marathi, Punjabi, Gujarati, Urdu
- 2. Dravidian (spoken by about 20%): Tamil, Telugu, Kannada, Malayalam
- 3. Austroasiatic: Santali, Mundari, Ho
- 4. Tibeto-Burman: Bodo, Meitei, Naga languages

These families are geographically distributed, with Indo-Aryan languages dominant in the north and central regions, and Dravidian languages in the south. The northeast is home to Tibeto-Burman languages, while Austroasiatic languages are spoken by tribal communities in central and eastern India.

12.6.4. Multilingualism and Language Use

The diverse geographical and linguistic background of the people reveals interesting facts about the linguistic scenario of India. India has always been a multiracial, multiethnic, multinational and multilingual country from the time of history (Chaudhary 2009). In Indian multilingual setting, there is a transparency and fluidity of boundaries between the languages (Khubchandani 1997). New languages arise because of the close contact between the existing languages, and this happens especially for the need of communication purposes. The languages emerged through contact are few, and are restricted to specific regions (Sridhar 1988). The new languages imparted themselves with the existing languages of the region. The multilingual creation in the country changed from time to time but multilingualism itself remained constant. The new languages emerged because of the socio-political and cultural, and primarily literary happenings in different linguistic communities (Pollock 1998).

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Pattnayak (1990) describes the multilingual situation of India as a non conflicting type, where different languages of India allocate different functions. According to him a mother tongue is 'an expression of primary identity and a group of solidarity, and it can be successful if there is respect for multiplicity in the society. There are many languages in India but many people do not know any other language than their own (Spolsky 1978). Every state in India is a multilingual region, still; they have a dominant language common for all. The other fact is Hindi-Urdu/Hindustani is a predominant language of North India. A form of pidginized variety of Hindi-Urdu/Hindustani is understood and used throughout India (Sridhar 1989) but the speakers in southern India prefer English over Hindi. This is where English play a vital its role in India. English, followed by Hindi is the most widely spoken second language of the people. The usefulness of Hindi is limited regionally but English prevails throughout the country. The constitution (Constitution of India 1998) recognizes Hindi as the official language of India according to Article 343 (1). In addition to the designation of Hindi, English is also accepted as an official language with eighteen other scheduled national official languages of India. Many controversies against Hindi in non Hindi states made a worse situation for the development of Hindi as a national language and as a result English continues to enjoy the language of power and prestige (Kachru 1986).

Role of English in Indian Multilinguism

The position of English in India is not just empowering but also extremely involving. In India, 'English' serves as a language of wider communication among the people (Kachru 1986). It provides a linguistic tool for the administrative cohesiveness in India. English in India has been ideologically loaded from its earliest introduction; still the language continues to occupy a peculiar role (Dasgupta, et.al. 1995). There has been an increasing familiarity of English use in India (Sahgal 1991). Sahgal observes and discusses the evidences of an increase in peoples self identification as speakers of Indian English rather than British English. English is displacing local languages and registers, as the international business, science and technology communities has started connecting itself (Swales 1997). Swales further assert that the media and the academia have been most affected by the spread of English. English is not just a language used in homes, business places and entertainment of several hundred million native speakers. It has now become a vital language of international cooperation at the union nation and the European Union (Mc Arthur 1998); for international

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communication and business (Hyrkstedt and Kalaja 1998), and for local commerce and media in such countries as India and Kenya (Kachru and Nelson 2001).

Kachru (1986) mentions four basic areas in which English manifests itself: linguistic, literary, attitudinal and pedagogical. This is mainly concerned with the model and methods of teaching English which is often commercially motivated and rarely considers the local needs of the countries. Countries where English is a native language, English is used for various purposes in the society (Gorlach 1991). In countries, such as India, where English has a place as a second language/ a foreign language, its use is restricted to the domains of administration, law, part of education, and the media , some forms of literature; other uses of language in different situations is being reserved to the mother tongue.

12.6.5. Language and Identity

Language is a powerful marker of identity in India. It is closely linked with:

- Regional identity: Language movements (e.g., Telugu and Marathi pride)
- Religious identity: Urdu and Arabic associated with Islam, Sanskrit with Hinduism
- Caste identity: Sanskritization and the preference for "pure" forms
- Ethnic identity: Tribal languages as markers of indigenous cultures

Language can unify or divide. It fosters solidarity within linguistic communities but may also contribute to exclusion and marginalization. Movements for linguistic states (e.g., Andhra Pradesh in 1953) reflect the centrality of language in political mobilization.

12.6.6. Language and Power

Power dynamics shape and are shaped by language use:

- English: Associated with upward mobility, education, and prestige
- Hindi: Promoted as a pan-Indian language but resisted in non-Hindi states
- Minority languages: Often lack institutional support and face decline

Access to power structures often requires competence in dominant languages. This reinforces social inequalities. For instance, urban elites with English proficiency have greater access to jobs, while rural populations speaking only regional dialects may be disadvantaged.

