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RESEARCH ARTICLE **ARTS & HUMANATIES**

A COMPARISON BETWEEN ENGLISH AND BANGLA VOWEL SYSTEMS

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Abstract: The vowel is an important type of speech sound. Different languages have different sets of vowels due to their genetic and typological profile. Though the languages in the world share some common features, they are governed by language specific properties. This paper aims at finding out the phonetic and phonemic similarities and dissimilarities between the vowels in English and those in Bangla. The findings show that the vowels in English and Bangla share some common characteristics on the one hand; they are distinct by some unique features on the other hand.

Key words: Vowel, articulation, length, speech mechanism, properties

Introduction

Properties of phonetics and phonology are important in any language. Phonetics refers to the ways speech sounds are produced while phonology refers to the logical arrangement of the produced speech sounds in a language to form a higher unit or a unit beyond the phoneme. The production of speech sounds and their mechanism, as well as, their logical sequencing may vary from one language to another. For example, the length of a vowel in English is very important since the meaning of a word depends largely on vowel length whereas the difference of vowel lengths makes hardly any difference in the meaning of a Bangla word. The variation may be of different levels and of different degrees. Depending on the nature, levels and degrees of variation, languages of the world are classified into different language categories and families. For instance, Indo-European, Altaic, Afroasiatic, Austronesian according to the genetic classification; and according to the typological classification as Isolating, Inflecting and Agglutinative languages. As per genetic classification, languages are grouped on the assumption that languages have diverged from a common ancestor whereas as per typological classification, languages are grouped into formal similar structural types on the basis of phonology, morphology and syntax. Thus English belongs to the Germanic group of Indo-European language family according to genetic classification and it falls under the Isolating, Inflecting and Agglutinative category as per typological classification (Crystal, 1997). Bangla, however, belongs to the same language family but different subgroup—Magadhan (Frawley, 2003), the Indo-Iranian, more specifically the Indo-Aryan.

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Considering that English and Bangla belong to two different subgroups of the same language family, it is assumed that the vowel systems of these two languages vary on different levels and degrees. This paper thus finds it important to identify the commonalities and differences between vowels in English and Bangla. With this objective, the paper puts forward the following specific questions: (i) what are the properties of vowels in English and Bangla? and (ii) what are the similarities and differences between them?

The Vowel: Its definition and features

A vowel is a speech sound which is articulated with the air-stream passing freely through the oral or the oral and nasal cavities without any obstruction, closure or narrowing. Jones (1993: 23) says "A vowel (in normal speech) is defined as a voiced sound in forming of which the air issues in a continuous stream through the pharynx and mouth, there being no obstruction and no narrowing such as would cause audible friction". Similarly, Verma and Krishnaswamy (1997: 34) say "a vowel is a sound produced by the unobstructed passage of the air stream without the oral cavity being constricted enough to cause audible friction". The term 'vowel' is approached and defined variously by different linguists and phoneticians. The most common view is that "vowels are sounds in which there is no obstruction to the flow of air as it passes from the larynx to the lips" (Roach, 1997: 10).

The vowel can best be understood from the description of its basic features of articulation. A vowel can be described on the basis of (i) air-stream mechanism, (ii) state of the glottis, (iii) state of the velum, (iv) stricture involved, (v) height of the tongue, (vi) position of the tongue, (vii) quality of vowels, (viii) position of the lips, and (ix) distribution in a word.

Air-stream mechanism: Speech sound is the modification of air stream which is produced by air-stream mechanism. There are three main air-stream mechanisms such as pulmonic, glottalic, and velaric air-stream mechanism. The pulmonic air-stream mechanism consists of the lungs and the respiratory muscles. The walls of the lungs act as the initiator which is moved by the respiratory muscles so that air is drawn into the lungs or pushed out of them. When the air-stream mechanism is used to push air out, it is called egressive and when it is used to draw air in, it is called ingressive. The second main type of air-stream mechanism is glottalic air-stream mechanism where closed glottis acts as the initiator and the air in the pharynx is used. The last main type of air-stream mechanism is velaric air-stream mechanism in which the back of the tongue is the initiator and the air in the mouth is set in motion.

State of the glottis: The opening between the vocal cords is called glottis. During the production of speech sounds, the vocal cords are either drawn wide apart or loosely held together. Sounds produced when the vocal cords are drawn wide apart are voiceless whereas sounds produced when the vocal cords are loosely held together are voiced.

