UNIT : 11

CLASSIFICATION OF SPEECH SOUNDS IN ENGLISH - CONSONANTS & VOWELS

:: STRUCTURE ::

11.0 OBJECTIVES

In this unit we shall

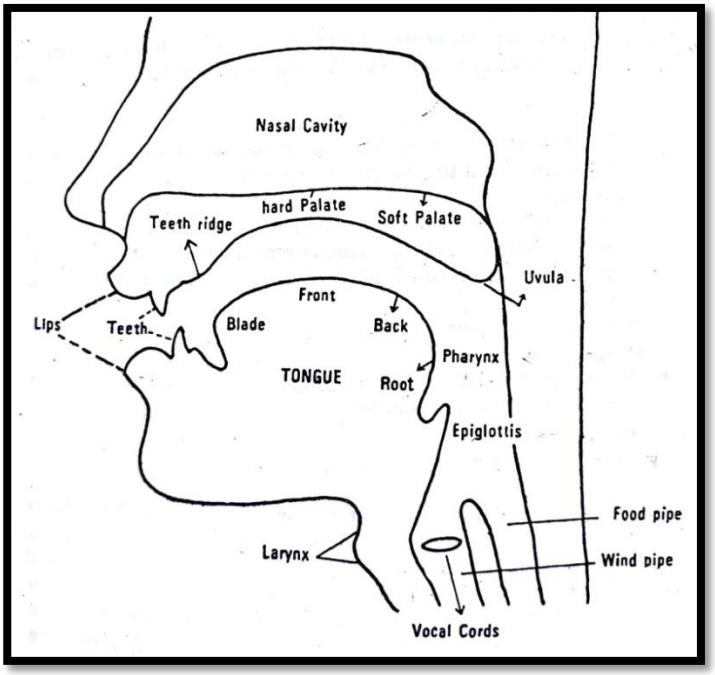
- Classify and describe the various speech sounds that we use, and
- Show how they are classified into consonants and vowels.

On completing the unit, you should be able to

- Describe the consonants and vowel sounds that we use in English language, and
- Use various English speech sounds according to their classification.

11.1 INTRODUCTION

Speech sounds are produced with the help of an air-stream mechanism. Certain organs of your body convert the air into speech sounds that flows out of your mouth. They are commonly referred to as 'organs of speech' or 'articulators'. They are: the lips, teeth, alveolar ridge, hard and soft palate (velum), uvula, glottis and various parts of the tongue. They can be divided into two types: active articulators and passive articulators. The active articulator is usually the lower lip or some part of the tongue. Passive articulators are alveolar ridge, soft palate, teeth ridge, hard palate, etc. During production of speech sounds, the active articulator moves towards the passive articulator and causes complete or partial obstruction of the flow of air in the vocal tract.



11.2 CONSONANTS AND VOWELS

Speech sounds are very broadly divided into two categories, namely, **Vowels** and **Consonants**. During the production of consonant sounds, the air escapes through the mouth with friction. And during the production of vowel sounds, the air passes through the mouth freely. For example,

there are three letters in the English word *she,* but only two sounds, i.e. /ʃ/ and /i/. While speaking the sound /ʃ/ one hears friction, and so it is a consonant. Whereas on producing the sound /i/ no such friction is heard, and so the sound is called a vowel. In other words consonant involves some constriction of airflow whereas vowels do not.

The English language has 26 letters yet represents 44 sounds. There are 24 different individual consonant speech sounds and 20 vowel speech sounds in the English language. Each speech sound has a symbolic representation. One or more speech sounds form a syllable of a word. Vowels and consonants are the two elements of a syllable. For example, the word 'any' has two syllables /e/ and /ni/.

Symbolic representation of Consonant Sounds

/p/	**p**in	/ʧ/	**ch**in	/v/	**v**oice	/ʒ/	vi**s**ion
/b/	**b**in	/ʤ/	**j**u**dg**e	/ɵ/	**th**in	/h/	**h**at
/t/	**t**in	/m/	**m**at	/ð/	**th**is	/l/	**l**ove
/d/	**d**ish	/n/	**n**ice	/s/	**s**in	/r/	**r**at
/k/	**k**in	/ŋ/	su**ng**	/z/	**z**oo	/j/	**y**outh
/g/	**g**as	/f/	**f**at	/ʃ/	**sh**ine	/w/	**w**ine