12.6.7. Language Endangerment and Preservation

Many Indian languages are endangered. According to UNESCO, dozens of Indian languages are at risk of extinction due to:

- Urbanization and migration
- Lack of intergenerational transmission
- Dominance of major languages in education and media

Efforts to preserve linguistic heritage include:

- Documentation projects (e.g., People's Linguistic Survey of India)
- Inclusion of tribal languages in primary education
- Promotion of literature and cultural activities

12.6.8. Language and Education

The three language formula was developed for the purpose of effective education in the country, to promote national integration, and, to provide wider language choice in the school curriculum (Srivastava 1990). According to the formula, people from the non Hindi areas study their regional language, Hindi and English. Hindi speakers, on the other hand study Hindi, English and another language. Baldridge quotes Kamal Sridhar (Sridhar 1989):

"The three language formula is a compromise between the demands of the various pressure groups and has been hailed as a masterly – if imperfect – solution to a complicated problem. It seeks to accommodate the interests of group identity (mother tongues and regional languages, national pride and unity (Hindi), and administrative efficiency and technological progress (English)" (Baldridge 1996).

Baldridge further states that though the formula sound fine but it has failed in context to India because it has not been practiced. English language has a very important part to play in most of the primary and secondary schools in the country as a second language. At present, English is taught mainly for the purpose of higher education and for the workplace. The curriculum for English language in primary schools is designed to provide learners a strong foundation in English language. With this strong foundation the learners are able to build
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upon their usage in English language for different purposes. Learning, reading and writing are the three skills which form the core of primary English curriculum.

The language policy of the school system is the result of pressure (Spolsky 1978). In India, there are a great number of sociolinguistic pressures influencing the development of English language in education. The elitist status of English in India creates problem for the economic development because that means that the education of the mass of the people will be ignored (Mark Tully 1997).

Education in India is a contested site for language politics. Key issues include:

- **Medium of instruction**: English-medium schools are increasingly preferred, even by non-elite families, due to perceived socio-economic benefits.
- Mother-tongue education: Advocated for better learning outcomes but underutilized.
- Multilingual education: Recognized in theory but often lacking in implementation.

Linguistic diversity poses challenges to curriculum design, teacher training, and resource development. Yet, it also offers an opportunity to develop culturally responsive pedagogy.

12.6.9 Government Policies and Language Planning

Language planning refers to deliberate efforts undertaken by governments or institutions to influence the function, structure, or acquisition of languages within a given speech community. It plays a critical role in shaping national identity, ensuring linguistic justice, and managing multilingualism. Government policies are central to language planning, as they determine how languages are used in education, administration, media, and public life.

Types of Language Planning

Language planning typically includes three major components:

1. **Status Planning**: This involves assigning functions or roles to particular languages, such as designating a language as official, national, or regional. Status planning helps determine which languages are used in government, law, and education.

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- 2. **Corpus Planning**: This refers to the development and standardization of language structure. It includes the creation of orthographies, grammar rules, dictionaries, and the modernization of vocabulary to suit scientific and technological domains.
- 3. Acquisition Planning: This involves efforts to promote the learning and spread of a language, often through educational policy, teacher training, and literacy programs.

Government Roles in Language Policy

Governments play a pivotal role in formulating and implementing language policies. These policies can have far-reaching consequences, especially in multilingual nations.

- In Monolingual States (e.g., France), governments often emphasize one national language, aiming for uniformity and cohesion. French language policy, for instance, includes strict regulations to limit foreign language influence and reinforce the status of French in public life.
- In Multilingual States (e.g., India, Canada, South Africa), language policy must balance diverse linguistic interests. India's language policy recognizes 22 scheduled languages and promotes multilingual education, while also giving official status to Hindi and English.

Language Policy and Education

Education is a primary area where language planning is implemented. Governments decide the **medium of instruction**, which language(s) are taught as subjects, and which languages are prioritized for literacy and communication.

For example, many postcolonial countries face dilemmas between promoting **indigenous languages** and maintaining **colonial languages** like English or French as mediums of higher education. Balancing these goals requires careful planning to ensure access, equity, and national development.

Challenges in Language Planning

Language planning is often contested due to:

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- **Political conflicts** (e.g., ethnic or regional tensions)
- Resistance to imposed norms (e.g., local dialects vs. standardized forms)
- **Resource limitations** (e.g., insufficient trained teachers or materials)
- Globalization (e.g., pressure to adopt English)

Moreover, language policies can have **exclusionary effects**, marginalizing minority languages or communities if not handled sensitively.

Governmental efforts to manage linguistic diversity include:

- Language commissions and academies: Support research and standardization
- Broadcasting policies: Promote regional language programming
- Census and surveys: Track linguistic demographics
- Official language acts: Define use in administration

However, policy often lags behind linguistic realities. There is a need for more inclusive and dynamic language planning that accommodates fluid multilingual practices.

12.7. FACTORS AFFECTING SOCIOLINGUISTIC IN INDIA

Sociolinguistics in India is shaped by a complex interplay of various factors. One primary element is the country's rich linguistic diversity. With over 1,600 languages spoken, each language reflects unique cultural identities and social contexts. This diversity creates a tapestry where sociolinguistic patterns emerge based on regional dialects, socio-economic status, and educational backgrounds.

Another significant factor influencing sociolinguistics in India is its historical context. Colonial influences have left an indelible mark on language use across different regions. The English language holds a prominent place in education and business, often acting as a bridge between various linguistic communities. This situation can lead to code-switching practices that blend local languages with English or other regional tongues.

Social stratification also plays an essential role in shaping how languages are used within Indian society. Language can signify class distinctions; certain dialects may be perceived as more prestigious than others. Consequently, people may adapt their speech patterns depending on their audience or social setting to convey identity or aspiration.