State of the velum: The velum or soft palate plays a very important role in producing speech sounds. The sounds become oral or nasal or nasalized due to the function of the soft palate. If the soft palate is lowered, the lung air passes through the nasal cavity and nasal sounds are produced. If the soft palate is raised, the lung air passes through the oral cavity and thus the oral sounds are produced. Sometimes, the soft palate assumes such a position that allows lung air to pass through both the oral and nasal cavities and produces the nasalized sounds.

Stricture involved: The term 'stricture' refers to the ways lung air is modified by different organs of speech. During the production of vowels, the active articulator and passive articulator assume

such a position that there is a gap between the two articulators through which the lung air passes freely without causing any audible friction.

Height of the tongue: Tongue movement plays a very important role in the production of vowels. Vowels are described and classified according to the height of the tongue. As per the height of the tongue, vowels can be described and classified as close vowels, half-close vowels, half-open vowels and open vowels. Close vowels are those vowels in the production of which the tongue rises as close to the roof of the mouth as possible. Open vowels, on the other hand, are those vowels in the production of which the tongue is lowered as far away from the roof of the mouth as possible. Half-close vowels are those vowels in the articulation of which the tongue occupies a position about one-third of the distance from close to open whereas during the articulation of the half open vowels, the tongue occupies a position about two-thirds of the distance from close to open.

Position of the tongue: During the articulation of vowels, the different parts of the tongue take part in action. Thus, based on the position of the tongue, vowels are described and classified as front vowels, central vowels and back vowels. Front vowels are those vowels in the production of which the front part of the tongue is raised towards the hard palate whereas in the production of back vowels, the back part of the tongue is raised towards the soft palate. Central vowels are those vowels in the articulation of which the central part of the tongue (i.e. between the front and the back of the tongue) is raised in the direction of the central part of the roof of the mouth (i.e. between the hard palate and the soft palate).

Quality of vowels: In the production of vowels, the quality may change or remain unchanged due to the different positions assumed by the tongue. If the quality remains unchanged, pure vowels or monophthongs are produced but if the quality changes, vowel glides or diphthongs are produced.

Position of the lips: The position of the lips is another criterion for the description and classification of vowels. During the articulation of vowels, the lips may be neutral or spread and rounded. If the lips are neutral or spread, the vowels are unrounded whereas if the lips are rounded, the vowels are rounded.

Distribution in a word: A vowel may occur in different positions in a word. However, there are some positions where a particular vowel may not occur due to the effect of neighbouring sounds.

Properties of English vowels

In English, there are twenty vowel sounds of which twelve are pure vowels and eight are diphthongs. The pure vowels are /i: /, /I/, /e/, /æ/, /a: /, /Ъ /, /ɔ: /, /U/, /u: /, /Λ/, / Ə/, and /ɜ:/, while the diphthongs are /eI/, / aI/, / ɔI/, / aU /, / ƏU /, /IƏ /, /eƏ/ and /UƏ/. The vowels have some common properties as well as some unique properties in terms of their articulation and distribution in a word. The common properties are the use of air stream mechanism, state of glottis, state of velum and stricture involved. In producing all English vowels, pulmonic egressive air stream mechanism is used. As far as the state of glottis is concerned, all English vowels are voiced since the vocal cords are held loosely together and there is vibration in the vocal cords when the lung is pushed out. The function of the velum remains the same during the articulation of all the English vowels, that is, the velum is raised and the nasal passage of air is completely closed. Therefore, the lung air passes freely through oral cavity producing all English vowels as oral. When the lung air passes freely through the oral cavity, there is no audible friction since there is sufficient gap between the active and passive articulators. Thus, all English vowels are produced with open approximation. Besides these commonalities among the vowels, each of them has certain unique

properties. The unique properties of English vowels are discussed below. As far as English pure vowels are concerned, these can be discussed with reference to Diagram 1.

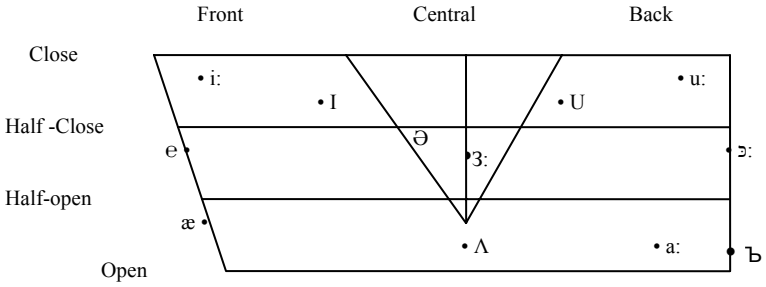

Diagram 1. English pure vowels.

