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# UNIT 2 THE DESCRIPTION AND CLASSIFICATION OF CONSONANTS AND VOWELS

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## 2.0 OBJECTIVES

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In this unit, we discuss in detail, the criteria for describing and classifying consonants and vowels. We also understand the concept of monophthong and diphthong.

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## 2.1 DESCRIPTION AND CLASSIFICATION OF CONSONANTS

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### 2.1.1. Introduction

In Unit 1 we studied in detail the functions of each of the organs of speech that contribute to the production of speech sounds. All these organs were studied under three different systems, i.e. The Respiratory System, the Phonatory System and the Articulatory System. The shapes and positions assumed by each of these organs of speech modify the air passing out from the lungs to meet the air outside, and determine the quality of the sound produced. Thus for the production of different speech sounds the organs of speech take up different positions and assume different shapes.

We saw that the two broad categories of sound - 'vowel' and 'consonant' can be produced with the air passage free (vowels) and with the air passage completely blocked or narrowed so as to cause friction (consonants). We shall now describe consonants in terms of their production. In doing so we shall make use of the information we have on the functions of the organs of speech in Unit I.

## 2.1.2 Criteria for the detailed description and classification of Consonants

In order to describe and classify consonants we must provide answers to the following questions.

1. Is the air stream provided by the lungs or by some other organs?
2. Is the air stream forced outward or drawn inward? (egressive or ingressive)
3. Do the vocal cords vibrate or not? (voiced or voiceless)
4. Is the soft palate raised or lowered?
5. At what point/s does the articulation take place?
6. What is the manner of articulation?

and 2) As we have already said, most languages of the world use lung air for the production of speech sounds and it is the egressive air stream that they use. Thus the air stream mechanism is **pulmonic egressive**. This is true of all Indian languages except Sindhi, and also of English. In a brief description of the sounds produced in these languages therefore we do not need to ask the first and second questions every time.

- 3) To answer question 3 we need to ascertain whether the vocal cords vibrate in the production of a given sound or not. To ascertain this we need to repeat the experiment we described in Unit 1, that is, put your forefingers into your ears so as to plug them, and produce the given sound. If you can hear a hum during the production of the sound, the vocal cords are vibrating and the sound is **voiced**. If no hum or buzz can be heard then the vocal cords are not vibrating and the sound being produced is **voiceless**.
- 4) If the soft palate is raised to shut off the nasal passage, there is a velic closure, during which only oral sounds can be produced. If the soft palate is lowered, there is no velic closure, and therefore either nasal or nasalised sounds can be produced (see unit one for nasal and nasalised sounds).
- 5) **The point or place of articulation** is determined by the passive articulator. For example, if the front of the tongue (active articulator) is raised towards the hard palate (passive articulator) to make a complete closure or for a narrowing of the air passage, then the place of articulation is the palate, and the sound is a **palatal** sound.
- 6) **The manner of articulation** refers to the kind of closure or narrowing involved in the production of the initial sound in the English word butter, the two lips make a complete closure. The air that is compressed behind the closure is then suddenly released. For the production of the initial sound in the English word soap, there is no closure but only a narrowing caused by the raising of the tip and blade of the tongue towards the teeth ridge. There is thus a difference with regard to the manner of articulation of the two sounds, as also their place of articulation.

## 2.1.3 Place of Articulation

As we have just seen the place of articulation of a consonant is determined by the **passive articulator** that is involved in its production. It is for this reason that the sound is also named after the passive articulator. For example, the initial consonant in the English word goal, is called a **velar**, because the passive articulator involved in the production is the soft palate or the velum.

Let us consider the main places of articulation of consonants beginning with the front most articulators.