Cultural norms heavily influence communication styles and preferences among different groups in India too. For instance, forms of politeness vary significantly from one community to another due to

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differing values around respect for elders or gender roles. These cultural nuances impact everyday interactions and larger discourses surrounding topics like politics and education.

Technological advancements have further transformed the landscape of sociolinguistics in modern India—especially through social media platforms where informal language use flourishes alongside traditional structures. As younger generations embrace digital communication methods such as texting or microblogging, new slang terms arise while established ones evolve rapidly.

In addition to these factors, globalization continues altering linguistic dynamics within Indian society dramatically by increasing exposure to foreign cultures through travel and migration trends that encourage intercultural exchanges related both directly (language learning) indirectly (media consumption).

12.8. CONCLUSION

The present study traces the development of English through history and its use throughout the globe today. We have seen how English has acquired the status of a global language from a small tribal language. The emergence of English into various varieties neither has polluted the language nor has lowered its status. The emergence of the new varieties of English has rather helped in gaining a predominant position in almost all the countries and become richer with the addition of new words and coinages. The fact, that English is now a global language and a language that leads to economic empowerment, has secured its position in contemporary times. English language itself is taking a new form. It has changes substantially from where its journey began. It has now started to fabricate the social life of the people and at the same time acquiring a vitality of its own, developing and reflecting local cultures and languages throughout the world.

Native and Non Native distinction is still a debate among the scholars. Social networks the speakers form, tends to influence their language choices. This in turn facilitates language change. Power relation also plays a major role in the influence and change in the language. Therefore language can be powerful in one domain and less powerful in the other. The influence of language on each other should not be ignored. There is a need to highlight those divergences and place them under close scrutiny. It has been said that Indians have made English a native language with its own linguistic and cultural ecologies and socio-cultural contexts. If it is true then what are the factors motivating them for using English frequently in

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their speech. This work aims to seek answers for factors motivating use of English in several domains. To conclude, it is argued that language change is dictated by the social and pragmatic factors but other factors such as power, identity, age, and gender play a major role.

12.9. SELF HELP QUESTIONS

Objective / Factual Questions

- 1. What is meant by the term *sociolinguistic area*?
- 2. Who first proposed the concept of India as a linguistic area?
- 3. Name the four major language families found in India.
- 4. Define code-switching and give an example from the Indian context.

Short Answer / Descriptive Questions

- 6. Explain the difference between a linguistic area and a sociolinguistic area.
- 7. How does multilingualism function in Indian society?
- 8. Describe how social factors such as caste, religion, or region influence language use in India.
- 9. What are the key features that characterize India as a sociolinguistic area?
- 10. Discuss the role of English as a sociolinguistic phenomenon in contemporary India.

Analytical / Essay-type Questions

- 11. Analyze how language contact has shaped linguistic behavior in India.
- 12. Discuss the sociolinguistic implications of India's education policy with regard to language use.
- 13. How do language attitudes influence identity formation in multilingual India?
- 14. Examine the sociolinguistic factors behind the persistence of regional dialects despite national language policies.
- 15. To what extent do patterns of code-mixing and code-switching reflect India's sociolinguistic diversity?

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Unit 13 INDIAN PROUNOUNCIATION SYSTEM

13.1. Introduction

- 13.2. Objectives of the Unit
- 13.3. Introduction to Indian Phonology

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13.3.2. Consonant and vowel inventories of Indian languages

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- 13.4. English Consonant Challenge for Indian Speakers
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13.1. INTRODUCTION

English is an official language in India, alongside other languages like Hindu and Urdu spoken in the country. This makes the language a gateway to broader opportunities both within and outside of India.

However, because English is not the first language in the country, its nuances might be a bit strange for Indian speakers. This is because English has features like <u>phonetics</u> and <u>stress</u> <u>patterns</u> that may be completely different from Indian languages.

The distinct features between both languages tend to make eloquent English pronunciation for Indian speakers problematic. Hence, even when you have mastered grammar and spelling, you may pronounce words poorly when compared to the <u>General American accent</u>. The good news is that you can manage your pronunciation to speak fluently, just like native English speakers.

This module introduces students to the unique features of Indian pronunciation, focusing on segmental (consonant and vowel sounds) and suprasegmental (stress, intonation) aspects. It covers the influence of regional languages on English pronunciation and examines common phonetic patterns found across Indian languages.

13.2. OBJECTIVES OF THE UNIT

By the end of this module, students will be able to:

- Describe the major phonological features of Indian languages.
- Understand how Indian languages influence English pronunciation in India.
- Identify key pronunciation patterns and errors typical of Indian English.
- Compare regional variation in pronunciation across India.
- Analyze phonetic data using IPA transcription.

13.3. INTRODUCTION TO INDIAN PHONOLOGY

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Phonology is the study of the sound systems of languages, encompassing the organization, distribution, and patterning of speech sounds. In the context of India—a nation marked by exceptional linguistic diversity—phonology becomes an essential tool for understanding how different language families co-exist, influence one another, and evolve over time. The Indian subcontinent is home to several major language families, primarily Indo-Aryan, Dravidian, Austroasiatic, and Tibeto-Burman, each with distinctive phonological systems. Despite this diversity, there are notable areas of convergence that define Indian phonology as a coherent field of study.