Diagram 1 reveals that according to the height of the tongue English pure vowels are described and classified in the following manner: /i: / and /u: / are close vowels while /a: / and /ɐ/ are open vowels; /I/ and /U/ are just above the half-close position; /e/, /ɔ: /, /3: / and /ə/ are between half-close and half-open position; /æ/ is slightly below the half-open position and /ʌ/ is just above the fully open position. As per the position of the tongue these vowels are described and classified as: /i: /, /I/, /e/ and /æ/ are front vowels; /a: /, /ɐ /, /ɔ: /, /U/, /u: / are back vowels and /ʌ/, / ə/ and /3: / are central vowels. Based on the position of the lips, /i: /, /I/, /e/, /æ/, /a: /, /ʌ/, / ə/ and /3: / are unrounded vowels whereas /ɐ /, /ɔ: /, /U/ and /u: / are rounded vowels. On the basis of the length, /i: /, /a: /, /ɔ: /, /u: /and /3: / are considered long vowels while /I/, /e/, /æ/, /ɐ /, /U/, /ʌ/ are / ə/ are considered short vowels. For instance, long in 'bee' /bi:/ but short in 'be' /bI/. The distributional pattern of these vowels shows that /i: /, /I/, /a: /, /ɔ: /, /u: /, /3: / and /ə/ occur in all the three positions (word initial, medial and final) in the word while /e/, /æ/, /ɐ / and /ʌ/ occur in the initial and medial positions, and /U/ occurs in the word medial and final positions only.

English diphthongs, however, have some typical features which make them distinct from pure vowels. Besides these, each diphthong has some unique properties which bring differences among the diphthongs. Diagram 2 explores the properties of English diphthongs.

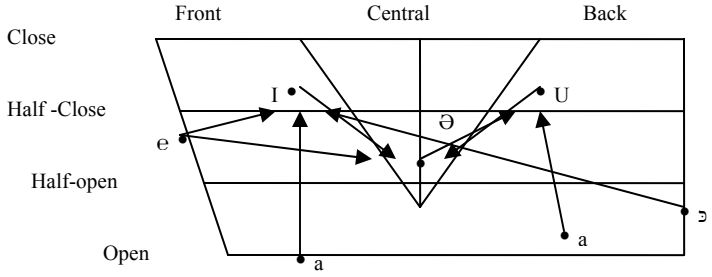

Diagram 2. English diphthongs.

As there is glide in the utterance of diphthongs, exact starting point of glide for each diphthong can be marked but it is difficult to mark the exact end point. Only the direction of the glide can be identified. Thus, according to the height and part of the tongue English diphthongs can be described as: for /eI/, the glide starts from /e/ and moves towards /I/; for / aI/, the glide starts from /a/ and moves towards /I/; for / ɔI/, the glide starts from /ɔ/ and moves towards /I/; for /Iə /, the glide starts from / I / and moves towards /ə/; for /eə/, the glide starts from / e / and moves

towards /Ə/; for /UƏ/, the glide starts from / U/ and moves towards /Ə/; for / ƏU /, the glide starts from / Ə/ and moves towards /U/;and for / aU /, the glide starts from / a/ and moves towards /U/ (The arrow shows the direction of the glide). When for the diphthongs the glide starts with /U/ and moves towards /U/, the lips assume round position in the beginning and at the end respectively. In other cases the position of the lips are either neutral or spread. As far as the length is concerned, English diphthongs are equivalent to long pure vowels. The length, however, varies considerably depending upon the environments in which they occur. The patterns of distribution indicate that /UƏ/ occurs only word medially and finally while all other diphthongs occur in all the three positions in the word.

Properties of Bangla vowels

Based on the parameter of the description and classification of vowels, it is found that all Bangla vowels are produced with pulmonic-egressive air stream mechanism. As far as the state of glottis is concerned, all Bangla vowels are produced as voiced. According to the function of the velum Bangla vowels can be articulated as oral and/or nasalized. When the lung air passes freely through the oral or the oral and nasal cavities, there is no audible friction since there is sufficient gap between the active and passive articulators. Thus, all Bangla vowels are produced with open approximation. Besides these commonalities among the vowels, each of them has certain unique properties. The unique properties of Bangla vowels are discussed below.

