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Developing English Pronunciation Among Students in Bangladeshi Universities: The Use of Segmental Elements

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Abstract

This study focuses on the proper uses of segmental elements of English pronunciation and compares theoretical knowledge and practical uses of segmental elements among tertiary students in Bangladeshi universities. The research is both qualitative and quantitative in nature, and is a combination of explorative, descriptive, and explanatory research. The study uses a questionnaire survey, diagnostic test, and Focus Group Discussion (FGD) as primary data collection instruments. The findings show that there remains a lack of motivation and negligence in the practical uses of segmental elements of English pronunciation while teaching in the universities in Bangladesh. Thus, mispronunciation by learners has become very common because their pronunciations tend to follow the spelling of English words. The absence of some English sounds (vowel and consonant) in the Bangla language also leads to pronunciation errors. The study recommends roles for teachers, learners, syllabus designers, and other stakeholders in developing effective pronunciation, leading to effective communication.

Keywords: Segmental English, English pronunciation, tertiary level.

Introduction

Every language is founded on its smallest linguistic units called sounds, and these sounds make up syllables; syllables form words; and words form sentences, which in turn form speech. So, sounds are the core elements for any language, and shape the pronunciation of words. These sounds are also known as segmental elements, and can be realized with consonant or vowel segments of words. It is not possible to know the appropriate pronunciation of an English word without knowing its sound system. Mirzaei et al. (2015, p. 57) have rightly noted “knowing a second or foreign language is not possible without knowing its sound system.” For example, in the case of the Bangla language, certain elements of English pronunciation are absent and some are different. As is the case for anyone learning a new language, the pronunciation of Bengali learners is influenced by their mother tongue, the pronunciation of their teachers, and local dialects spoken by the learner. “It is also impossible to disregard the effect of the first language sound system on the pronunciation of sounds of the second. The more these effects disappear, the more native like the learner’s sound” (Mirzaei, 2015, p. 58). Moreover, English language learners in Bangladesh do not get a supportive

environment to practice pronunciations in their institutions, as well as in their everyday conversations, and therefore remain weak in their ability to speak English.

For this study, we conducted a survey to find the roles of theoretical knowledge of segmental elements among students, and their ability to use them in English pronunciation. By analyzing the audio recordings of the respondents of the survey questionnaire, we examined how the respondents apply these theoretical tools to their English speech production and compared participants' English pronunciation of words, idioms, and phrases with English pronunciation as instructed in the dictionaries. Using Speech Analyser, we compared the sound intensity of the respondents' utterances with those elements of British standard speech through waveforms. Also, we conducted Focus Group Discussions (FGD), and obtained direct opinions of the respondents regarding teaching, learning, and practicing standard English pronunciation on their university campuses, and collected information on the roles played by the institutions and the teachers. This study makes recommendations on how Bengali learners can apply the elements of English pronunciation in their speech effectively.

Background of the Study

Even after 12 years of learning academic English, most tertiary level students are unable to acquire segmental elements of English pronunciation. For example, they do not use Received Pronunciation (RP), as there is little or no provision for learning pronunciation in the primary, secondary, and higher secondary curriculum in Bangladesh. Since the independence of the country in 1971, there has been little or no emphasis on listening and pronunciation in the teaching of the English language. Maniruzzaman (2012, cited in Rahman 2014) has explored the pedagogy of pronunciation in Bangladesh and identified the following reasons that contributed to the exclusion of pronunciation in the syllabus and curriculum at primary, secondary, and tertiary levels:

- Syllabus designers are ignorant of the significance of teaching pronunciation;
- Syllabus designers are uninformed about the needs of the students;
- Syllabus designers do not have training and expertise in designing syllabus for teaching pronunciation; and
- Academics coming from a literature stream might have willfully ignored teaching of pronunciation as not being important.

Harmer (2001) emphasizes that the first thing that native speakers notice during a conversation is pronunciation. Grammar and vocabulary are important elements of language and can be of less use if the speakers cannot pronounce those elements or words accurately. Communicative efficiency can be guaranteed by correct pronunciation. Pronunciation is an essential part of communication and without correct pronunciation, nobody should claim that he/she knows the English language fully.

Theoretical Aspects of English Pronunciation in Bangladesh

In Bangladeshi universities, English departments offer *English Phonetics and Phonology* courses at undergraduate and graduate levels that are loaded with theoretical aspects, i.e., speech organs, and the places and manners of the articulations of 44 sounds. These contain distinctive features of vowels and consonants, consonants and vowels of different languages, allophones and phonemes, stress, intonation, rhythm, Daniel Jones's Theory, Prague School Phonology, Sapir's Theory, Bloomfield and the Post Bloomfieldians, Prosodic Analysis, Distinctive Features Theory, Generative Phonology, and so on. Teachers who have in-depth theoretical knowledge make themselves busy with completing their syllabus and making learners understand all theoretical aspects. They do not get enough time to teach students practical aspects of the language, let alone practicing in the classroom, despite the availability of modern facilities and online resources. Hai and Ball (1961, p. 2) note that "a native speaker of a language acquires the habit of pronouncing each sound through constant exercises of the organs of speech in his or her childhood. The organs of speech of a native speaker get set in particular fashion in relation to the sounds of his or her language." Without sufficient practice of sounds, it cannot be expected that theoretical knowledge alone will develop learners' English pronunciation. As students are evaluated only through written examinations, they do not have any incentive to develop the elements of correct pronunciations practically. As a result, students receive a lot of theoretical knowledge, but never learn to apply this when speaking.