Major Features of Indian Phonological Systems

1. Consonantal Richness

Most Indian languages feature an extensive inventory of consonants. A distinctive trait is the **four-way contrast** in plosives: voiceless unaspirated, voiceless aspirated, voiced unaspirated, and voiced aspirated (e.g., /p/, /p^h/, /b/, /b^h/). This contrast is found in both Indo-Aryan and Dravidian languages, although with regional variation in frequency and phonemic relevance.

Another hallmark of Indian phonology is the presence of **retroflex consonants** (/t/, /d/, /n/, etc.), produced with the tongue curled back against the palate. These retroflexes distinguish Indian languages from many Western phonological systems and are a significant feature in both Indo-Aryan and Dravidian phonologies.

2. Vowel Systems

Vowel inventories in Indian languages tend to be symmetrical and include distinctions in vowel **length**, with many languages differentiating between short and long vowels (e.g., /i/ vs. /i:/). Nasalized vowels and diphthongs are also present in several languages. Dravidian languages, in particular, have a more complex vowel system with multiple height distinctions.

3. Syllable Structure

Indian languages generally prefer **open syllables** (ending in vowels), though consonant clusters are found, especially in Indo-Aryan languages. The syllable structure is mostly of the type (C)V(C), with restrictions varying by language.

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4. Tone and Intonation

While most Indian languages are **non-tonal**, pitch and intonation play an important role in signaling sentence types and emphasis. However, some Tibeto-Burman languages of Northeast India, such as Bodo and Mizo, are tonal, using pitch to distinguish word meanings.

Phonological Convergence and the Linguistic Area

M. B. Emeneau's (1956) concept of India as a **linguistic area** (Sprachbund) is rooted in the observation of phonological and grammatical features shared across unrelated language families. Features such as retroflexion, vowel harmony tendencies, and echo-word formation occur widely, suggesting long-term language contact and bilingualism.

Hence, Indian phonology offers a rich and complex field of study shaped by typological diversity, historical depth, and regional interaction. Understanding its patterns requires a comparative approach that respects both the uniqueness of each language and the shared traits that unify the subcontinent's linguistic landscape. As India continues to evolve linguistically, phonological research remains crucial for documenting, analyzing, and preserving its oral heritage.

13.3.2. Consonant and Vowel Inventories of Indian Languages

India is home to one of the richest and most diverse linguistic landscapes in the world. With over **1,600 spoken languages** (according to the 1961 Indian Census) and **22 officially recognized languages** in the Eighth Schedule of the Constitution, Indian languages exhibit a wide range of phonological systems. Among the most striking features of these systems are their consonant and vowel inventories. These inventories not only vary across different language families but also share some convergent features due to prolonged contact and bilingualism, making India a classic example of a **linguistic area** or **Sprachbund** (Emeneau, 1956).

Let us explore the **consonant and vowel inventories** of Indian languages, examining the commonalities and divergences across major language families—Indo-Aryan, Dravidian,

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Austroasiatic, and Tibeto-Burman. We will also discuss the implications of these inventories for phonological typology, language contact, and linguistic identity.

I. Overview of Major Language Families in India

Before delving into the specifics of consonant and vowel inventories, it is important to contextualize the linguistic diversity of India through its major language families:

- 1. **Indo-Aryan**: A branch of the Indo-European family, spoken predominantly in northern, central, and western India (e.g., Hindi, Bengali, Marathi, Punjabi).
- 2. **Dravidian**: Primarily spoken in southern India (e.g., Tamil, Telugu, Kannada, Malayalam).
- 3. Austroasiatic: Includes languages like Santali and Mundari, spoken in eastern and central tribal areas.
- 4. Tibeto-Burman: Spoken in northeastern states (e.g., Manipuri, Bodo, Mizo).

Each of these families has its own phonological character, but many share overlapping traits due to millennia of co-existence.

II. Consonant Inventories of Indian Languages

1. Common Features across Families

a. Rich Plosive Systems with Aspiration and Voicing

A key feature of many Indian languages, especially Indo-Aryan and Dravidian, is the presence of **a four-way contrast in plosives**:

- Voiceless unaspirated: /p t t k/
- Voiceless aspirated: /p^h t^h t^h k^h/
- Voiced unaspirated: /b d d g/
- Voiced aspirated: /b^h d^h d^h g^h/

This distinction is relatively rare globally but highly common in the Indian subcontinent.

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b. Retroflex Consonants

Retroflex consonants (produced by curling the tongue back) such as $/t d \eta s t/$ are found across Indo-Aryan, Dravidian, and even some Austroasiatic languages. This feature is a hallmark of the South Asian linguistic area.

c. Nasal Consonants

Indian languages typically include a full set of nasals:

- /m/ (bilabial)
- /n/ (alveolar)
- /ŋ/ (retroflex)
- /ŋ/ (velar)

Dravidian languages especially emphasize these, even allowing word-final nasals.

d. Lateral and Rhotic Sounds

Most Indian languages include one or more lateral approximants (/l/, /l/) and rhotics (/r/, /t/), with the Dravidian languages particularly rich in lateral contrasts (e.g., Tamil has /l/, /l/, /t/).

2. Language-Family Specific Features

a. Indo-Aryan Languages

- Have large consonant inventories (30–35 consonants).
- Include voiced aspirates—a feature not commonly found outside South Asia.
- Some languages (e.g., Hindi) allow for consonant clusters and final obstruents.

b. Dravidian Languages

- Less emphasis on aspiration but stronger on retroflexion.
- Distinctive trilled rhotics and multiple laterals.
- Voiced plosives often arise via **phonological alternation** rather than being phonemic.