Symbolic representation of Vowel sounds

/i:/	f**ee**l	/ɑ:/	h**a**rd	/u/	f**oo**t	/ei/	b**a**de	/au/	n**ow**
/i/	f**i**ll	/ɔ/	c**o**t	/ʌ/	b**u**d	/ai/	b**i**de	/iə/	h**ea**r
/e/	m**e**n	/ɔ:/	c**au**ght	/ə:/	b**ir**d	/ɔi/	b**oy**	/uə/	p**oo**r
/æ/	m**a**n	/u:/	f**oo**d	/ə/	**a**bout	/əu/	g**o**	/ɛə/	p**ea**r

11.3 CLASSIFICATION OF CONSONANTS

On the production of Consonant sounds air passes through the mouth with some friction. For example the initial letters like *sh, s, z* and *wh* in the words *shoot, simple, zero,* and *when* produce friction while speaking. All these sounds are therefore consonants but each one of them sounds different from the others. These sounds should therefore be sub-classified. There are 24 distinctive consonants in English. Linguists describe consonant sounds using three criteria as follows,

Let us now discuss each one in detail.

11.3.1 Voicing or State of Glottis:

English speech sounds are classified according to the presence and absence of voice, i.e. voiceless and voiced sounds. Voicing or State of Glottis refers to what are the vocal cords doing. Voiceless sounds are generated when air passes through open vocal cords. Here the glottis is wide open. E.g. the sound /p/, /t/ etc. Voiced sounds are generated when

the glottis is vibrating. E.g. the sound /b/ /d/ etc. All consonant sounds are either voiceless or voiced sounds.

voiceless sounds			voiced sounds		notes
1	dea**f**	/f/	re**v**	/v/	All vowels (a, e, o, u, i) and diphthongs (sound glides from one vowel sound to another) are voiced.
2	nec**k**	/k/	le**g**	/g/	
3	ste**p**	/p/	we**b**	/b/	
4	le**ss**	/s/	fe**z**	/z/	
5	swea**t**	/t/	sprea**d**	/d/	
6	ben**ch**	/ʧ/	le**dge**	/ʤ/	
7	dea**th**	/ɵ/	wea**th**er	/ð/	
8	fre**sh**	/ʃ/	plea**s**ure	/ʒ/	
9	**h**ead	/h/	**l**ight	/l/	
10			ge**m**	/m/	
11			te**n**	/n/	
			ste**r**eo	/r/	
			wet	/w/	
			yet	/j/	If "y" sounds like a vowel sound, it is a vowel. Say-key-boy-buy-cry-happy-gym etc.
			ki**ng**	/ŋ/	

While speaking the sound /b/ and /p/, lips come together and the sound is released with a burst of air. At this time many non native English speakers make common error. They pronounce a voiceless sound when it should be a voiced sound. This mistake usually happens on sounds that are pairs because the mouth shape is in exact the same position. The only difference is the voicing. It usually happens when the voiced sound is at the end of the word. For example one might say /cup/ when one really means to say /cub/ or /rack/ when one really means to say /rag/. There are lots of such consonant pairs where the mouth position is the same, and one is voiced, the other is voiceless. For example /ʧ/ (voiceless) and /ʤ/.

Here are some such tricky sound pairs:

/p/ and /b/, /t/ and /d/, /s/ and /z/, /k/ and /g/, /f/ and/v/, /th/ and /th/. Now practice the following words and hold the vowels for two beats while speaking a voiced consonant at the end of the word and notice the difference.

Bead and beat, heed and heat, bid and bit, robe and rope, tab and tap, bathe and bath, breathe and breath, bag and back, tag and tack, pig and pick, have and half, save and safe, live and life.

An easy way to determine whether a consonant is voiced or not is:

1. To place a finger on the throat. While pronouncing a letter, vibration of vocal cords is felt. If vibration is felt, the consonant is a voiced one. If vibration is not felt, the consonant is a voiceless one.
2. To put a piece of paper in front of the mouth when saying the sounds - the paper moves when saying the unvoiced sounds.
3. Two examples are /z/, which is voiced and /s/, which is voiceless.

Some more examples for practice:

voiced	**voiceless**	**voiced**	**voiceless**
dug	**t**ug	**b**ark	**p**ark
ball	**P**aul	**d**own	**t**own
vile	file	**g**oat	**c**oat
zoo	sue	**v**an	**f**an
girl	**c**url	**z**ip	**s**ip
thy	**th**igh	trea**s**ure	**s**ure
Jill	**ch**ill	**J**ane	**ch**ain

Exercise:

a) Classify the following sounds into Voiceless or Voiced Sounds.