There is a controversy regarding the number of Bangla vowels. Chatterji (2002), Shaw (1996) and Islam (2002) say that there are seven pure vowels in Bangla which are /ই/, /এ/, / এ্যা/, /আ/, /অ/, /ও/ and /উ/ (see Diagram 3), while Hai (1985) and Huq (2002) mention that there are eight pure vowels in Bangla which are /ই/, /এ/, / এ্যা/, /আ/, /অ/, /ও/, /ও’/ and /উ/ (see Diagram 4).

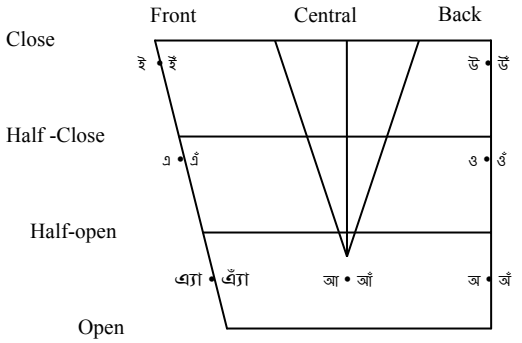

Diagram 3. Seven pure vowels of Bangla.

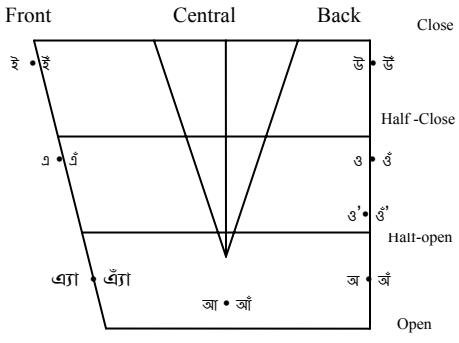

Diagram 4. Eight pure vowels of Bangla.

All these pure vowels (seven or eight) are oral. A unique property of these pure vowels is that these are produced as nasalized pure vowels also. When they are produced as nasalized, they are marked with / ঁ/, i.e. /ইঁ/, /এঁ/, / এ্যাঁ/, /আঁ/, /অঁ/, /ওঁ/, /ওঁ’/ and /উঁ/. Diagram 4 above reveals that according to the height of the tongue Bangla pure vowels are described and classified in the following manner: /ই/ and /উ/ are close vowels while /আ/ is an open vowel; /এ/ and /ও/ are half-close vowels; /এ্যা/ and /অ/ are half-open vowels; /ও’/ is slightly above half-open vowel. As per the position of the tongue these vowels are described and classified as: /ই/, /এ/, / এ্যা/ are front vowels; /অ/, /ও/, /ও’/, /উ/ are back vowels and /আ/ is a central vowel. Based on the position of the lips, /ই/,

/এ/, / এ্যা/, and /আ/ are unrounded vowels whereas /অ/, /ও/, /ও'/ and /উ/ are rounded vowels. The distributional pattern of these vowels shows that /ই/, /এ/, / এ্যা/, /আ/, /ও/ and /উ/ occur in all the three positions (word initial, medial and final) in the word while /অ / and /ও'/ occur in the initial and medial positions only.

As far as diphthongs are concerned, with regard to their number Chatterji (ibid) and Shaw (ibid: 330-31) say that there are twenty five diphthongs in Bangla which include /ইআ/, /ইও/, /ইউ/, /এই/, /এআ/, /এও/, /এউ/, / এ্যাএ/, / এ্যাও/, /আই/, /আএ/, /আও/, /আউ/, /অএ/, /অআ/, /অও/, /ওই/, /ওএ/, /ওআ/, /ওউ/, /উই/, /উএ/, /উআ/, /উও/ and /ইএ/ (see Diagram 5)

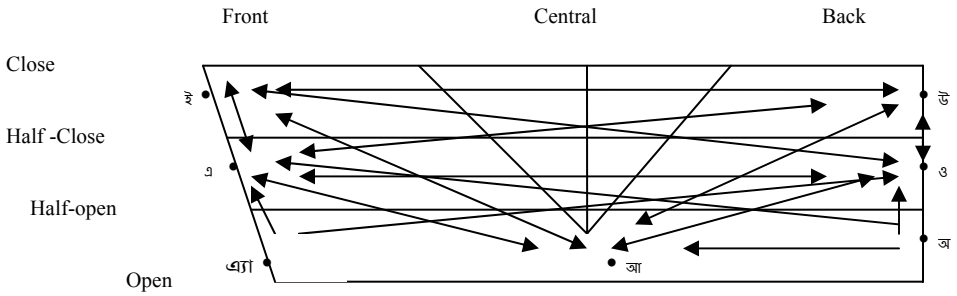

Diagram 5. Twenty five diphthongs of Bangla.