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c. Austroasiatic Languages (Munda Branch)

- Typically smaller inventories.
- Lack retroflexion in some dialects, but acquire it due to contact.
- Show contrasts in **voicing**, but often lack aspiration.

d. Tibeto-Burman Languages

- Use of voiceless nasals in some languages.
- Consonant clusters are common.
- Some languages (e.g., Bodo) include **tonal distinctions** and contrastive pre-aspiration.

III. Vowel Inventories of Indian Languages

1. Common Features across Families

a. Length Distinctions

Most Indian languages distinguish between **short and long vowels**. For example:

- Hindi: /i i:/, /u u:/
- Tamil: /a a:/, /e e:/

This vowel length contrast is phonemic and can change the meaning of words (e.g., Tamil /karu/ 'black' vs. /ka:ru/ 'vehicle').

b. Symmetrical Vowel Systems

Indian vowel systems are often symmetrical in terms of front, central, and back vowels, with both high and mid vowels represented:

- /i e a o u/ (core five-vowel system)
- Long counterparts: /i: e: a: o: u:/

Some languages (e.g., Telugu) also include additional mid-central vowels like /ə/.

c. Nasalized Vowels

Languages like Hindi and Bengali exhibit **nasalization** as a phonemic feature (e.g., Hindi /pãː/ 'bread' vs. /paː/ 'to read').

2. Language-Family Specific Patterns

a. Indo-Aryan

- Typically feature 10–14 vowel phonemes (including diphthongs).
- Schwa /ə/ plays a central role in **word formation and deletion** rules (e.g., Hindi schwa deletion).
- Bengali vowel system includes breathy voiced vowels in certain dialects.

b. Dravidian

- Strong vowel length contrast (e.g., Malayalam: /u/ vs. /u:/).
- Central vowel /uu/ in languages like Kannada and Tamil.
- Lack of diphthongs; glides used instead.

c. Austroasiatic

- Vowel inventories vary; some Munda languages have elaborate systems with central vowels and nasalized vowels.
- Santali has 6 oral and 6 nasal vowels.

d. Tibeto-Burman

- Systems tend to be smaller but may have contrastive **tone** and **phonation** types.
- Syllabic nasals and liquids are more common than in other Indian language families.

IV. Phonotactics and Allophony

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- Schwa Epenthesis and Deletion: Hindi and other Indo-Aryan languages often insert or delete schwa for prosodic reasons (e.g., /pəni/ → [pni]).
- **Gemination**: Dravidian languages frequently use geminated consonants for lexical distinction (e.g., Tamil /pati/ 'wife' vs. /patti/ 'farm').
- Allophonic Variation: Voicing, aspiration, and vowel centralization may vary by context, region, and speaker.

V. Convergence and Sprachbund Phenomena

Despite being genetically unrelated, Indian languages share several phonological traits due to longterm contact:

- Widespread **retroflexion** across families.
- Aspiration borrowed into Dravidian from Indo-Aryan.
- Word-final vowel avoidance and epenthesis.
- Echo words, reduplication, and onomatopoeia follow similar phonological rules.

Such convergence validates the idea of **India as a linguistic area**, with shared features overriding genetic affiliations.

13.3.3. Phonemic Distinctions in Indian Languages Not Found in English

Now let us discuss several **key phonemic contrasts** in Indian languages that pose challenges for English speakers and learners—particularly **retroflex consonants, aspirated stops, vowel length contrasts, and voiced aspirates**. Understanding these distinctions is crucial for anyone studying Indian phonology or learning Indian languages, as they fundamentally shape pronunciation, word meaning, and phonological systems.

<u>1. Retroflex Consonants</u>

a. What Are Retroflexes?

Retroflex consonants are produced by curling the tongue tip back toward the hard palate or alveolar ridge. This articulatory gesture is unfamiliar to native English speakers, whose language lacks retroflexes as phonemic categories.

Common retroflex consonants in Indian languages include:

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- Stops: /t/ (voiceless retroflex stop), /d/ (voiced retroflex stop)
- Nasals: $/\eta/$ (retroflex nasal)
- Laterals: /l/ (retroflex lateral)
- Flaps: /t/ (retroflex flap)

For example, in **Hindi**, the words $t\bar{a}l\bar{i}$ /ta:li:/ ('clap') and $t\bar{a}l\bar{i}$ /ta:li:/ ('plate') are differentiated by the retroflex /t/ vs. the dental /t/. In English, this distinction does not exist—/t/ has no retroflex counterpart and is usually realized as an alveolar or glottalized stop, depending on dialect.

b. Phonemic Significance

In Indian languages, retroflex sounds are not simply variants or allophones; they serve to contrast meanings. Mispronouncing them can lead to unintelligibility or confusion. English speakers often find retroflexion difficult to master, leading to substitution with more familiar alveolar or dental stops.

c. Distribution Across Languages

- Indo-Aryan: All major languages like Hindi, Bengali, Marathi, and Punjabi have retroflexes.
- Dravidian: Languages like Tamil and Malayalam have even more retroflex categories.
- Austroasiatic and Tibeto-Burman: Some languages have adopted retroflexes through contact, although they may not be native.