	/s/	/z/	/b/	/j/	/d/	/p/	/m/	/t/	/v/	/g/	/f/	/h/	/n/	/ð/
Voiceless														
Voiced														

11.3.2 Manner of Articulation

Manner of Articulation refers to how the airflow is constricted. In other words it refers to the stricture involved. The term 'stricture' refers to the way in which the passage of air is restricted by various organs of speech. Phoneticians divide such sounds into different categories, depending on the degree of stricture. Generally, three such degrees are proposed: closure, close approximation, and open approximation. Plosive, affricate, nasal, fricative, etc. are labels given to consonants according to their manner of articulation. Let us discuss them separately.

a) Plosive or Occlusive (e.g. /p/, /b/, /t/, /d/, /k/, /g/):
Plosive or stop sounds result from a complete constriction of air flow followed by sudden release of the air. In other words such sounds are produced when the active articulator is suddenly removed from the passive articulator and the air escapes with a small explosive noise. The initial sounds in the English words *put, boot, tap, door, kite* and *gun* are plosives.

b) Fricative (e.g. /f/, /v/, /ɵ/, /ð/, /s/, /z/, /ʃ/, /h/):
Fricative consonants are produced by forcing air through a narrow channel made by placing two articulators close together. Such sounds result with a stricture of close approximation. The mouth is brought into position to block the passage of the airstream, but not making complete closure, so that air moving through the mouth generates audible friction. In other words in the production of Fricative sounds the nasal passage of air is shut off by raising the soft palate. This gives friction like quality. The initial sounds in the English words *four, vine, thus, sip, zero, shy* and *help* are fricative consonants.

c) Affricate (e.g. /ʧ/, /ʤ/):
Affricate sounds are a combination of a plosive with an immediately following fricative, generally with the same place of articulation. Affricate sounds result from the sequence of stop plus fricative in rapid succession so that /ʧ/ represents /t/ + /ʃ/, and /ʤ/ represents /d/ + /ʒ/. Such consonants are produced with a stricture of complete closure and slow release. Such affricate sounds can be heard in the initial sounds of English words *church* and *jam*, for instance.

d) Nasal (e.g. /m/, /n/, /ŋ/):
Nasal sounds are produced when the air passes through the nasal cavity. The lung-air will then escape through the nostrils freely. There is a velic opening, while at the same time, there is an obstruction in the oral cavity. Thus nasal sounds follow a stricture of complete oral closure. Nasals can be heard in the final sounds of English words *sum, pun* and *sung*. Some modern phoneticians place both nasals and plosives into one single stops category on the grounds that both involve a total obstruction of the airflow.

e) Lateral (e.g. /l/):
In the production of lateral sounds there is a stricture of complete closure in the centre of the vocal tract. Moreover the tip of the tongue is raised against the roof of the mouth with the air being allowed to escape without any friction on one or both sides of the tongue: e.g. /l/ sound in the English word *lip* is a lateral sound.

f) Trills or Rolled (/r/):
In phonetics a Trill is a consonantal sound produced with a series of rapid closures or taps. Trill or rolled sounds result when the tongue tip taps against the alveolar ridge several times with the air escapes between the active and passive articulators intermittently: e.g. the Scottish people pronounce the letter **/r/** in the English words like *red* and *ran*. Thus trill sounds involve a stricture of intermittent closure.

g) Taps or Flaps (/r/):
In phonetics a tap or flap is a type of consonantal sound which is produced when the active articulator strikes against the passive articulator

just once and then quickly flaps forward. Some English people speak the letter /r/ in English word *very* in this manner. A tap or flap differs from a trill in that it is made by a muscular contraction rather than airstream.

h) Approximant (/w/, /j/, /l/, /r/):
The term 'Approximant' is coined by Peter Ladefoged (1975). Approximants fall between fricatives (producing a turbulent airstream) and vowels (producing no turbulence) and so they are also called 'frictionless continuants' and 'semi-vowels' (a consonant that sounds in some ways like a vowel). Such sounds result with a stricture of open approximation. This class of sounds includes lateral approximants like the sound for "l" in the word "like, "r" in the word "right" and semivowels like /j/ and /w/ as in the words *yes* and *wet*.

In phonetics and phonology, a semivowel is a sound that is phonetically similar to a vowel sound but functions as the syllable boundary rather than as the nucleus of a syllable. In other words they contrast with vowels by being non-syllabic. Moreover they are shorter than vowels. For example the words like "well" and "yell" have semi-vowels in the beginning of the words.

- **Check Your Progress**

a) Fill in the blanks in the following sentences:

1. ..... sounds are produced when the active articulator is suddenly removed from the passive articulator and the air escapes with a small explosive noise.
2. 'Frictionless continuants' are also called ……..
3. When the active articulator strikes against the passive articulator just once and then quickly flaps forward, …….sounds are produced.
4. Nasals are articulated with a stricture of ……..
5. ……. is a consonantal sound produced with a series of rapid closures or taps.
6. The initial sounds in the English words *fifth, thumb, zoo,* and *shut* are ……. consonants.
7. Consonants that are produced with a stricture of complete closure and slow release are called …….
8. The term ……. refers to the way in which the passage of air is restricted by various organs of speech.
9. The sound represented by the letter ***n*** in the English word *finger* is a …….
10. The sound represented by the letter ***g*** in the English word *good* is a …….