Hai (ibid: 27-29), however, says that the number of diphthongs is thirty-one of which nineteen are regular which are /ইই/, /ইউ/, /এই/, /এও/, /এউ/, / এ্যাও/, / এ্যাএ/, /আই/, /আও/, /আউ/, /আএ/, /অও/, /অএ/, /ওও/, /ওউ/, /ওই/, /ওএ/, /উই/and /উউ/, and twelve are irregular which include /ইআ/, /ইএ/, /ইও/, /এআ/, /এও/, / এ্যাআ/, /অআ/, /ওআ/, /ওএ/, /উএ/, /উআ/, and /উও/ (see Diagram 6 for regular and 7 for irregular diphthongs).The arrow shows the point of starting and the direction of glides for each diphthong.

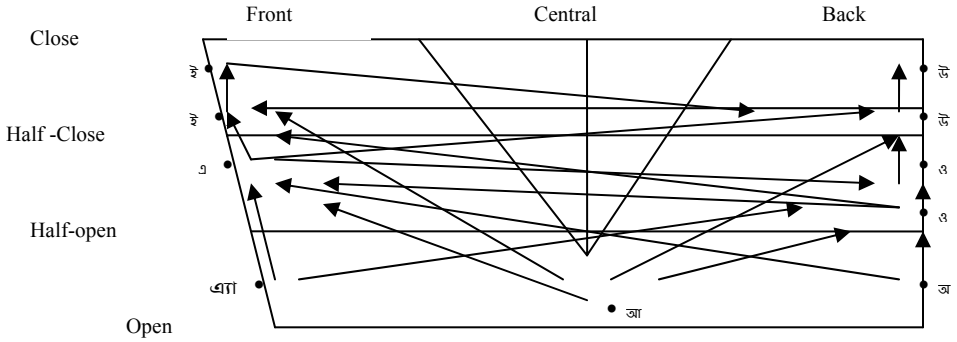

Diagram 6. Nineteen regular diphthongs of Bangla.

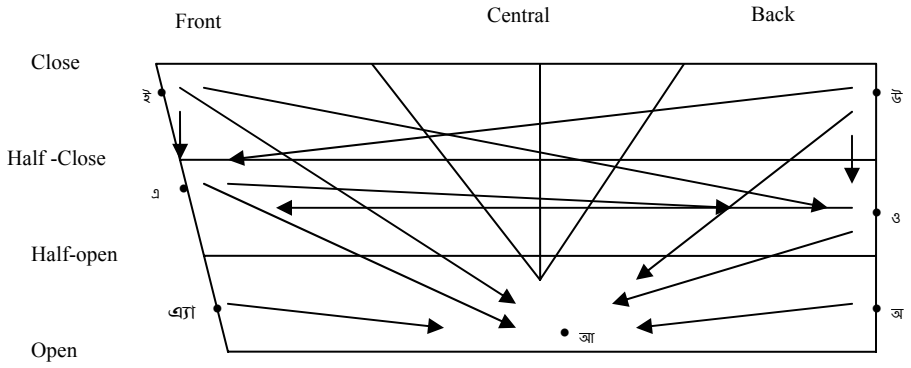

Diagram 7. Twelve irregular diphthongs of Bangla.

Comparison between English and Bangla vowels

From the preceding discussion it is observed that there are some properties common to both the vowel systems on one hand, and they are distinct on many grounds on the other hand. The similarities between the two vowel systems are presented in Table 1, while their differences are shown in Table 2 below.

Table 1. Similarities between English and Bangla vowels.