- (a) **Bilabial:** Those consonants in the articulation of which the (upper and lower) lips are involved. For example, the initial sounds in the English words, post, boast, meal, win and the Hindi words फल, पल, बल.
- (b) **Labio-dental:** Those consonants in the production of which the active articulator is the lower lip and the passive articulator is the upper teeth. The initial consonants in the English words fate and vow are labio-dental consonants.
- (c) **Dental** consonants are those in the production of which the active articulator is the tip of the tongue and the passive articulator the upper teeth. Examples of dental consonants are the initial consonants in the English words, thin and these and in the Hindi words, तान, थान, दान, धागा. However, the English consonants in these words differ from the consonants in the Hindi words in respect of the manner of articulation.
- (d) **Alveolar** consonants are produced with the blade of the tongue as the active articulator and the teeth ridge as the passive articulator. For example, the initial consonants in the English words tool, day, lip, nail, sit, zoo, and in the Hindi word सोना.
- (e) **Post-alveolar** consonants are those in the production of which the active articulator is the tip of the tongue, and the passive articulator the rear part of the teeth ridge. For example, the initial consonant of the English word red.
- (f) **Retroflex** consonants are produced with the underside of the tip of the tongue as the active articulator and front of the hard palate as the passive articulator. The tip of the tongue is curled back in such a way that only its underside articulates. For example, the initial sounds in the Hindi words एमाटर, छा, डर, छीला. English does not have retroflex consonants.
- (g) **Palato-alveolar:** For the production of palato-alveolar consonants (i) the blade of the tongue as the active articulator, articulates against the teeth ridge which is the passive articulator. At the same time the front of the tongue (active articulator) is raised towards the hard palate (passive articulator). For example the initial consonants in the English words chop, just, ship, and the sound represented by the spelling si in the words provision, revision.
- (h) **Palatal** consonants are produced with the front of the tongue as the active articulator and the hard palate as passive articulator. For example, the initial consonant in the English word yard.
- (i) **Velar:** For the production of velar consonants the active articulator, the back of the tongue articulates against the passive articulator, the soft palate. For example, the final consonants in the English words rock, bag, ring and the initial consonants in the Hindi words कड़ी, खड़ी, गली, पड़ी.
- (j) **Uvular:** The active articulator in the production of Uvular consonants is the back of the tongue, and the passive articulator the Uvula. For example, the initial consonants in the Urdu words क़लम (pen) and क़रीब (near). English and Hindi have no Uvular consonants.
- (k) **Pharyngeal:** The active articulator for the production of these consonants is the hindermost part of the tongue and the wall of the Pharynx. An example of a Pharyngeal consonant is the Arabic consonant represented by the spelling h in the word Mohammed. This consonant does not occur in English and most of the Indian languages.

- (l) **Glottal:** The articulators for the glottal sounds are the two cords which move closer resulting in a narrowing of the air passage. For example, the initial consonants in the English word hat and the Hindi word हथ.

Thus we have the main places of articulation to help us describe and classify the consonants of a large number of languages. It would be in place to point out here that some consonants require two simultaneous articulations — a primary articulation and a secondary articulation. In such cases there are two points in the oral tract at which an active articulator moves towards a passive articulator simultaneously. Take the example of the initial consonant in the English word watch. It is produced by bringing the lips together and at the same time raising the back of the tongue towards the soft palate.

#### 2.1.4 Manner of Articulation

As we have already seen **manner of articulation** refers to the specification of the kind of closure or narrowing in the production of a sound. In order to give a complete description of a consonant it is absolutely necessary to specify the manner of articulation. For example, if two consonants are described as voiced and as having the same place of articulation (such as the initial consonants in the English words dew and zoo which are alveolars) we cannot differentiate between them unless we also state **how** each one is produced, for they differ from each other only in respect of manner of articulation.

The classification of consonants according to manner of articulation, is done under the following categories.

- (a) **Plosive:** In the production of a plosive there is a complete closure of the articulators at some point in the vocal tract thus completing shutting off the air passage. The air is built up behind the closure and then suddenly removed, causing the sudden release of the blocked air with some explosive noise. For example, the initial sounds in the English words pit, bit, tip, dip, keep, goal are plosives - two are bilabial plosives, two alveolar plosives and two velar plosives, respectively.
- (b) **Affricate:** Affricates are produced by a complete closure of the air passage, followed by the building up of pressure behind the closure, and the gradual release of the blocked air. Affricates differ from plosives in respect of the third stage of production. Whereas the release of the blocked air is sudden in the production of plosives, the release of air is slow in Affricates because the articulators are drawn apart slowly. This results in some friction rather than an explosive noise as is the case in the production of plosives. For example, the initial sounds in the English words, choice and joy.
- (c) **Nasal:** Nasals are those consonants in the production of which there is a complete closure of the oral passage while the nasal passage remains open, so that the air passes freely through the nose. The velum is lowered to allow the air free passage through the nasal cavity. For example, the medial sounds in the English words simmer, sinner, singer (represented by the spelling mm, nn, ng) are nasal consonants. Similarly, the Hindi consonants म as in काम, न as in नाक, ज as in गुज are nasal consonants.
- (d) **Trill or Roll** Consonants produced by the intermittent taps of the active articulator against the passive articulator are called Trill or Rolls. No closure is involved in the production of these sounds. The repeated taps of the tip of the tongue against the teeth (or just behind it), or the uvula against the back of the tongue result in the intermittent passage of air between the articulators. English does not have any Trills or Rolls. However, in an extended and