(b) Say whether the following statements are true or false:

1. A voiced sound is one in which the vocal cords vibrate, and a voiceless sound is one in which they do not.

2. It is generally agreed that there are approximately 44 letters in English language.
3. The air passes through the nose during the production of all the nasal consonants.
4. Lateral sounds result from a complete constriction of air flow followed by sudden release of the air.
5. Speech sounds are very broadly divided into two categories, namely, vowels and consonants.
6. All consonant sounds are either voiceless or voiced sounds.
7. The air passes with friction during the production of vowel sounds.
8. The initial letters like *sh*, *s*, *z* and *wh* in the words *shoot, simple, zero,* and *when* produce friction while speaking.
9. /l/ sound in the English word love is a lateral sound.
10. Active articulators remain stationary during the production of speech sounds.

11.3.3 Place of Articulation:

Place of Articulation refers to where the constriction of airflow takes place. Consonant sounds can be described according to where the obstruction occurs in the vocal tract between an articulatory gesture, an active articulator and a passive location. This is called the place of articulation. Both active as well as passive articulators are involved in the production of consonant sounds. The place of articulation of a consonant is a point where the constriction of airflow takes place. The following consonant sounds are classified according to where in the vocal track the sound is crafted.

a) Bilabial (e.g. /p/, /b/, /m/):
Bilabial sounds are produced with the two lips. Bilabial consonants include the English sounds like /p/, /b/ and /m/ as in the words *pope*, *bomb* and *mom*.

b) Labio-dental (e.g. /v/, /f/):
In the production of labio-dental sounds the lower lip (active articulator) articulates with the upper teeth (Passive articulator). Such consonants include the English sounds like /v/ and /f/ as in the words *voice* and *five*.

c) Dental (e.g. /ɵ/, /ð/):
In the production of dental sounds the tip of the tongue (active articulator) articulates with the upper front teeth (passive articulator). Dental consonants include the English sounds like /ɵ/ and /ð/ as in the words *thing* and *this*.

d) Alveolar (e.g. /t/, /d/, /n/, /s/, /z/, /l/):
In the production of alveolar sounds the tip or the blade of the tongue (active articulator) articulates with the teeth ridge (passive articulator).

Alveolar consonants include the English sounds like /t/, /d/, /n/, /s/, /z/ and /l/ as in the words *top, dip, nose, sip, zoo* and *love.*

e) Post-alveolar (e.g. /r/):
In the production of post-alveolar sounds the tip of the tongue (active articulator) articulates with the part of the roof of the mouth that lies immediately behind the teeth ridge (passive articulator). Post-alveolar consonants include the English sounds like /r/ as in the words *try* and *dry*.

f) Palato-alveolar (e.g. /ʧ/, /ʤ/, /ʃ/):
In the production of palate-alveolar sounds the tip of the tongue or the tip and blade of the tongue (active articulator) articulates with the teeth ridge (passive articulator). Simultaneously, the front of the tongue is raised in the direction of the hard palate. Palato-alveolar consonants include the English sounds like /ʧ/, /ʤ/ and /ʃ/ as in the words *chin, jam* and *sheep*.

g) Palatal (e.g. /j/):
In the production of palatal sounds the front of the tongue (active articulator) articulates with the hard palate (passive articulator). Palatal consonants include the English sounds like /j/ as in the words *young* and *yes*.

h)Velar (e.g. /k/, /g/, /ŋ/):
In the production of velar sounds the back of the tongue (active articulator) articulates with the soft palate (passive articulator). Velar consonants include the English sounds like /k/, /g/ and /ŋ/ as in the words like *kite, gang* and *sung*.

i) Glottal (e.g. /h/):
In the production of glottal sounds, there is an obstruction or narrowing of the glottis. Such consonants are produced at the glottis and the two vocal cords are the articulators. Glottal consonants include the English sound like /h/ as in the words *house* and *hat*.

Thus, the above study shows that the English Consonants are classified according to (i) voicing, (ii) the manner of articulation and (iii) the place of articulation. In this way the English consonants can be described using three-term label. For example, the letter /p/ in the English word *put* is described as a voiceless plosive bilabial consonant sound. The letter /j/ in the English word *you* is described as a voiced approximant palatal consonant sound.