Students who are not in English departments rarely receive classes on English phonemes in functional English or business communication classes. English departments offer courses in *English Phonetics and Phonology* for BA Honors and MA in English Language Teaching (ELT), addressing theoretical aspects of pronunciation. Most teachers do not provide appropriate activities in the class to practice pronunciation (Alam, 2006). According to 97% of teachers, sufficient logistical support is unavailable to teach pronunciation (Abedin, 2010-2011). There are some expert ELT teachers in Bangladesh, most of whom are involved in designing syllabi for *English Phonetics and Phonology* courses. They prioritize theoretical aspects and the syllabus design and class teachers develop evaluation systems based on written examinations. We found one or two class tests on presentation and speaking, but there was no concentration on English pronunciation. Students were found to give importance to lessons that were likely to be on examinations and neglect English pronunciation. Due to the lack of teaching strategies or techniques for teaching pronunciation, the majority of English as a Foreign Language (EFL) teachers simply avoid pronunciation instructions and bypass these (Maniruzzaman, 2008). Howlader (2010) reveals that 80% of teachers need training on teaching pronunciation.

Practical Aspects of English Pronunciation

From the 1940s to the 1960s, pronunciation was regarded as an important component of English language teaching curricula both in the audio-lingual methodology developed in the US and the British System of Situational Language Teaching (Morley, 1991). Along with correct grammar, the accuracy of pronunciation was given a high priority in both these systems. From the late 1960s to 1980s, English language teaching changed radically. Plenty of questions were raised about pronunciation in the English as a Second Language (ESL) curriculum. There were questions about the importance of pronunciation as an instructional focus, questions about whether or not it could be taught directly at all, and questions about whether it could be learnt at all under direct instruction. As a result, very little new materials on pronunciation appeared. Teachers and learners were demotivated, and pronunciation lost its appeal. Morley (ibid.) mentioned that from 1980s to the 1990s there was a growing interest in revisiting the pronunciation component of the ESL curriculum for adults and young adults. An important part of this movement was pronunciation development in several Education Support Professional areas that were academic or occupational in nature. Pronunciation is an inbuilt aspect of a word. Pronunciation is the identity of a word, so it demands exact articulation. If it is executed in the wrong way, it loses its uniqueness and changes its meaning, thus creating an unintelligible message among communicators.

Expectations versus Practices of Teaching Segmental Elements at Tertiary Level

Most public and private universities in Bangladesh offer the aforementioned course *Introduction to Phonetics and Phonology/English Phonetics and Phonology* for one semester/trimester as part of the BA (Honors) in English / MA in ELT. These courses do not emphasize the theoretical aspects of segmental elements. In previous research, it was found that phonetic transcriptions are also not taught. So the students are deprived from practical uses of segmental elements of English pronunciation in their speech. Alam (2006), Khan (2007), and Maniruzzaman (2008) hold that most EFL teachers do not know useful strategies or techniques and do not provide any effective pronunciation activity in classrooms. Mumeneen (2011) confirms that no private or public university of Bangladesh offers any course in English pronunciation at undergraduate level.

Barriers to Developing English Pronunciation in Bangladesh

In most cases, Bangladeshi learners start learning the English language by imitating the pronunciation of their teachers, who are themselves influenced by their local dialects in their speech. They do not receive formal instruction or training in English pronunciation. In a similar way, they continue to practice speaking English without making the necessary corrections. Consequently, as some segmental elements of English pronunciations are unique and absent from the Bangla language, learners frequently mispronounce or substitute the near equivalent sounds when uttering English. Rivers (1968) opines that every foreign-language teacher should understand the principles of articulatory phonetics so that she/he can explain the particular difficulties one faces while transferring sounds from one language to the other.

Bengali learners start learning the English language by familiarizing themselves with the sounds of individual alphabets first, instead of knowing the sounds in the language. Then, they start memorizing words which are pronounced based on their spelling. In schools, students never become familiar with the Received Pronunciation (RP) sounds of English through IPA (International Phonetic Association) symbols in dictionaries. Wahiduzzaman (2017) highlights the problems that non-native speakers face in producing correct pronunciation, which they experience from the early days of their language learning.

Research Questions

Our research considers three major questions. These are:

- How does the tertiary or post-secondary education system in Bangladesh emphasize the practical use of segmental elements of English pronunciation in English language teaching and learning contexts?
- Are there any difficulties that post-secondary students in Bangladesh face while practicing segmental elements of English pronunciation? If yes, what are those difficulties and to what extent do students experience them?
- What remedial academic measures can be taken to ensure the effective use of segmental elements of English pronunciation at the tertiary level in Bangladesh?