2. Aspirated vs. Unaspirated Stops

a. Understanding Aspiration

Aspiration refers to a burst of air that follows the release of a consonant, typically stops. In phonetic terms, it is measured as Voice Onset Time (VOT).

English uses aspiration in an **allophonic** way. For example:

• top [t^hap] vs. stop [stap]

But this difference does **not change word meaning**, so English does not treat aspirated vs. unaspirated /t/ as different phonemes.

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b. Phonemic Aspiration in Indian Languages

In Indian languages, the presence or absence of aspiration **does** create phonemic distinctions. Consider Hindi:

- *kal* /kəl/ ('yesterday')
- *khal* /k^həl/ ('skin')

This four-way contrast is unique and central to Indian phonological systems:

- /p/ voiceless unaspirated
- /p^h/ voiceless aspirated
- /b/ voiced unaspirated
- /b^h/ voiced aspirated

Such contrasts are rare globally and entirely absent in English. Native English speakers often collapse these distinctions, leading to incorrect pronunciation and misunderstanding in Indian languages.

3. Voiced Aspirated Stops (Breathy Voiced Stops)

a. What Are They?

Voiced aspirated stops—also known as **breathy voiced consonants**—combine vocal fold vibration with aspiration. They sound like a cross between a voiced stop and an /h/ sound.

Examples:

• $/b^{h}/, /d^{h}/, /d^{h}/, /g^{h}/$

These sounds are common in Indo-Aryan languages but do not exist in English phonology.

b. Phonemic Function

Breathy voiced consonants are **phonemic** and serve to differentiate word meanings:

• bal /bəl/ ('strength') vs. bhal /b^həl/ ('forehead')

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Many Indian languages—especially Hindi, Marathi, and Gujarati—make systematic use of these contrasts. English speakers often substitute plain voiced or voiceless consonants, missing the aspiration and thus altering the meaning.

4. Vowel Length Distinction

a. Phonemic vs. Allophonic Length

In English, vowel length is largely **allophonic**—it is influenced by stress and context. For example:

• beat [bi:t] vs. bit [bɪt]

Though these differ in quality and duration, English does not contrast /i/ vs. /iː/ phonemically across the board.

b. Vowel Length in Indian Languages

In Indian languages, vowel length is often **phonemic**, with short and long vowels changing the meanings of words:

Hindi:

- kam /kəm/ ('less')
- *kaam* /kaːm/ ('work')

Tamil:

• kalam /kalam/ ('stage') vs. kālam /ka:lam/ ('season')

This kind of vowel length distinction is crucial and is often missed by non-native speakers. Dravidian languages, in particular, make systematic use of vowel length contrasts.

5. Additional Non-English Phonemic Distinctions

a. Nasalized Vowels

In languages like Hindi and Bengali, nasalization of vowels is phonemic:

Hindi:

• *pān* /pã:/ ('betel leaf') vs. *pān* /pa:n/ (non-nasal)

English uses nasalization only **allophonically**, due to neighboring nasal consonants (e.g., $man \rightarrow [m\tilde{e}n]$).

b. Implosives and Pre-aspiration

These features appear in some **tribal or minority Indian languages**, particularly among Tibeto-Burman speakers. While not common in major Indian languages or in English, they highlight the phonetic diversity of the subcontinent.

Implications for Second Language Learning

These phonemic distinctions have profound implications for:

- Language teaching: Native English speakers must learn to perceive and produce unfamiliar contrasts like retroflexion or aspiration.
- **Phonological analysis**: Linguists must account for features not found in Indo-European languages when analyzing Indian phonology.
- **Speech technology**: Systems for automatic speech recognition and synthesis must accurately represent these contrasts to work effectively in Indian languages.

The phonemic distinctions found in Indian languages—particularly **retroflex consonants**, **aspirated and breathy stops, vowel length**, and **nasalization**—represent key departures from the phonological structure of English. These features are not just exotic curiosities but serve as essential elements in communication, meaning-making, and identity in Indian linguistic communities. Understanding and respecting these distinctions is vital for linguists, educators, language learners, and technologists alike, especially in a globalized world where cross-linguistic interaction is increasingly common.

13.4. ENGLISH CONSONANT CHALLENGES FOR INDIAN SPEAKERS

Indian English speakers often encounter challenges with consonant sounds due to differences between their native languages and English. This includes difficulties in adapting to rhotic sounds (aka R sounds), final consonants, and vowel-consonant combinations.

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Also, Indian English speakers might drop or simplify the initial or final consonants in English clusters. Hence we hear them pronouncing words like "streets" as "seets" or "streesh," resulting in a less accurate pronunciation. Let's review some of the most common consonant challenges below.

"R" Sound

In English pronunciation for Indian speakers, <u>the "R" sound</u> can be tricky because the Indian language lacks this sound as it exists in English. In Hindi and Urdu, they pronounce the "R" as a flap sound, which is different from the English "R" sound.

To properly pronounce the English "R," place the tip of your tongue just behind your upper front teeth. Round your lips slightly, but not as much as you would for the Hindi or Urdu "R." Next, exhale air while keeping your tongue in this position. The sound should come from the throat rather than the tongue.

You can practice with words like "red," "run," or "rabbit." Repeat these words slowly, paying close attention to your tongue and lip positions.