emphatic articulation of the initial sound in the English words red, round for example, the resultant sound would be a Trill or a Roll.

- e) **Flap** Whereas the production of a roll consists of several taps of the active articulator against the passive articulator, the production of a flap involves only a single tap of the active articulator against the passive articulator. For example, in Hindi **ड़** in **टोड़** (break) is a retroflex flap and **र** in **फरी** (fairy) is an alveolar flap. In English, the **r** sound is very often produced as a flap when it occurs between two vowel sounds, for example, variety, various.
- f) **Lateral**: In the production of a lateral, though the centre of the oral tract is closed owing to a contact between the active and the passive articulator at some point in the vocal tract, the air escapes from the sides of the contact. This is possible because the rims of the tongue are lowered. Since the air can pass continuously the sound produced is a continual one that is, there is no obstruction to the passage of air. For example, the initial consonant in the English word left, or in the Hindi word **लम्बा** (tall).
- (g) **Fricative**: To produce a fricative there is no closure made anywhere, there is only a narrowing. The active articulator moves towards the passive articulator at some point in the vocal tract, so that there is a very narrow gap for the air to pass through. This causes audible friction. Since the air can pass continuously, the sound produced in this manner can be continued, unlike a plosive and an affricate. For example: the initial sounds in the English words below are fricatives: face, veil, think, those, see, zebra, sheep, have. The initial sounds in the Urdu words **खराब** (bad) and **ग़लत** (wrong) are also fricatives. In the production of fricatives the narrowing can take place in the centre of the vocal tract so that the air passes out into the outer atmosphere through the central passage. It can also take place on the sides so that the rims of the tongue move towards the upper teeth. There is a complete closure at the centre between the tip of the tongue and the centre of the teeth ridge so that the air escapes with friction through the narrowing on the sides of the vocal tract between the rims of the tongue and the upper teeth. Sounds thus produced are **lateral fricatives**. For example, the initial consonant in the Welsh word llan (church). English has no lateral fricatives.
- (h) **Frictionless Continuant**: Unlike fricatives (for the production of which the degree of narrowing is enough to cause audible friction in the sound produced) frictionless continuants are produced by a lesser degree of narrowing of the articulators so that the air passes out freely and no audible friction accompanies the sound produced. The sound can be continued. For example, the initial consonant in the English words reel, road, reason is a frictionless continuant in Standard British English, and the initial consonant in the Hindi words **बट**, **वीर**, **बायू** are also frictionless continuants.
- You must have noticed that the English consonant in the initial position in words like veil, vine, vow is a fricative and different from the frictionless continuant **व** in Hindi.
- i) **Semi-vowel**: Semi-vowels are vowel-like in phonetic form but function as consonants. For example, the initial consonants in the English words weight and yawn and the Hindi word **याद** (which is the same as the initial consonant yawn)

We must make a note of the fact that frictionless continuants and semi-vowels defined in strictly phonetic terms should be regarded as vowels because in their production there is no obstruction or narrowing in the oral passage to cause friction. But in many languages these sounds function as consonants, so they are generally grouped along with the consonants.

We shall now classify and describe consonants in detail using the criteria we have discussed.