Review of Literature

For this study, the researchers considered Received Pronunciation (RP) to be the standard for identifying learners' conditions of English pronunciation. According to the Collins COBUILD Advanced English Dictionary, RP is a way of pronouncing British English that is often considered to be the standard accent. According to the British Council (n. d.), RP refers to an accent in English regarded by many people as a "standard" accent. Also, it has been called "the Queen's English" or "BBC English." In the past, RP had a high status in the UK, indicating the prestige of an educated speaker, and RP became transferred to EFL over time. It has been used as a model for pronunciation in countries formerly colonized by the British.

Segmental elements are the smallest functional contrastive linguistic units which can be divided and can bring about a change of meaning. These are the parts of vocalic effects which are realized in the form of vowel and consonant sounds. In English, these sounds are divided into two categories – vowel sounds (20) and consonant sounds (24). According to the Oxford Advanced Learner's Dictionary, the 20 English vowel sounds are divided into two categories:

- Monophthongs: these are single pure vowel sounds. In English language, there are 12 monophthongs – /I, U, e, &, Q, @, V, i:, u:, O:, 3:, A:/ (Roach, 2009) and
- Diphthongs: these are the combination of two pure vowel sounds which glide from one vowel to another vowel. A diphthong is pronounced like a single sound. In English language, there are 8 diphthongs – /eI, aI, OI, I@, e@, U@, @U, aU/ (Roach, 2009).

According to Hai and Ball (1961), in Bangla language, there are 32 vowel sounds – 7 pure vowels, 7 nasal vowels and 18 diphthongs. Hai (1967) mentions 7 pure vowels, 7 nasal vowels, and 31 diphthongs – in total, 45 vowels. Morshed and Kalam (1972, pp. 24, 32-35) has identified 7 pure vowels, 7 nasal vowels, and 29 diphthongs – in total 43 vowels in the standard Bangla language. All 18 diphthongs are common in Hai's list. From Morshed's list of diphthongs, 'iO (ইঅ), e-e (এঃয়), a-a (আয়v)' sounds are absent in the list of Hai. Therefore, the extra 3 diphthongs will be added to the list of Hai and in total, there are 34 (31+3) Bangla diphthongs, as shown below:

- 7 pure vowels: / i(ই), e(এ), &(এ্যv), a(আ), O(অ), o(ও), u(উ)/
- 7 nasal vowels: / i~(ইঁ), e~(এঁ), &~(এঁtv), a~(আঁ), O~(অঁ), o~(ওঁ), u~(উঁ)/
- 34 diphthongs: /i-i (ইই), iu (ইউ), ia (ইয়v&), ie (ইঃয়), io (ইও), iO (ইঅ), ei (এই), eo (এও), eu (এউ), ea (এয়v&), ey (এয়), e-e (এঃয়), &o (এ্যvও), &y (এ্যvয়), &a (এ্যvয়v&), ai (আই), ao (আও), au (আউ), ay (আয়), a-a (আয়v), Oo (অও), Oy (অয়), Oa (অয়v&), o-o (ও ও), ou (ওউ / ওঁ), oi (ওই / ঐ), oy (ওয়), oa (ওয়v&), oe (ওয়য়), ui (উই), u-u (উউ&), ue (উঃয়), ua (উয়v&), uo (উঃয়v)/

(Five more different diphthongs in Hai's list from Morshed are: /ey (এয়), &a (এ্যvয়v&), o-o (ও ও), oe (ওয়য়), u-u (উউ&)/)

The above shows us that there are 48 (14+34) vowel sounds in the Bangla language, or 28 more vowel sounds than there are in English. For English vowels, the phonemic difference is marked by long and short vowel sounds, which changes the meaning of words. On the other hand, in Bangla vowels, there is no provision for long and short sounds for phonemic difference. The phonemic difference is realized through the nasalization of the same vowel sounds. In English vowels, there are no nasal vowel sounds. According to Hai and Ball, “Bangla vowels, however, have one peculiarity that English vowels do not possess. All Bangla vowels can be nasalized, independently of any nasal consonant. This nasalization can sometimes produce a difference in meaning” (1961, p. 10).

English consonant sounds are – / p, b, t, d, k, g, f, v, T, D, tS, dZ, s, z, S, Z, m, n, N, l, r, h, j, w/. These sounds create some interruption in our vocal organ. These are divided into two parts (Roach, 2009):

- a) 15 voiced – /b, d, g, v, D, dZ, z, Z, m, n, N, l, r, j, w/ and
- b) 9 voiceless – /p, t, k, f, T, tS, s, S, h/.

Voiced sounds are produced with the vibration of the vocal cords and voiceless sounds are produced without the vibration of the vocal cords. Each consonant is separate from its cognate sound and others in terms of place of articulation, voice quality, force quality, and duration in pronunciation (Catford, 1988; Roach, 2009; Jones, 2006).

Different linguists and researchers have presented Bangla consonants in different ways. According to Hai and Ball (1961), there are 30 consonant sounds in Bangla: 20 plosives – (ʈ/k/, ʈ/kh/, ʈ/g/, ʈ/gh/, ʈ/c/, ʈ/ch/, ʈ/j/, ʈ/jh/, ʈ/ʃ/, ʈ/ʃh/, ʈ/d/, ʈ/dh/, ʈ/t/, ʈ/th/, ʈ/dʰ/, ʈ/dhʰ/, ʈ/p/, ʈ/pʰ/, ʈ/b/, ʈ/bh/), 3 nasals – (g/m/, b/n/, ʈ/s/η/), 4 fricatives – (ʃ/f/, ʃ/s/, ʃ/h/, ʃ/r/), 1 lateral – (ʃ/l/), and 2 approximants – (q/y/, ʃq/w/).