Sometimes, Indian speakers may reverse the pronunciation of "V" and "W." This means that they may pronounce words containing the English "V" as the "W" sound and vice versa. This is one of the most common English pronunciation mistakes for Hindi speakers and Indians in general.

Native English speakers produce the "V" sound by lightly touching the upper teeth to the lower lip. This contact creates a slight obstruction of airflow needed to achieve this fricative sound. The "W" sound, on the other hand, is a glide produced without any contact between the tongue or teeth.

The "V" sound is voiced, which means that your vocal cords vibrate and you feel a buzzing sensation in your throat when you say it.

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"W" is typically voiceless, meaning your vocal cords do not vibrate when you say it. We produce this sound with the movement of air, without vocal cord vibration.

To distinguish between the two sounds, it's helpful to practice minimal pairs, which are pairs of words that differ by only one sound. Examples include "vain" and "wane" or "vet" and "wet."

"Th" Sounds

Another English pronunciation for Indian speakers that we will be addressing is the voiceless "th" and voiced"TH" sounds. Many Indian English speakers replace the "Th" sounds with the "T" or "D" sounds because they don't exist in most Indian languages.

For the voiceless "th" sound, place the tip of your tongue against your upper front teeth. Let air flow between your tongue and your upper front teeth. Ensure you keep your vocal cords silent and there should be no vibration. Also, remember to keep your tongue relatively relaxed the whole time. You may practice with words like "think," "thin," and "bath."

The voiced "TH" sound is very similar to the voiceless "th" sound, but it involves vibration of the vocal cords. Place the tip of your tongue against your upper front teeth as you do with the voiceless "th."

Allow your <u>vocal cords to vibrate</u> while maintaining the airflow between your tongue and teeth. Examples of the voiced" TH" include "this," "these," "there," "mother," and "bother."

"T" and "D" Sounds

The "T" and "D" sounds are commonly found in various Indian languages, like Hindi. However, they often have a distinct pronunciation from the English sound. Their "T" and "D" are more pronounced "tuh" or "duh," with the tongue connecting further back with the mouth.

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To pronounce "T" in English, place the tip of your tongue against the alveolar ridge, stop the airflow, and release it suddenly. The English "T" is a voiceless sound, and this means your vocal cords do not vibrate when you produce it.

Pronouncing "D" in English is nearly the same as "T," but with voicing. This means that your vocal cords will vibrate when you release the airflow.

"P," "T," and "K" Sounds

Standard English pronunciation will naturally have aspirated consonants "P," "T," and "K." However, Indian speakers can tend to unaspirate these consonant in their English pronunciation.

Aspirated sounds are produced with a strong burst of air when you release the closure of the lips or tongue. This means unaspirated sounds lack this burst of air, and this alters the original sounds.

To pronounce the aspirated "P" (as in "pat"), place your lips together to create a complete closure. Next, build up a burst of air behind the closure by exhaling. Finally, release the closure with a strong puff of air.

To pronounce the aspirated "T" (as in "top"), position your tongue against the area just behind the upper front teeth to create a complete closure. Also, build up a burst of air behind the closure by inhaling slightly or holding your breath. Now, release the closure with a strong puff of air.

Like "T" and "P," raise the back of your tongue against the soft palate to create a complete closure in the back of the mouth to pronounce the aspirated "K" (as in "kick"). Again, build up a burst of air behind the closure by inhaling slightly or holding your breath. Finally, release the closure with a strong puff of air.

13.5. COMMON ENGLISH VOWEL PRONUNCIATION MISTAKES

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English has more vowel sounds, including diphthongs and long vowels, which are the result of vowel shifts over time.

These vowel sound variants are less common in Indian languages that have relatively stable vowel systems. Urdu, for example, has between 8 and 12 vowel sounds, compared to the 15 in American English.

Schwa

Words with schwa sounds (/are some of the most common English words that Indian pronounce wrong.

Ideally, the schwa sound requires minimal tension in your articulatory organs, as it is a very relaxed and almost unnoticeable sound. However, Indian languages have clear vowel sounds, even in unstressed syllables, making it hard to reduce vowels this way.

The key to pronouncing the schwa sound in English pronunciation for Indian speakers is to relax your tongue, jaw, and lips. Always keep your tongue in a neutral, central position in your mouth, and do not round or spread your lips. Position your tongue in the middle of your mouth without touching the roof of your mouth, the back of your front teeth, or any other part of your mouth.

"AA" Sound

The "AA" sound, as in the word "cat," does not exist in Indian languages like Hindi and Urdu.

To produce this sound, place your tongue comfortably in the middle of your mouth, not touching anything. Next, open your mouth moderately, but not too wide. Also, keep your lips relaxed and unrounded. Your lips should not be too loosely parted or tightly rounded, and ensure that your jaw is relaxed and not too tense.

13.6. SPEECH RHYTHM CHALLENGES FOR INDIAN SPEAKERS

Indian speakers may encounter challenges related to speech rhythm, potentially influenced by the differences in syllable timing and pitch between their native language and English.

Stress Patterns

Indian English speakers sometimes place equal stress on all syllables in a word, which can make it difficult to distinguish which words are most important. This is because many Indian speakers use intonation patterns from their native languages. Sometimes these intonations make their speech overly melodic.

Pitch Range and Speech Speed

Some Indian English speakers may not use pauses or rhythm patterns that are common in English speech. This makes them unintentionally blend words when they speak, lumping syllables together in a manner that sounds rushed or disjointed.