- a) The sound represented by the letter **pp** in the English word copper
- i) The air stream is **pulmonic**
  - ii) The air stream is **egressive**
  - iii) The vocal cords are apart and do not vibrate. The sound is therefore **voiceless**.
  - iv) The soft palate is raised. The sound is therefore **oral**, not nasal.
  - v) The articulation takes place at the lips. The upper lip is the passive articulator and the lower lip the active articulator. The sound is therefore **bi-labial**.
  - vi) The sound is produced by a complete closure of the mouth, the building up of air pressure behind the closure, and then a sudden release of the blocked air with some explosive noise. The sound is thus a **plosive**.
- b) The sound represented by the letter **v** in the English word favourite.
- i) The air stream is **pulmonic**
  - ii) The air stream is **egressive**
  - iii) The vocal cords vibrate. The consonant is therefore **voiced**.
  - iv) The soft palate is raised and the sound is **oral**
  - v) The articulation takes place between the lower lip and the upper teeth. The lower lip is the active articulator, the former the passive articulator. The sound is **labio-dental**.
  - vi) The sound is produced by a narrowing between the upper teeth and the lower lip so that the air passes through the narrow passage with audible friction. The sound is therefore a **fricative**.
- c) The sound represented by the letters **nn** in the word banner.
- i) The air stream is **pulmonic**
  - ii) The air stream is **egressive**.
  - iii) The vocal cords vibrate. The sound is therefore **voiced**.
  - iv) The soft palate is lowered to let the air out through the nasal passage. The sound is therefore **nasal**.
  - v) The articulation takes place at the alveolar ridge. The tip or blade of the tongue (active articulator) makes contact with the alveolar ridge (passive articulator). The consonant is thus **alveolar**.
  - (vi) There is a complete closure of the air passage through the oral tract and the velum is lowered so that the air passes out through the nose only. Thus the sound is a **nasal**.
- d) The final sound in the Hindi word **पेड़** (tree)
- i) The air stream is **pulmonic**
  - ii) The airstream is **egressive**
  - iii) The vocal cords vibrate. The sound is therefore **voiced**.
  - iv) The soft palate is raised. The sound is **oral**.
  - v) The articulation takes place between the tip of the tongue curled back and the front of the hard palate. The sound is therefore **retroflex**.
  - vi) The tip of the tongue curls back and the underside makes a single tap against the front of the hard palate. The sound is thus a **flap**.
- (e) The sound represented by the letters **ll** in the English word follow.
- (i) The airstream is **pulmonic**
  - (ii) The airstream is **egressive**.

- (iii) The vocal cords vibrate. The sound is **voiced**.
- (iv) The soft palate is raised and the sound is **oral**.
- (v) The active articulator the tip of the tongue, articulates with the centre of alveolar ridge (passive articulator). The sound is therefore **alveolar**.
- (vi) While there is a contact between the tip of the tongue and the alveolar ridge the rims of the tongue are lowered to let out the air from the lungs through the sides. The sound is therefore a **lateral**.

### 2.1.5 A brief phonetic description of consonants

We have seen that in detailed Phonetic description of consonants the terms pulmonic and egressive are common to all the consonants, that is, the answers to questions (i) and (ii) are the same in all cases. We can therefore, take these answers for granted. Notice that except in the case of nasal consonants the soft palate is raised. Since the identification of nasal consonants is possible by answering the last question (vi), question 4 becomes redundant. Thus questions 1,2 and 4 need not be asked. As a result, it becomes possible to describe consonants briefly by answering questions: 3,5 and 6. Thus the consonants we have described in detail above can be described as

- (a) (iii) voiceless (v) bilabial (vi) plosive
- (b) (iii) voiced (v) labio-dental (vi) fricative
- (c) (iii) voiced (v) alveolar (vi) nasal
- (d) (iii) voiced (v) retroflex (vi) flap
- (e) (iii) voiced (v) alveolar (vi) lateral

We have thus described these consonants with reference to the **position of the vocal cords, the place of articulation and the manner of articulation**. A brief description of consonants must, of course, be made only after we have studied and understood what these terms mean, for only then can we identify consonants.