Hai (1967) has classified 32 consonant sounds: 20 plosives – (ʈ/k/, ʈ/kh/, ʈ/g/, ʈ/gh/, ʈ/c/, ʈ/ch/, ʈ/j/, ʈ/jh/, ʈ/t/, ʈ/th/, ʈ/d/, ʈ/dh/, ʈ/t0/, ʈ/t0h/, ʈ/d0/, ʈ/d0h/, ʈ/p/, ʈ/pʰ, ʈ/b/, ʈ/bh/), 3 nasals – (g/m/, b/n/, ʈ/s/η/), 1 lateral – (ʃ/l/), 1 trill – (ʃ/r/), 2 flapped – (ʃ/r/, ʃ/rh/), 3 fricatives – (ʃ/f/, ʃ/s/, ʃ/h/), and 2 approximants – (q/y/, ʃq/w/).

In Bangla, there are some sounds that differ according to their places of articulation but they are heard as similar sounds, i. e. the three – /k, l, m/ sounds are different in places of articulation but their sounds are the same and so they are represented with the single sound (ʃ/f/). Also, the two – /R, h/ sounds are different in their places of articulation but represent the same sound which is (ʈ/j/). Therefore, regarding this issue of homophonous sound of the different phonemes in Bangla, we consider the 32 consonant sounds that the Hai’s model has presented (Hai, 1967).

Based on the research of Rahman (2014), pronunciation skills are connected to factors of age, background in learning pronunciation, aptitude, learner attitude and motivation, and native language. He points out that it might be difficult to achieve native-like pronunciation by the adult learners due to the effect of lateralization. Regarding the second factor, i. e. background of the learners, he argues that some speakers might have habitual or systematic phonological errors. Besides, motivation also determines success or failure in achieving phonological skills. Finally, learners’ native language skills may interfere negatively in attaining good pronunciation skills in their second language learning.

Howlader’s (2010) findings have suggested that 80% of teachers think that teaching pronunciation is significantly useful. Sixty per cent of teachers in that study reported that they fully used Communication Language Teaching (CLT) in teaching pronunciation, whereas 30% reported that they partially employed CLT to teach pronunciation. Further, 75% of teachers believe that RP (Received Pronunciation) or GA (General American) should be taught in the classroom. Ninety-five per cent of teachers believed that mutual intelligibility and comprehensibility should be emphasized, 90% of teachers thought that computer technology may be useful in teaching pronunciation, and 80% of teachers said that teachers need training on teaching pronunciation.

Hai and Ball (1961) have shown a comparative analysis between the sound structures of English and Bangla. They find that there are both similarities and dissimilarities between segmental elements of these two languages. They claim that Bangla speakers equate the 4 English sounds /@, V, 3:, A:/ with the simple Bangla sound /A/. They also mention that English /I@/, /e@/, and /U@/ diphthongs are not heard in Bangla.

Rahman (2008) identified that some difficulties were encountered by Bangla speaking learners of English. Firstly, Bangla speakers find it difficult to articulate English words maintaining exact vowel lengths; secondly, they cannot differentiate between English pure vowels and diphthongs; thirdly, they tend to follow spelling of English words to pronounce them. Imam et al. (2015) claimed that Bangladeshi learners cannot differentiate the distinction

between long and short vowels of English. Two vowels (/@U, 3:/) are absent from the standard Bangla vowel phoneme list. Bangla speakers tend to pronounce /h/ sound in these words – *where, what, which, when, why*; in Standard English it is not pronounced (Hai and Ball, 1961). Zaman (2008) suggested that in the pronunciation of Bangla speaking EFL learners, /f/ sound becomes /ph/ sounds; /v/ sound becomes /bh/ sounds; /tS/ sound becomes /s/ sound; /dZ/ sound becomes /z/ sound; /z/ sound becomes /dZ/ sound; /Z/ sound becomes /z/ or /dZ/ sound; /T/ (voiceless dental fricative) sound becomes /D/ (voiced dental fricative) sound; and /@/ sound becomes /&/, /V/ sounds. Abedin (2010-2011) found that 81% of students are uninformed about the concept of standard pronunciation. In addition, 91% of teachers and 76% of students said that regional accent influences English accent. Apart from this, 97% of teachers reported that sufficient logistical support is unavailable to teach pronunciation. Uddin and Monjur (2015) confirm that most of the teachers (90%) and students (80%) think that their regional accent has an influence on their English accent.

Li (2016) maintains that although English has become more disseminated globally and the importance of pedagogies for English has increased, the teaching of pronunciation has not received enough attention, especially in English education in Asian countries. According to Li (2016), once native Chinese students are affected by a negative transfer of their mother tongue, they may not be able to make themselves understood, and this may very likely contribute to their unintelligibility and incomprehensibility. Native Chinese speakers mistakenly say “You are lice” when attempting to say, “You are nice”. Thus, it is essential to enforce the regular practice of some phonemes which can be subject to a negative transfer of native Chinese speakers in learning English. According to Watson (2002), consonants such as /p/-/b/ or /f/-/v/ appear to be problematic for Arab speakers who are learning English. This occurs due to the absence of /p/, /v/, and /t/ in the Arabic language.