The 24 distinctive consonants in English are tabulated below:

Place → Manner ↓	**Bilabial**	**Labio-dental**	**Dental**	**Alveolar**	**Post-Alveolar**	**Palato-alveolar**	**Palatal**	**Velar**	**Glottal**
plosive	p b			t d				k g	
nasal	m			n				ŋ	
fricative		f v	ɵ ð	s z		ʃ ʒ			h
affricate						ʧ ʤ			
approximant	w				r		j	(w)	
Lateral				l					

- **Check Your Progress**

(a) Complete the following table with the study you have done about the place of articulation.

Name	**Active Articulators**	**Passive Articulator**	**Example**
Bilabial	lower lip	upper lip	/p/, /b/, /m/
Labio-dental			
Dental			
alveolar			
Post-alveolar			
Palato-alveolar			
Palatal			
Velar			
Glottal			

(b) Say whether the following statements are true or false:

1. The place of articulation of a consonant is a point where the constriction of airflow takes place.
2. Bilabial sounds are produced with the upper teeth and lower lip.
3. The initial sounds of the words foolish and vain are the examples of labio-dental consonants.
4. In the production of dental sounds the tip of the tongue articulates with the upper front teeth.
5. Alveolar consonants include the English sounds like /ʧ/ and /ʤ/ as in the words *chin* and *jam*.
6. Teeth ridge works as a passive articulator in the production of speech sounds.
7. Velar consonants include the English sounds like /k/, /g/ and /ŋ/ as in the words like *kin, goship* and *sung*.
8. The sounds of a language are produced with the help of speech organs generally known as articulators.
9. Active articulators are immovable speech organs.

10. During production of speech sounds, the active articulator moves towards the passive articulator and causes complete or partial obstruction of the flow of air in the vocal tract.

(c) Complete the following table using the three-term label.

	/d/	**/k/**	**/ʧ/**	**/m/**	**/n/**	**/ʃ/**
Voicing						
The Manner of Articulation						
The place of Articulation						

11.3.4 Consonant clusters:

A Consonant cluster is defined as a group or sequence of consonants that appear together in a syllable without a vowel between them. Almost always a consonant is followed by a vowel. But in English we can have one, two, three and sometimes even four consonant sounds together with no vowel sound between them. A consonant cluster can appear at the beginning, in the middle, or at the end of a word. For example the word *play* has a consonant cluster /pl/ in the beginning of the word, i.e. sounds /p/ and /l/ come in a sequence and belong to the same syllable. The word *fact* has a consonant cluster /kt/ at the end of the word.

In English there are some rules which consonants can be used together because every consonant cannot always be mixed. For example consonants /p/ and /t/ cannot be put together as they are the same type of sounds. Consonant sounds in a consonant cluster should be of different types.

In initial position no more than three consonants occur in a sequence:

- **The initial CC Clusters in English (two consonants):**

first member of initial CC Cluster	**second member of initial CC Cluster**	**example**	**first member of initial CC Cluster**	**second member of initial CC Cluster**	**example**
/p/ oral	/l/, /r/, /j/	plot, press	/f/ fricative	/l/, /r/, /j/	flash free

plosive		pure			few
/b/ oral plosive	/l/, /r/, /j/	black bread beauty	/v/ fricative	/j/	view
/t/ oral plosive	/r/, /j/, /w/	tree tune twice	/ɵ/ fricacive	/r/, /w/	throw thwart
/d/ oral plosive	/r/, /j/, /w/	draw duty dwarf	/s/ fricative	/p/, /t/, /k/, /m/, /n/, /l/, /w/	spit, stand scarf, small snore, sleep swift
/k/ oral plosive	/l/, /r/, /j/, /w/	cliff cream cure quite	/m/ nasal	/j/	mute
/g/ oral plosive	/l/, /r/	glee great	/h/	/j/	humid
/n/ nasal plosive	/j/	news			

- **The initial CCC Clusters in English (three consonants):**

The initial CCC Clusters in English has always /s/ as the first element which is followed by /pl/, /pr/, /tr/, /tj/, /kr/ or /kw/.