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## 2.2 DESCRIPTION AND CLASSIFICATION OF VOWELS

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### 2.2.1 Introduction

In unit 1 we saw that the two general classes 'vowel' and 'consonant' differed from each other in respect of the passage of the air-stream. In the production of a vowel there is no obstruction to the air in the pharynx and the mouth, nor is there any narrowing to the extent that it causes audible friction. Vowels generally have a 'hum' when produced. In other words, vowels are normally **voiced**. The features distinguishing 'vowel' from 'consonant' do not help us to distinguish between different vowels, nor do the criteria we have used in the previous section to describe and classify consonants. We have, therefore, to set up criteria for the description and classification of vowels; for example, the criteria should enable us to distinguish between the vowels in the English words, feed and food or between vowels such as those in the Hindi words दीन and दिन. The differences between vowels here are broadly of two types: **difference of quality**, as illustrated by the pair feed and food and **differences of quantity** as illustrated by the pair of Hindi words. Difference of quantity is a difference in the length of vowels. Difference of quality is more complex and needs to be examined in greater detail.

### 2.2.2 Criteria for the description of vowels.

Since the passage of air is free and unobstructed for the production of vowels, we have to determine the differences in their quality with reference to the modifications that take place in the shapes and sizes of the resonating chambers through which the tone passes, that is the pharyngeal cavity, the nasal cavity and the mouth. The soft

**palate, the lips and the tongue** are mainly responsible for the modifications of the resonating chambers. To identify and classify vowels, therefore, we must describe

- (a) the position of the velum: whether it is raised to produce oral vowels or lowered to produce nasalised vowels
- (b) the shape of the lips during the production of a vowel—whether they are spread, neutral or rounded and
- (c) the shape of the tongue, that is, which part of the tongue is raised and how high it is raised.

Of these factors we can clearly observe only the shape of the lips. Therefore, we can describe them in articulatory terms. The position of the soft palate is judged only by auditory perception. A vowel is oral or nasalised depending on the absence or presence of nasality in the vowel produced. As for the shapes of the tongue, we can feel only the extreme positions it takes, for example, when we produce the vowel in the English word bee, we can feel that the front of the tongue is raised very high towards the hard palate. Similarly, when we produce the vowel in the English word calm, we can feel that the back of the tongue is low in the mouth. Apart from these extreme positions, most other positions assumed by the tongue may differ so minutely from one another that the differences may be very difficult to notice. We cannot get any help from our sense of touch either, because there is no contact of the tongue with the roof of the mouth. For these reasons, most of the positions of the tongue are judged by auditory perception only. On the whole, vowels are best described in terms of both articulation and auditory impressions.

**2.2.3 The part of the tongue raised**

The parts of the tongue that are involved in the production of vowels are the **front** of the tongue which lies opposite the hard palate, the **back** of the tongue which lies opposite the soft palate when it is at rest, and the **centre** of the tongue which lies opposite the back of the hard palate and the front of the soft palate. The centre of the tongue is hard to determine and is imagined. The vowels produced when each of these parts of the tongue is raised are called **front, back and central** respectively. For example, the vowels in the English words neat, knit, net, are front vowels. The vowels in the English words, card, cod, cord, could, cooed, are back vowels. And the vowels in the English words bud, bird, are central vowels.

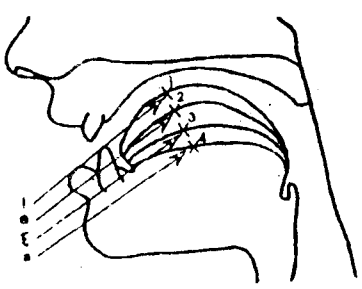


Fig.1 Tongue positions for the four front vowels

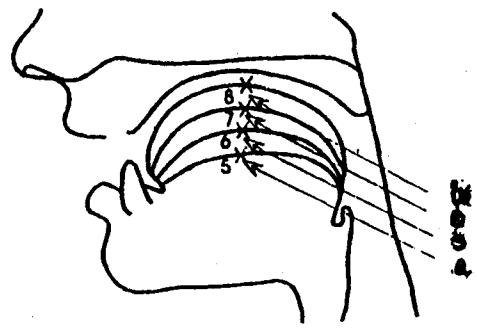


Fig.2 Tongue positions for the four back vowels

**2.2.4 The height of the tongue**

In the production of vowels any part of the tongue can be raised, but the height to which it can be raised is restricted so that there is no audible friction. Also, any part of the tongue can be lowered, but not beyond a certain point for the production of vowels. The figures above indicate roughly the parts of the tongue and how high they can be raised. The vowels produced when any part of the tongue is raised to the highest point are called close vowels. Those vowels produced with any part of the



tongue at the lowest point are called **open vowels**. For example, the vowels in the English words like feed and food are close vowels because to produce them (the front of the tongue in the case of feed and the back in the case of food) we raise the tongue to the highest point possible. The vowel in the English word balm is an open vowel because in producing it, the back of the tongue is at the lowest point possible.