We have explained above that there are substantially more sounds in Bangla than English. In addition, there are some missing sounds (/z, Z, j, @, 3:, i:, u:, A:, O:, I@, e@, U@/) and some sounds that are different from English in terms of the places or manners of articulation (/p, t, k, f, v, T, tS, dZ, r/). Generally long sounds and diphthongs make strong syllables and take stress marks (") in English, which are pronounced with more force and take more time than other weak syllables formed by short sounds. This can be seen in the examples of the words “regard” - /rI" gA:d/ and “invite” - /In" vaIt/. Sometimes, changing the stress pattern can change the meaning of the word, e.g., absent (adj) - /" &bs@nt/, absent (v) - /&b"sent/. Strong and weak syllables make a rhythmic (high-low) tone in pronunciation (Roach, 2009). English is a “stress-timed language” (Hai, 1967, p. 243). Unlike English, there is no option of short or long sounds in Bangla, and all diphthongs are formed by two identical long sounds, e.g. / ai (আই)/, and also two identical sounds, e.g. /a-a (আঁআঁ)/, which make equally strong and lengthy syllables and take equal time to pronounce except for expressing any certain emotions. In short, there is no option for stressed/strong and unstressed/weak syllable. Although the Bengalis sometimes employ stress to express emotion, that does not change the meaning as it does in English, rendering Bangla a “stressless language” (Hai 1967, p. 243). Bangla is a syllable timed language or language whose syllables take approximately equal amounts of time to pronounce (British Council, n. d.).

Some English consonants have redundant elements (/p^h, k^h, t^h/), which add a native flavor to the speaking, but make no change of meaning, as it is phonetic, not phonemic. In Bangla, there are no redundant elements as Bangla is a phonemic language, i.e. it has the sounds /p, ph/, /k, kh/, and /t, th/. The accent used for British English is classed as non-rhotic – the phoneme /r/ is not usually pronounced except when a vowel follows it. In the Bangla language, there are three types of /r/ sounds in comparison with the RP. The symbol “i(/r/)” is like the RP /r/ sound and the other symbols “s(/r/)” and “T(/rh/)” are similar to the flap of the rhotic /r/ sound. This difference in English is phonetic, but phonemic in Bangla. So in Bangla, unlike in English, there is a difference in meaning when the sound changes from non-rhotic to rhotic or rhotic to non-rhotic. Consequently, these missing English sounds and the different and equally long Bangla sounds strongly influence the Bengali learners of English and create different pronunciations or lead to the mispronunciation of English words.

Research Methodology

Research Design and Nature

Our study employed a survey questionnaire to measure the theoretical and background knowledge of learners, role of teachers, role of institutions, and environmental issues regarding teaching, learning, and practicing segmental elements of English pronunciation by tertiary level students. The study employed a diagnostic test method to measure the strength and weakness of learners in using segmental elements of English pronunciation. There was also a Focused Group Discussion (FGD) to have an overall discussion with the respondents. The data obtained was interpreted in descriptive, statistical, and quantitative ways. The study used tables, diagrams, waveforms, and logical interpretation as data presentation tools. This research is both qualitative and quantitative in nature, following a mixed method approach. It is a combination of explorative, descriptive, and explanatory research.

Study Sample

Samples were taken randomly from both undergraduate and graduate students in three public universities and four private universities. A total of 373 respondents took part actively in the questionnaire survey. Among them, 100 respondents took part in the audio recordings for the diagnostic test. The number of the sample population was as follows:

Table 1: Respondents for Diagnostic Test from Total Sample

Faculty/Program/ Department	Total Respondents	Took the Diagnostic Test
Arts Faculty	50	20
Science Faculty	132	20
Commerce Faculty	53	20
English Department	87	20
MBA Program	51	20

To get the respondents' direct opinions about the present status of English pronunciation, the researchers arranged two Focused Group Discussion (FGD) – FGD-1 at a public university and FGD-2 at a private university in Dhaka. Both FGDs were moderated by the researchers and there were five participants in each. The participants were from three faculties (Science, Arts, and Commerce), English Department, and MBA Program, with two representatives from each.

Data Analysis

A questionnaire was developed for survey, and included reading materials (words, phrases, and idioms), audio recorder, and a responsive voice. JavaScript (JS) and check lists (for observation) were used for diagnostic test; some selected questions and audio recorders were used for the FGDs as data collection instruments.

Editing, coding, data entry, and multivariate analysis stages were used to analyze the collected data. The category of data analysis was mostly descriptive, with the use of some statistical and quantitative tools.

To analyze the survey data, researchers used the SPSS software, Microsoft Excel, and Percentage. For analyzing the audio data, Speech Analyser 3.0.1, responsive voice, JS, Windows media player, VLC media player, head phones, and soft copies of the E-E dictionaries were used. Also, the researchers used check lists to code the audio speeches into written format (phonetic transcriptions).