/spl/	/spr/	/str/	/stj/	/skr/	/skw/
split	spread	stress	stupid	scroll	squire

- **The final CC Clusters in English (two consonants):**

first member of final CC Cluster	**second member of final CC Cluster**	**example**	**first member of final CC Cluster**	**second member of final CC Cluster**	**example**
/s/, /l/, /m/	/p/	gasp scalp stamp	/l/	/b/	bulb
/p/, /k/, /ʧ/, /f/, /s/, /ʃ/, /n/, /l/	/t/	adapt, project, touched, lift, gist, blushed, hunt, belt	/b/, /g/, /ʤ/, /v/, /ð/, /z/, /m/, /n/, /ŋ/, /l/	/d/	sobbed, begged, changed, braved, mouthed, fused, chimed,

					sand, banged, sold
/s/, / ŋ/, /l/	/k/	mask, ink, sulk	/n/, /l/	/ʧ/	munch, clutch
/n/, /l/	/ʤ/	range, indulge	/l/	/f/	golf
/l/	/v/	self	/p/, /t/, /d/, /f/, /m/, /n/, /ŋ/, /l/	/ɵ/	depth, eighth, breadth, twelfth, warmth, tenth, strength, health
/p/, /t/, /k/, /f/, /ɵ/, /n/, /l/	/s//,	ships, pats, apex, laughs, faiths, fence, girls	/b/, /d/, /g/, /v/, /ð/, /m/, /n/, /ŋ/, /l/	/z/	sobs, breads, legs, wives, smoothes, norms, fans, wings, pulls

- **The final CCC Clusters in English (three consonants):**

first members of final CCC Cluster	**last member of final CCC Cluster**	**example**
/ds/, /ks/, /sk/, /mp/, /nʧ/, /ns/, /ŋs/, /ŋk/, /lp/, /lk/, /ls/	/t/	amidst, mixed, asked, prompt, clenched, against, angst, linked, gulped, milked, whilst
/nʤ/, /lv/	/d/	hinged, shelved
/ks/, /lf/	/ɵ/	sixth, twelfth
/pt/, /pɵ/, /tɵ/, /kt/, /ft/, /f ɵ/, /sp/, /st/, /sk/, /mp/, /nt/, /n ɵ/, /ŋk/, /lp/, /lt/, /lk/	/s/	adapts, depths, eighths, constructs, drafts, fifths, gasps, lists, risks, jumps, appointments, elevenths, thinks, helps, belts, chalks
/nd/, /ld/, /lv/	/z/	grounds, fields, solves

- **The final CCCC Clusters in English (four consonants):**

first members of final CCCC Cluster	**last member of final CCCC Cluster**	**example**
/kst/, /ksθ/, /mpt/, /lf θ/	/s/	texts, sixths, attempts, twelfths

- **Check Your Progress**

Separate the following words according to the consonant clusters they fall in and arrange them in the table given below:
attempts, twelfths, next, rests, molds, attempt, tempt, adopts, concepts, scroll, squash, square, splendid, plastic, plural, prediction, prayer, blow, brain, transport, drill, cream, glow, free, thrive, statute, gasp, clasp, camp, pant, melt, sold, task, blink, strange, pushed, went, mugs, wives, prince, bats

Initial CC Cluster	**Initial CCC Cluster**	**Final CC Cluster**	**Final CCC Cluster**	**Final CCCC Cluster**

11.4 CLASSIFICATION OF VOWELS

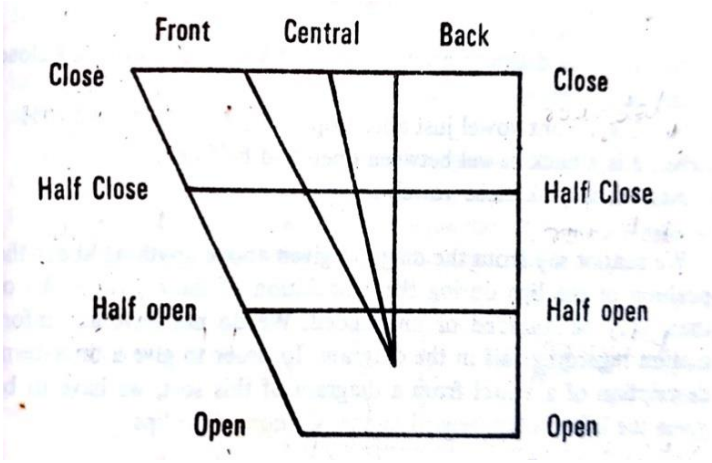
As it is said earlier that the production of Vowel sounds occurs without obstruction or narrowing in vocal tract. The air passes through the mouth freely, without any friction. For example the letters ***o*** in *boll*, ***a*** in *bad* and ***u*** in *put* are vowels as they are articulated with a stricture of open approximation. All these vowel sounds are different because during their articulation the tongue takes up different positions. There are only 5 vowel LETTERS ***a, e, I, o, u*** and sometimes ***y*** which represent multiple vowel sounds in the English language. There are 20 English vowel phonemes in Received Pronunciation.