When we consider vowels such as the ones in the English words beat, bit, bet, bat, how do we distinguish between them as they are all front vowels? It would be possible to do so only on the basis of the height of the tongue. But the close-open distinction does not enable us to distinguish between all of them, because our scale is not refined enough. To refine it we have other imaginary positions between close and open, that is, **half-close** and **half-open**, so that the positions close, half-close, half-open and open are equidistant. We can then distinguish between the vowels in bet and bat, for example, by describing them as a front vowel below the half-close position and a front open vowel, respectively.

### 2.2.5 The different lip positions

The lip positions are the only factor that can be observed in the production of vowels and a factor that is sometimes the only one to distinguish between two vowels for example, the vowels in the English words cost and cast are both back and open vowels. The lips are rounded for the production of cost and unrounded for the production of cast. Hence the importance of lip position in the description of vowels. The lips can thus be **spread** as for the vowels in the English word feel; **neutral** as for the vowel in the English word fur; **open** for the vowel in far; **open-rounded** for the vowel in rod and **close-rounded** for the vowel in rude. It is the general practice to regard the spread, neutral and open positions as **unrounded** and the other two positions as **rounded**.

### 2.2.6 Cardinal Vowels

If we look at the figures indicating the tongue positions for the production of vowels and combine them to represent the different tongue positions used to articulate the front and back vowels, we get the **vowel area**. This is however inadequate as a descriptive device. So the English phonetician Daniel Jones who evolved the system of **Cardinal Vowels** also evolved a vowel scale represented by a vowel diagram. In the diagram the parts of the tongue raised and the height of the tongue are depicted.

The position of the tongue are located on the two axis; one horizontal, from the front to the back of the mouth and the other vertical, from the roof of the mouth downwards. The eight cardinal points on the scale are equidistant not only spatially but also auditorily. It must be remembered that the **Cardinal vowels do not occur in any language**. They are useful as reference points to compare and describe the vowels sounds that do occur in a language.

In a description of the vowels of any language with reference to the eight cardinal vowels we need to add the position of the lips for each vowel in order to make it complete.

Using the eight cardinal vowels as reference points let us plot some vowels of English on the vowel diagram below and describe them using the three-term label.

The vowel in the English word feast is showed in a position close to cardinal vowel 1, and is a **front** vowel, between **close** and **half-close** but nearer the **close** position. (In addition, when we produce it, the lips are spread, in other words, unrounded). Hence it is a **front unrounded vowel**.

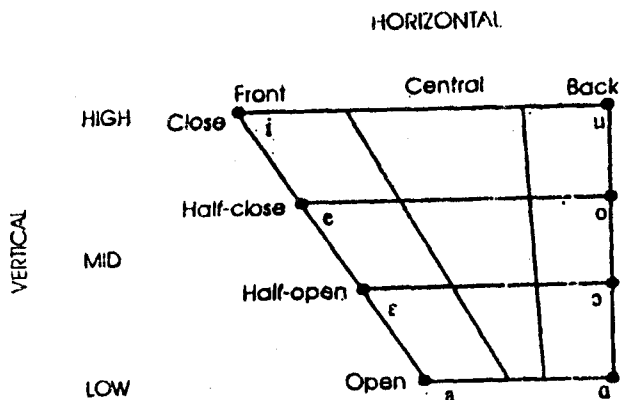


Fig.3 The vowel diagram

The vowel in the English word fast is shown as a **back open** vowel somewhat advanced. (In its production the lips are **unrounded**). Hence, it is a **back open unrounded vowel**. The vowel in the English word foot is a back (advanced) half-close (rounded) vowel. Hence it is a **back half-close rounded vowel**. The vowel in the English word curd is a central vowel between half-close and half-open. (It is unrounded). It is thus a **central, between half-close and half-open unrounded vowel**.