Speech Analyser (v. 3.0.1) is a computer program for acoustic analysis of speech sounds. It is developed and powered by a particular Language Technology called *SIL Language technology*. The researchers have used this speech analyzer to produce waveforms of the respondents' audio speeches. A waveform is a two-dimensional graphical representation of a sound. The two dimensions in a waveform display are time and intensity. In this paper (and in most of the literature), the vertical dimension is intensity, and the horizontal dimension is time (Mannell, 2018).

ResponsiveVoice, JS is an online based UK English text to speech solution. The researchers used this software to code the reading materials (words, phrases, and idioms) used in the research into standard UK English speech (audio). These audio formats of the UK English were used to produce waveforms by using speech analyzer to compare it with those of the respondents.

Discussion and Findings

Discussion on Survey Report

The survey informed the researchers about students' motivation, interest, and experience about learning English pronunciation (EP). It also focused on environmental support for their language development.

Table 2: Comparative Table for Survey Report

Faculty/Department	% of sample students (SS) who want to learn EP	% of SS who had an idea of what EP is about	% of SS who were motivated to learn EP	% of SS who learnt EP	% of SS who received theoretical knowledge of segmental elements of EP	Environmental support for practicing correct EP (%)
All respondents	96.5	70	44.5	36.2	13	Positive – 25.2 Negative – 74.8
Arts Faculty	100	56	50	14	14	Positive – 12 Negative – 88
Commerce Faculty	94.7	79.5	47.7	43.2	4.5	Positive – 30.3 Negative – 69.7
Science Faculty	100	49.1	18.9	35.8	6.6	Positive – 9.4 Negative – 90.6
English Department	95.4	89.7	73.6	37.9	36.75	Positive – 36.8 Negative – 63.2
MBA Program	96.1	47.1	7.8	37.3	0	Positive – 21.6 Negative – 78.4

Table 2 above shows that 96.5% of respondents had an interest in learning English Pronunciation (EP) for effective communication. About a third of them (36.2% of all respondents) had the opportunity to do so, 70% had an idea of what EP is about, and 44.5% were motivated to learn EP. Only 13% learned EP using knowledge of segmental elements of EP. They happened to be graduating in English literature and/or language. In practicing correct EP, the majority of participants (74.8%) thought that the environment was not supportive for them. This confirms the findings of Abedin (2010-2011) that 81% of students are uninformed regarding any concepts associated with pronunciation. Table 2 also shows that only 13% of students had knowledge and skills of using segmental elements, which meant that 87% did not have it.

Discussion on Audios of Words, Phrases, and Idioms

Table 3 shows the comparative study of “words” and “phrases and idioms” uttered by students.

Table 3: Segmental Elements of English Pronunciation (Part 1)

Faculty/Department	Content	Mean percentage of similar to RP	Mean percentage of correct aspiration	Mean percentage of /r/ prominence
All respondents	Words	32.5	35.6	79.4
	Phrases and idioms	15.8	18	83.5
Arts Faculty	Words	27.5	34	68
	Phrases and idioms	10	13.3	90
Commerce Faculty	Words	35.5	32	91
	Phrases and idioms	18	26.7	82.5
Science Faculty	Words	37	52	78
	Phrases and idioms	16	33.3	52.5
English Department	Words	37	38	74
	Phrases and idioms	16	6.7	97.5
MBA Program	Words	25.5	22	86
	Phrases and idioms	19	10	95

Respondents’ efforts to pronounce words, phrases, and idioms accurately is presented, with the accuracy level determined by the proximity of the students’ pronunciation to the RP Standard (the pronunciation given with IPA symbols in standard dictionaries) for “words” and “phrases and idioms”. Respondents correctly pronounced 32.5% of words and 15.8% of phrases and idioms. Good performance was found among the students of Science Faculty and English Department, i.e., they recorded as speaking correctly at 37% for words and 16% for phrases and idioms. The weakest performance was found among the MBA students, with 25.5% for words and 19% for phrases and idioms. The table shows that these students had very little idea regarding the use of segmental elements.

Students’ practical application of accuracy (similar to RP Standard) was found reduced from “words” to “phrases and idioms”. The reduction rates were:

Table 4: Reduction Rates from “Words” to “Phrases and Idioms”

“Words” to “Phrases and Idioms” Reduction Rates	Respondents
$(32.5 - 15.8)\% = 16.7\%$	All respondents
$(27.5 - 10)\% = 17.5\%$	Arts Faculty
$(35.5 - 18)\% = 17.5\%$	Commerce Faculty
$(37 - 16)\% = 21\%$	Science Faculty
$(37 - 16)\% = 21\%$	English Department
$(25.5 - 19)\% = 6.5\%$	MBA Program

The highest reduction rate of 21% was found among the Commerce and Science students, and the lowest was found among the MBA students. It disclosed that the participants’ practical performances regarding proper uses of segmental elements of English pronunciation are 50% less appropriate than “words” to “phrases and idioms”, except for the MBA students. These results reflect that the learners did not have the proper knowledge of IPA symbols given in dictionaries as they failed to use these elements correctly.

