



Activity 1

This is an exercise on articulatory phonetics, which is one of the three main branches of phonetics. The other two branches of phonetics are acoustic phonetics and auditory phonetics. Here is a brief explanation about what they involve:

- 1) articulatory phonetics: this branch deals with the production of sound by a speaker.
- 2) acoustic phonetics: this branch deals with the transmission of sound from the speaker to the listener.
- 3) auditory phonetics: this branch deals with the reception of sound by the listener.

Given below are 25 consonants that are present not only in Sanskrit, an ancient Indian language, but in its daughter languages as well. These include Hindi, Marathi, Gujarati, Bengali, Sindhi, Punjabi, Oriya etc. We shall together try to arrange them into a 5*5 matrix according to their place and manner of articulation. Please hear the voice-recording to learn how these 25 sounds are pronounced. Each sound is pronounced twice in the recording.

j p th bh m k c ḍh ñ gh ṭ ṇ ṭh g t ch dh n ph b kh ṇ jh d ḍ

What is place of articulation?

It is the part of your mouth that you use to produce these sounds. The five parts, or combinations of parts, involved in this exercise are:

- 1) tongue touched to teeth (dental)
- 2) velum, which is behind one's throat (velar)
- 3) tongue rolled, and tip of tongue touched to the upper palate, that is, roof of the mouth (retroflex or cerebral)
- 4) tip of tongue simply touched to the upper palate (palatal)
- 5) upper and lower lips touched to each other (bilabial)

In this exercise, each of the five parts have been used to produce exactly five of the 25 consonantal sounds.

What is manner of articulation?

For this exercise, all you need to know is that it involves three components:



1) Time when you stop air flow: Note that all these 25 sounds are called ‘stops’ because they are produced by completely stopping the air flow which is done by shutting the vocal folds, or in other words, by blocking the vocal tract. These are different from continuants, such as vowels, which are produced by continuing the air flow through the vocal tract. Among the 25 consonantal stops, the air flow is blocked sooner than it is for others. Those which are produced by stopping the air flow relatively earlier are called ‘unaspirated’ stops, which those which are produced by stopping the airflow relatively later are called ‘aspirated’ stops. Of these 25, 10 are aspirated while the other 15 are unaspirated.

2) Whether or not vocal folds vibrate: if the vocal folds vibrate when the sound is being produced, then it is called a voiced stop, and if they do not vibrate when the sound is being produced, then it is called an unvoiced stop. Of these 25 sounds, 10 are voiced, while 15 are unvoiced.

3) nasality: If air flows through the mouth into the nose, producing a nasal sound, then the sound is called a nasal stop. In other cases, it is called a non-nasal stop. Of these 25 sounds, 20 are non-nasal, and 5 are nasal.

Manner \ Place	Unvoiced Unaspirated non-nasal	Unvoiced Aspirated Non-nasal	Voiced Unaspirated Non-nasal	Voiced Aspirated Non-Nasal	Voiced Unaspirated Nasal
Velar					
Palatal					
Cerebral					
Dental					
Bilabial					

How shall we enter the sounds into this table? Please follow the steps given below:

1) Classify the 25 sounds into 5 groups based on place of articulation. These five groups are Velar, Palatal, Cerebral, Dental, and Bilabial. Each of these five groups will have five sounds. Observe carefully which part or group of parts of the mouth is being used to produce the sound and categorize them accordingly.



Hints:

- t and th will fall into the same group, and so will k and kh, b and bh, ɖ and ɗh, and so on and so forth.
- Each group will have at least one nasal sound. Nasal sounds are represented by either m or n (with diacritics).

2) Once you have created these five groups, work on the Velar group. There will be one nasal sound, as mentioned above. Place it in the correct box. Then work on the remaining four sounds, that is, non-nasal sounds. Place your two fingers on your throat and try to pronounce them. Now look at the table given above and try to arrange them in the first four sections of the Velar row. Two of the sounds are unvoiced, that is, you will experience lesser vibrations of the throat on your fingers when you pronounce them. For the voiced ones, the vibrations experienced will be more. Now you will have two voiced and two unvoiced sounds.

3) Of the two unvoiced sounds, one is unaspirated, and the other is aspirated. Place two fingers on your throat and try to pronounce them. You will experience greater movement in your throat for the aspirated one, as you will throw out a greater amount of air to produce it as compared to the unaspirated one. Similarly, among the voiced sounds too, one is unaspirated and the other is aspirated. Use the same process to identify which is which.

Hint: In writing, the unaspirated sounds are without an h, while their aspirated counterparts always have an h. For example, t and th, k and kh, j and jh etc.

4) Repeat the same process for the Palatal, Cerebral, Dental, and Bilabial groups as well. Upon having filled out the table, read aloud the five groups from left to right as you have filled them out in the table. Also look up IPA (International Phonetic Alphabet) and try to locate these sounds on the IPA chart.

Thanks for your time, and congratulations for completing this exercise.