Vowel sounds can be differentiated due to the length of different vowel sounds. For example, ***sit*** (short vowel sound) and ***seat (***long vowel sound). Vowels may further be divided into pure vowels or monophthongs and diphthongs. Monophthongs involve one vowel quality. For example, the sound /i/ as in the word *sick*. Diphthongs involve two vowel qualities for example, the sound /ɔi/ as in the word *boy*.

Symbols and Key word with the letters representing the vowel italicized

Pure Vowels	/i:/	m*ee*t	Diphthongs	/ei/	d*ay*
	/i/	s*i*t		/ai/	m*y*
	/e/	m*e*n		/ɔi/	b*oy*
	/æ/	m*a*n		/əu/	g*o*
	/ɑ:/	c*a*rt		/au/	n*ow*
	/ɔ/	c*o*t		/iə/	h*ea*r
	/ɔ:/	c*au*ght		/uə/	p*oo*r
	/u/	b*oo*k		/ɛə/	th*ei*r
	/u:/	b*oo*t			
	/ʌ/	c*u*t			
	/ə:/	h*ea*rd			
	/ə/	*a*bout			

Vowel sounds can be classified in three ways according to the position of the tongue and lips. The following vowel diagram will be useful before moving further. It is a quadrilateral which shows different tongue positions during the production of vowel sounds.



11.4.1 The Horizontal movement of the tongue

There are front, back and central vowels according to how far the front or the back of the tongue is from the roof of the mouth while producing the sound.

Front vowels: the front of the tongue is raised in the direction of the hard palate.

Back Vowels: the back of the tongue is raised in the direction of the soft palate.

Central Vowels: they are intermediate between the front of the mouth (below the front portion of the hard palate) and the back of the mouth (below the soft palate).

There are four front vowels (/i:/, /I/, /e/, /æ/), five back vowels (/u:/, /ʊ/, /ɔ:/, /ɔ/, /ɑ:/) and three central vowels (/ə:/, /ə/, /ʌ/). This classification is

made keeping in mind which part of the tongue is highest in the mouth during their articulation.

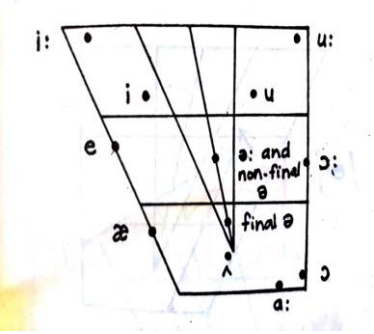
11.4.2 The Vertical movement of the tongue:

There are close (high), mid and open (low) vowel sounds according to the vertical movement of the tongue. It refers to how high or low the tongue is in the mouth while producing the vowel. For example while producing the sound /i/ the tongue goes up and while producing the sound /a/ the tongue goes down. Hence /i/ is a close vowel sound and /a/ is an open vowel sound. In other words during the production of close vowels, the tongue goes near the roof of the mouth and during the production of open vowel the tongue goes far away from the hard palate or the roof of the mouth. There are two more possibilities in the way the tongue moves between close and open positions: half open and half close. For example the vowel sounds like /e/ (half open) and /æ/ (half close) are produced in this way.

11.4.3 The position of the lips: rounded and unrounded vowels.

According to the position of the lips, vowel sounds can be classified in two ways, rounded and unrounded vowels. Roundedness means whether or not the lips are rounded when producing vowel sounds. For example, the vowel sound /i/ is unrounded and the vowel sound /u/ is rounded. All front vowels are articulated with unrounded lips while the back vowels are articulated with rounded lips.

The above classification gives us 3 X 4 X 2 = 24 possibilities. It can best be explained in the following diagram.



Check Your Progress

(a) Describe the following vowel sound in the order given to you.

Vowel sound	Height	Backness	Roundedness
/u/	close	back	rounded
/i/			
/æ/			
/ɔ/			
/i:/			

(b) Note down the monophthongs and diphthongs used in the following words.

Kite		bite		oil		cow	
shut		get		boil		fit	
put		bat		out		**a**bout	
cup		past		school		pot	
big		near		fool		hurt	

11.5 LET US SUM UP

In this unit you have learnt

- to classify and describe the consonants and vowel sounds that are used in English language, and
- to use various English speech sounds according to their classification.

11.6 KEY WORDS

Alveolar ridge It is one of the two jaw ridges, either on the roof of the mouth between the upper teeth and the hard palate or on the bottom of the mouth behind the lower teeth.

Articulation the formation of clear and distinct sounds in speech.

Air-stream mechanism In phonetics, the airstream mechanism is the method by which airflow is created in the vocal tract.

Glottis It is the opening between the vocal folds.

Larynx The hollow muscular organ forming an air passage to the lungs and holding the vocal cords in humans and other mammals; the vocal box.