Students’ performance with respect to aspiration accuracy (similar to the RP Standard) regarding “words” to “phrase and idioms” were also reduced. The reduction rates were 17.6% for the students of all respondents, 20.67% for Arts Faculty, 5.33% for Commerce Faculty, 18.67% for Science Faculty, 31.34% for English Department, and 12% for the MBA Program. It reflected learners’ lower performance in applying aspiration while pronouncing two or more words at a time. These results reflect that the learners did not know the rules of proper aspiration.

It was also found that the /r/ sound was strongly prominent in students' speech from "words" to "phrases and idioms". However, a reverse application (from "phrases and idioms" to "words") of /r/ prominence was found among the Commerce and Science Faculty students. These results reflect the students' lack of practical knowledge of using the /r/ sound.

Table 5: Segmental Elements of English Pronunciation (Part 2)

	Most frequently mispronounced monophthongs	Less frequently mispronounced monophthongs	Most frequently mispronounced diphthongs	Less frequently mispronounced diphthongs	Most frequently mispronounced consonants
All respondents	/A:, 3:, u:/ /@/	/i:, O:/ /I, U, e, Q/	/@U, U@, eI/	/I@/	/v, tS, dZ, S, Z, j/ /jU@/
	Mean Percentage of the correct long vowels	Mean percentage of the correct short vowels	Mean percentage of the correct diphthongs	Mean percentage of the correct consonants	
	34	36.4	59.25	36.67	

Table 5 demonstrates the information regarding the most frequently mispronounced and less frequently mispronounced vowel and consonant sounds and the mean percentages of the correct vowel and consonant sounds. The most frequently mispronounced long vowel sounds in pronunciation were /A:, 3:, u:/ sounds and less frequently mispronounced long vowel sounds in their pronunciation were /i:, O:/ sounds. The most frequently mispronounced short vowel sound in their pronunciation was /@/ sound and comparatively less frequently mispronounced short vowel sounds in their pronunciation were /I, U, e, Q/ sounds. So, the problems with the application of sound length and missing sounds in speaking were marked. This affirms the findings of Hai and Ball (1961), Rahman (2008), and Imam et al. (2015) that Bangladeshi learners cannot maintain and differentiate vowel length in their English pronunciation, indicating their lack of awareness of the practical uses of English phonemes.

The most frequently mispronounced diphthongs in their pronunciation were /@U, U@, eI/ sounds and the comparatively less frequently mispronounced diphthong was /I@/ sound. In most cases, they pronounced the initial sounds of these diphthongs and omitted the last sounds; in addition, some of them substituted those initial sounds, i.e., /O:/ sound for /@U/ sound, /U, u:/ sounds for /U@/ sound, /e/ sound for /eI/ sound, and /I, i:/ sounds for /I@/ sound. The participants could pronounce the /ai, OI, I@, e@/ sounds but most of them pronounced these sounds as two portions separately; this meant that they gave a short break between the two sounds instead of gliding between them. Hai and Ball (1961) claimed that Bangladeshi learners pronounce the first part of the diphthongs and ignore the end part, thereby failing to glide in the pronunciation of these words.

Compared to the vowel sounds, the learners had fewer problems in pronouncing consonant sounds. The participants could pronounce two-thirds of the total consonant sounds properly but the remainder of the consonant sounds were not pronounced correctly and the problems varied depending on their local language/dialect. The most frequently mistaken consonant sounds in their pronunciation were the /v, tS, dZ, S, Z, j/ sounds. Almost all learners failed to pronounce the combined /jU@/ sounds. In most cases, the respondents tried to substitute similar sounds from their own language instead of the correct ones. We found that the respondents substituted different sounds for a single sound as well.

Measuring Segmental Elements

Among the waveforms (graphical pictures) shown below, the first one in all categories is the British English (BrE) sound, and the remaining five graphical pictures are sounds from the participants. From all categories of the respondents, random selections of waveforms were made for five participants' voice recordings. Only some of the compared waveforms (graphical pictures) are presented below. All of the following displayed waveforms of the segmental elements are for words. The words selected were limited to monosyllabic and disyllabic ones.