13.7. HOW TO IMPROVE ENGLISH PRONUNCIATION FOR INDIAN SPEAKERS

For many Indian speakers, English is a second or third language, often acquired through formal education rather than natural immersion. While grammar and vocabulary may be strong, pronunciation frequently presents challenges due to the influence of native languages like Hindi, Bengali, Tamil, or Telugu. Improving English pronunciation is essential not just for intelligibility, but also for confidence, professional communication, and global comprehension.

1. Understand the Problem Areas

Indian languages differ significantly from English in phonology. Common pronunciation issues include:

- Vowel substitutions: Indian languages have fewer vowel contrasts than English, leading to confusion between sounds like /I/ and /i:/ (e.g., *bit* vs. *beet*).
- **Retroflex vs. alveolar sounds**: Indian speakers often use retroflex stops (/t/, /d/) in place of English alveolars (/t/, /d/), giving speech a distinct accent.

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- Aspirated stops: English uses aspiration conditionally, while Indian languages use it phonemically. Misplacing aspiration can sound unnatural to native English speakers.
- **Syllable timing**: Indian languages are syllable-timed, while English is stress-timed. This affects rhythm and intonation.

Awareness of these differences is the first step toward correction.

2. Use Phonemic Awareness and the IPA

Learning the **International Phonetic Alphabet (IPA)** can help identify and produce English sounds more precisely. Understanding minimal pairs (e.g., *ship* vs. *sheep*) helps train the ear to distinguish and replicate subtle differences.

3. Practice with Native Materials

Listening to native English through:

- Audiobooks
- Podcasts
- News channels
- Films and TV shows

This develops auditory familiarity with correct pronunciation, rhythm, and intonation. **Imitating** native speakers through shadowing (repeating speech in real time) is particularly effective.

4. Record and Compare Your Speech

Record yourself reading aloud or speaking extemporaneously. Compare with native pronunciation. Tools like Google Translate's audio, YouGlish, or online dictionaries with pronunciation guides can help highlight differences and offer models for correction.

5. Focus on Stress and Intonation

English uses **word stress** and **sentence-level intonation** extensively. Misplacing stress can make words hard to recognize. For example:

• REcord (noun) vs. reCORD (verb)

Learn the patterns of stress in polysyllabic words and practice rising and falling intonation for questions, statements, and emphasis.

6. Seek Feedback and Training

Language labs, pronunciation apps (like ELSA or Speechling), and speech coaches can provide targeted feedback. Participating in English-speaking clubs or discussion forums can also help practice in real-world contexts.

7. Be Patient and Consistent

Pronunciation improvement is gradual. Daily short sessions of focused practice are more effective than occasional long ones. Keep a list of words you mispronounce and revisit them regularly.

13.8. LET US SUM UP

Thus Indian English is a rich and legitimate variety shaped by the phonological systems of the country's many native languages. It reflects the multilingual character of India, carrying features such as syllable-timed rhythm, retroflex consonants, and native vowel substitutions. However, in contexts where clarity, mutual intelligibility, or native-like fluency in English is important—such as international communication, media, academia, or global business—working toward a more standard or neutral accent can be highly beneficial.

Improving pronunciation does not mean erasing one's linguistic identity but rather enhancing clarity and effectiveness in cross-cultural communication. Awareness of common pronunciation challenges—such as aspirated vs. unaspirated stops, vowel length distinctions, or misplaced word stress—is essential. With the use of phonetic tools, exposure to native English input, and consistent practice, Indian speakers can refine their pronunciation without compromising fluency or naturalness.

It is also crucial to recognize that accent modification is not about conformity but intelligibility. The goal is to be understood across diverse English-speaking audiences while maintaining confidence and authenticity. English, being a global language, accommodates a wide range of accents, and Indian English continues to evolve as a respected variety.

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In sum, with growing global connectivity, the ability to speak English clearly and confidently is an empowering skill. For Indian speakers, refining pronunciation is not just a linguistic goal—it is a practical step toward more impactful communication and broader opportunity.

13.9. SELF CHECK QUESTIONS

Comprehension Questions

- 1. What are some key phonological features that distinguish Indian English from other varieties of English?
- 2. How does syllable-timed rhythm in Indian languages affect English pronunciation?
- 3. Why is the contrast between aspirated and unaspirated stops significant for Indian English speakers?
- 4. What are minimal pairs, and how can they help in improving English pronunciation?
- 5. How does the use of retroflex consonants impact intelligibility in Indian English?
- 6. What role does the International Phonetic Alphabet (IPA) play in pronunciation improvement?
- 7. In what ways can native language interference influence English pronunciation among Indian speakers?
- 8. Why is it important to focus on stress and intonation in spoken English?
- 9. What are some effective tools and techniques for improving English pronunciation?
- 10. What is the difference between accent reduction and improved intelligibility?

Critical Thinking / Discussion Questions

- 1. Should Indian English strive for neutrality or maintain its regional uniqueness? Why?
- 2. Is it necessary for Indian speakers to adopt a native (e.g., British or American) accent to be understood globally?
- 3. How can schools and language programs in India better address pronunciation challenges?
- 4. How does pronunciation affect professional opportunities in global settings?
- 5. To what extent is pronunciation a matter of identity versus communication effectiveness?

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