Linguistics The scientific study of language and its structure, including the study of grammar, syntax, and phonetics.

Nasal cavity It is the inside of your nose.

Palate The roof of the mouth, separating the cavities of the mouth and nose in vertebrates.

Phoneme Any of the perceptually distinct units of sound in a specified language that distinguish one word from another, for example *p, b, d,* and *t* in the English words *pad, pat, bad,* and *bat*.

Phonetics the study and classification of speech sounds.

Syllable: A unit of pronunciation having one vowel sound, with or without surrounding

	consonants, forming the whole or a part of a word; for example, there are two syllables in *water*.
Vocal cords	A pair of folds at the upper end of the throat that produce sound when air from the lungs moves over them.

11.7 BOOKS SUGGESTED

Dictionaries for Reference

1. Longman Dictionary of Contemporary English
2. Oxford Advanced Learner's Dictionary of Current English by A.S. Hornby 3rd edition (Revised and Updated)

Suggested Reading

1. Abercrombie, D., Elements of General Phonetics, Edinburgh, Edinburgh University Press, 1967
2. Balasubramanian, T., A Textbook of English Phonetics for Indian Students, Macmillan India Ltd., New Delhi, 1981

Here are some useful links which will be a kind of audio support to learn the above theory:

1. https://youtu.be/9bw
2. https://youtu.be/JwTDPu2TE6k
3. https://youtu.be/OXa-HvFliGU
4. https://youtu.be/e6NiCWR-2g4

❖ Answers

Check Your Progress-1

(a)

	/s/	**/z/**	**/b/**	**/j/**	**/d/**	**/p/**	**/m/**	**/t/**	**/v/**	**/g/**	**/f/**	**/h/**	**/n/**	**/ð/**
Voiced		√	√	√	√		√		√	√			√	√
Voiceless	√					√		√			√	√		

Check Your Progress-2

(a)

1. Plosive 2. Approximants 3. Tap 4. Complete oral closure 5. A trill 6. Fricative 7. Affricates 8. Stricture 9. Nasal 10. Plosive

(b)

1. True 2. False 3. True 4. False 5. True 6. True 7. False 8. True 9. True 10. False

Check Your Progress-3
(a)

Name	**Active Articulators**	**Passive Articulator**	**Example**
Bilabial	lower lip	upper lip	/p/ /b/ /m/
Labio-dental	lower lip	upper front teeth	/v/ /f//
Dental	the tip of the tongue	upper front teeth	/thief/ /this/
alveolar	the tip of the tongue	the teeth ridge	/t/ /d/ /s/ /z/ /n/ /l/
Post-alveolar	the tip of the tongue	the part just behind the teeth ridge	/r/
Palato-alveolar	the tip of the tongue	the part of the teeth ridge	/ts/ /d3/ **/3/** /S/
Palatal	the front of the tongue	the hard palate	/j/
Velar	the back of the tongue	the soft palate	/k/ /g/ /su**ng**/
Glottal	the vocal cords	---	/h/

(b)
1. True 2. False 3. True 4. True 5. False 6. True 7. True 8. True 9. False 10. True

(c)

	d	***k***	***ch***	***m***	***n***	***f***
Voicing	voiced	voiceless	voiceless	voiced	voiced	voiceless
The Manner of Articulation	plosive	plosive	affricate	nasal	nasal	fricative
The place of Articulation	alveolar	velar	palate-alveolar	bilabial	velar	labio-dental

Check Your Progress-4

Initial CC Cluster	**Initial CCC Cluster**	**Final CC Cluster**	**Final CCC Cluster**	**Final CCCC Cluster**
plastic, plural, prediction, prayer, blow, brain, transport, drill, cream, glow, free, thrive, statute	scroll, squash, square, splendid	gasp, clasp, camp, pant, melt, sold, task, blink, strange, pushed, went, mugs, wives, prince, bats	next, rests, molds, attempt, tempt, adopts, concepts	attempts, twelfths

Check Your Progress-5

(a)

Vowel sound	**Height**	**Backness**	**Roundedness**
/u/	close	back	rounded
/i/	close	front	unrounded
/æ/	half- open	front	unrounded
/ɔ/	half-open	back	rounded
/i:/	close	front	unrounded

(b)

Kite	/ai/	bite	/ai/	oil	/ɔi/	cow	au
shut	/ʌ/	get	/e/	boil	/ɔi/	fit	/i/
put	/u/	bat	/æ/	out	/au/	**a**bout	/ə/
cup	/ʌ/	past	/a:/	school	/u:/	pot	/ɔ/
big	/i/	near	/iə/	fool	/u:/	hurt	/ə/