### 2.3 MONOPHTHONGS AND DIPHTHONGS

We have so far described vowels assuming that the position of the tongue remains unchanged throughout the process of their production. These sounds, in other words are called **monophthongs** or pure vowels. In addition to vowels that are produced by a single position assumed by the tongue, it is possible for the tongue to change its position during the production of a vowel. This change in the position of the tongue also bring about a change in the quality of the vowel. The movement of the tongue from one position to another is so gradual and smooth that it may be called a **glide**. The vowels produced as a result of such glides are called **diphthongs**. Diphthongs are **not** the same as a sequence of two monophthongs example, the vowels in the English word seeing are a sequence of two monophthongs, whereas the vowel in the English word fear is a diphthong. The monophthong in see is followed by another monophthong in the suffix -ing. The diphthong occurs within one syllable, while a sequence of two monophthongs is spread over two syllables. This concept of the syllable will become clear in unit 4.

### 2.4 LET US SUM UP

In this unit we have further expanded the meaning of the general categories 'vowel' and 'consonant' by examining the criteria for the description and classification of consonants and vowels. We have seen that separate sets of criteria are used for the description of vowels and consonants.

Consonants are best described in terms of their articulation. For a detailed description of consonants we must speak about the nature of the air stream, the state of the vocal cords, the position of the soft palate (raised or lowered), the place of articulation, the manner of articulation. If the vocal cords vibrate the sound produced is **voiced**, if it does not, it is **voiceless**. If the soft palate is raised, the nasal passage gets shut off and the sound produced is **oral**. If the soft palate is lowered, the nasal passage remains open and the sound produced is **nasal** (when the oral passage is closed).

According to their place of articulation, consonants can be classified as bi-labial, labio-dental, dental, alveolar, post-alveolar, retroflex, palato-alveolar, palatal, velar, uvular, pharyngeal, and glottal. According to their manner of articulation they can be classified as plosives, affricates, nasals, rolls, flaps, laterals, fricatives, frictionless continuants and semi-vowels. For a brief description, or identification of a consonant especially in English, we use this criteria: (i) voice or voiceless (ii) place of articulation and (iii) manner of articulation.

Vowels which are normally voiced, differ from one another in respect of quality or quantity or both. The quality of the vowel produced depends on the part of the tongue raised and the height of the tongue. Depending on the part of the tongue raised, the vowels produced are front vowels, central vowels and back vowels. Depending on the height of the tongue the vowels produced are close, half-close, half-open and open vowels. Using these two parameters a diagram has been evolved indicating 8 primary cardinal vowels with reference to which the vowels of all languages can be plotted and described. In a three-term description of vowels, the third parameter, i.e. the position of the lips (unrounded, rounded) is also essential.

In the production of monophthongs or pure vowels the position of the tongue remains unchanged. In the production of diphthongs the position of the tongue changes smoothly by a glide. A diphthong occupies a single syllable as does a monophthong.

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## **2.5 KEY WORDS**

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<b>Vowel:</b>	a speech sound whose production involves no significant obstruction of the airstream
<b>Consonant:</b>	any speech sound whose articulation involves a significant obstruction of the airstream
<b>Pulmonic air stream:</b>	the use of lung air in speaking
<b>Egressive air stream:</b>	producing a stream of air for speaking in which the air flows out of the mouth
<b>Ingressive air stream:</b>	producing a stream of air for speaking in which the air flows into the mouth
<b>Bilabial:</b>	a speech sound produced by putting the two lips together, such as /m/, /p/, /b/
<b>Dental:</b>	any consonant which is produced by putting the tongue on or near the teeth, such as English /θ/ as in <u>thin</u>
<b>Labio-dental:</b>	a speech sound produced with the upper lip and the lower teeth, such as /f/ or /v/
<b>Palatal:</b>	a speech sound produced by raising the front of the tongue towards the palate, such as /j/ of English <u>yes</u>
<b>Velar:</b>	a speech sound produced by raising the back of the tongue towards the velum, such as /g/ or /x/