English vowels	Bangla vowels
All English vowels are articulated with pulmonic-egressive air-stream mechanism.	All Bangla vowels are articulated with pulmonic-egressive air-stream mechanism.
All English vowels are voiced.	All Bangla vowels are voiced.
All English vowels are articulated with the stricture of open approximation.	All Bangla vowels are articulated with the stricture of open approximation.
English vowels are described and classified as Front, Central and Back vowels, according to the position of the tongue.	Bangla vowels are described and classified as Front, Central and Back vowels, according to the position of the tongue.
Active articulators for English Front, Central and Back vowels are the front of the tongue, central part of the tongue and back of the tongue respectively.	Active articulators for Bangla Front, Central and Back vowels are the front of the tongue, central part of the tongue and back of the tongue respectively.
Passive articulators for Bangla Front, Central and Back vowels are the hard palate, central part of the palate and the soft palate respectively.	Passive articulators for Bangla Front, Central and Back vowels are the hard palate, central part of the palate and the soft palate respectively.
English vowels are described and classified as Close, Half-close, Half-open and Open vowels, according to the height of the tongue.	Bangla vowels are described and classified as Close, Half-close, Half-open and Open vowels, according to the height of the tongue.
English vowels are described and classified as Rounded and Unrounded vowels according to the position of the lips.	Bangla vowels are described and classified as Rounded and Unrounded vowels according to the position of the lips.
English vowels are described and classified as Pure vowels and Diphthongs according to the quality due to positions of the tongue	Bangla vowels are described and classified as Pure vowels and Diphthongs according to the quality due to positions of the tongue

Table 2. Differences between English and Bangla vowels.

English vowels	Bangla vowels
English RP has twenty distinct vowels.	There is controversy regarding the number of vowels.
There are twelve pure vowels.	There are seven/eight pure vowels.
There are eight diphthongs.	There are twenty-five/thirty-one diphthongs.
There are four front pure vowels.	There are three front pure vowels.
There are three central pure vowels.	There is one central pure vowel.
There are five back pure vowels.	There are three or four back pure vowels.
There are eight unrounded pure vowels.	There are four unrounded pure vowels.
There are four rounded pure vowels.	There are three or four rounded pure vowels.

All pure vowels are naturally oral but can be produced as nasalized if surrounded by nasal consonants.	All pure vowels are oral as well as nasalized.
Pure vowels are classified as long and short according to their length. There are five fully long and seven short vowels. Long vowel is marked with ':' as /i:/. Change in the length brings about change in meaning of the words.	All pure vowels are short. Length of vowels does not contribute to the meaning of the words.
One vowel sound is represented by one or more than one vowel letters, e.g. /i: / in 'theme', 'beat'.	One vowel sound is represented by one vowel letter consistently.
Vowel sound is represented by the full form of the vowel letter, e.g. /I/ is represented by 'i' in 'lift'.	Vowel sound may be represented by the full or short form of the vowel letter, e.g. full form 'ই' /I/ as in 'ইট' /It/ (brick); short form 'ি' as in 'কি' /kI/ (what).
In spelling or transcription the symbol that represents English vowels appears alone (e.g. /aI/, or before or/and after the consonant in a syllable (e.g. /æks/, /hI/, /bel/).	In spelling or transcription the symbol that represents Bangla vowels appears before or/and after the consonant or in case of some diphthongs consonant may appear between the first and second element of that diphthong in a syllable (e.g. /দিন/, /দান /, /দোল/).
The glide of English diphthong starts from one vowel and moves towards another (e.g. /aI/).	The glide of Bangla diphthong starts from one vowel and may move towards another or the same one (e.g. /ওই /, /ওও /).

Problems for the L1 Bangla speakers in learning English

Since there are commonalities and differences between English and Bangla vowels, L1 Bangla speakers seem to have the following problems in pronouncing English vowels: (1) general L1 Bangla speakers cannot articulate English vowels accurately, (2) they cannot maintain proper length of the English vowels, (3) they cannot follow allophonic variations of English vowels properly, (4) they cannot follow proper distributional patterns of English vowels, (5) they fail to distinguish between pure vowels and diphthongs in their use, (6) they pronounce English words as per spelling and (7) they tend to make equivalence between English and Bangla vowels.

Conclusion

English and Bangla are two different languages as they belong to two different subgroups of the Indo-European language family. In spite of having some commonalities, the vowels of English are different from those of Bangla in many respects such as number of vowels, function of velum, vowel length, and distributional patterns. These differences create difficulties for Bangla speakers in learning English or vice versa. Taking these differences into consideration, the following measures can be adopted for improving pronunciation of English vowels: (1) English pure vowels and diphthongs should be clearly articulated consulting a standard English pronouncing dictionary, (2) proper length of each vowel should be maintained, (3) the distributional patterns of English vowels should be followed properly, (4) allophonic variation of English vowels should be maintained carefully, (5) spelling guided pronunciation should be avoided, (6) omission, insertion, substitution and transposition of vowels should be avoided, (7) a particular variety of pronunciation, e.g. RP or BBC should be chosen and (8) sufficient exposure to English language has to be ensured.

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