<b>Pharyngeal:</b>	a speech sound produced by a constriction in the pharynx, such as Arabic / ʕ /
<b>Glottal:</b>	A consonant produced by closing the glottis completely for a moment. It is represented by the symbol / ʔ /
<b>Plosive:</b> (also known as stop)	a consonant produced by closing off the flow of air completely and then releasing it suddenly, example /p/, /d/, /k/.
<b>Affricate:</b>	a consonant in which a complete closure is made in the mouth and the closure is then released slowly, with friction eg /tʃ/ as in <u>church</u> , and /dʒ/ as in <u>judge</u>
<b>Uvular:</b>	a speech sound produced by pulling the back of the tongue towards the uvula, such as /X/ in Dutch.
<b>Lateral:</b>	a speech sound produced in such a way that airflow is completely blocked in the midline of the mouth while air flows along one side or both sides, such as /l/
<b>Fricative:</b>	a speech sound which is produced by forcing the airstream through a small aperture in the mouth, the obstruction produces a friction noise. Examples are /f/, /v/, /θ/, /s/, /z/ and /h/
<b>Frictionless continuant:</b>	a consonant sound which is produced without severely obstructing the flow of air in the mouth. Examples /j/ as in <u>yes</u> and /r/ as in <u>red</u>
<b>Semi-vowel:</b>	a speech sound which patterns like a consonant but is phonetically a brief vowel, such as /w/ in <u>we</u> or /j/ in <u>yes</u>
<b>Front vowel:</b>	a vowel during whose production the highest part of the tongue lies towards the front of the mouth, such as /i/, /e/ or /a/
<b>Back vowel:</b>	any vowel which is pronounced with the back of the tongue raised higher than any other part, such as /u/, /o/ or /ɔ/
<b>Close vowel:</b>	a vowel which is produced with the high part of the tongue about as high as it can go, such as /i/ or /u/
<b>Open vowel:</b>	a vowel which is produced with the highest part of the tongue as low as it can go in the mouth, such as /a/
<b>Cardinal vowel:</b>	a certain set of arbitrarily chosen vowel sounds. These are arranged in a kind of grid. The cardinal vowels serve as points of reference for identifying real vowels in actual languages.
<b>Monophthong:</b>	a pure vowel, such as /a/ or /e/, and so on.

**Diphthong:**

a single vowel which changes its quality noticeably during its pronunciation, as /eɪ/ of day and (aɪ) of die.

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## 2.6 EXERCISES

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1. Say whether the statement given below are true or false.
- (a) We cannot hear voiceless sounds ( )
  - (b) No sounds can be produced when the vocal cords are apart. ( )
  - (c) We must close the oral passage of air in order to produce a nasal consonant. ( )
  - (d) The active articulator determines the place of articulation. ( )
  - (e) If the soft palate is raised, no oral sound can be produced. ( )
  - (f) All vowels are oral. ( )
  - (g) Monophthongs can be fully described in terms of the part of the tongue raised and the height of the tongue. ( )
  - (h) The line close in the vowel diagram represents the highest point to which the tongue can be raised. ( )
  - (i) There is no articulation of the speech organs in the production of vowels. ( )
  - (j) Auditory perception plays an important role in distinguishing one vowel from another. ( )
2. Fill in the blank spaces in the following
- (a) A sound produced with the vocal cords wide apart is a -----sound.
  - (b) Sounds that perform the function of consonants but are phonetically vowels are called-----.
  - (c) In the production of vowels there is -----
  - (d) ----- are produced when the back of the tongue articulates with the soft palate.
  - (e) In the production of -----there is complete closure of the air passage.
  - (f) A brief description of consonants involves information regarding -----
  - (g) Cardinal vowels are -----for the description of the vowels of any language.
  - (h) The position of the tongue -----for the production of a diphthong.
  - (i) A three-term label to describe a pure vowels must state what part of the tongue has been raised-----and -----.
  - (j) Fricatives are produced by a ----- in the vocal tract so as to -----.

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## 2.7 ANSWERS

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### Exercise 1

- (a) false (b) false (c) true (d) false (e) false (f) false (g) false (h) true (i) false (j) true

### Exercise 2

- (a) voiceless
- (b) semi-vowels
- (c) no obstruction to the passage of air through the vocal tract.
- (d) Velar consonants
- (e) plosives
- (f) voice or voicelessness, place of articulation and manner of articulation
- (g) reference points
- (h) changes
- (i) the height of the tongue and the position of the lips.
- (j) Narrowing cause audible friction.