Comparative Waveforms of British English and Participants' English for Words

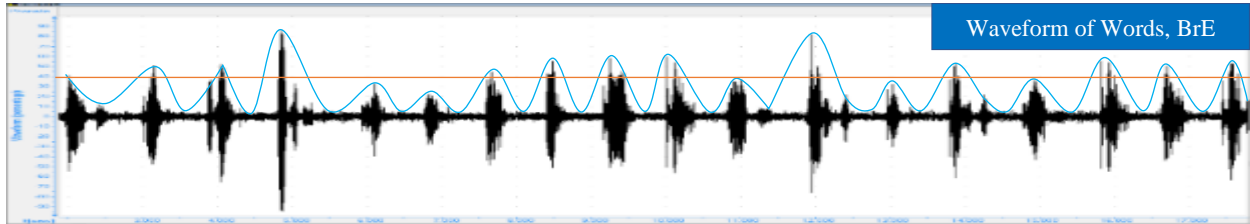


Figure 1: Waveform of British English (BrE) for words

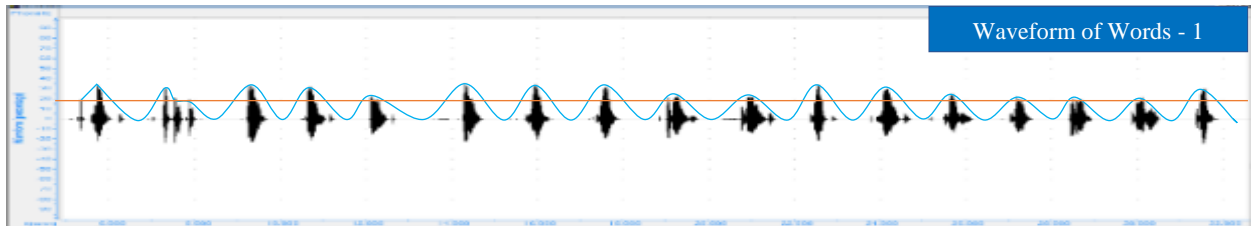


Figure 2: Waveform of the respondent-1 for words

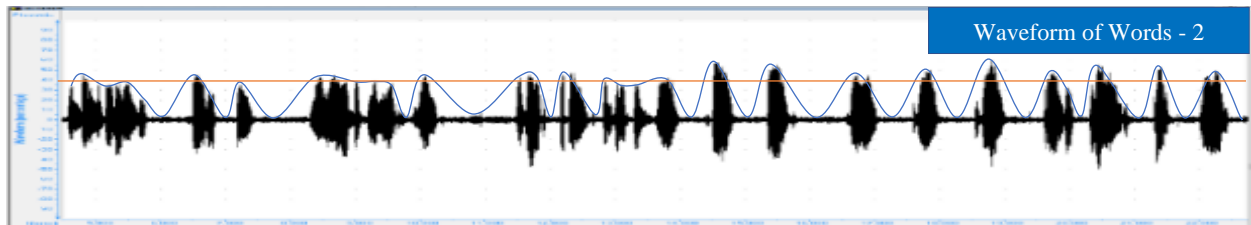


Figure 3: Waveform of the respondent-2 for words

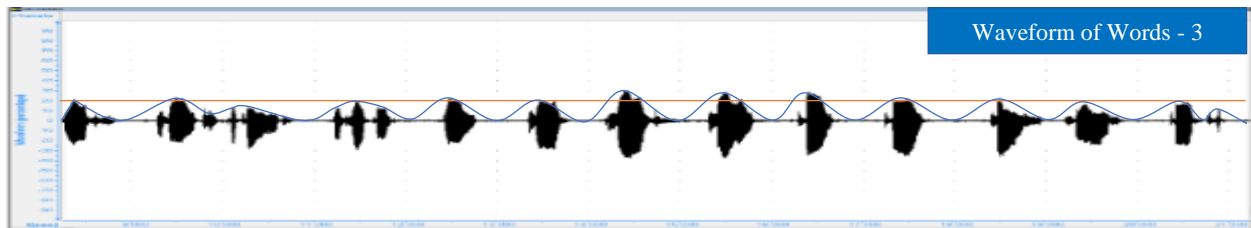


Figure 4: Waveform of the respondent-3 for words

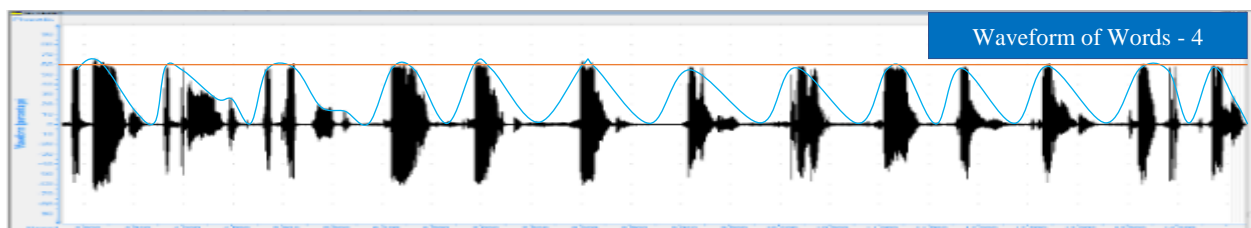


Figure 5: Waveform of the respondent-4 for words

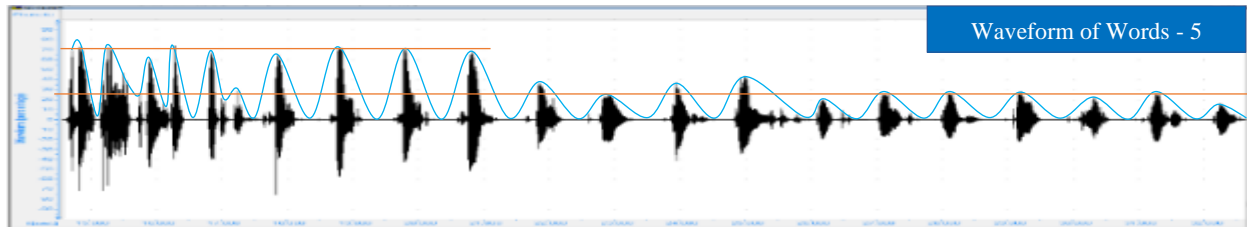


Figure 6: Waveform of the respondent-5 for words

Comparative Waveforms of British English and Participants' English for Phrases and Idioms

All the following displayed waveforms of the segmental elements are for the phrases and idioms.

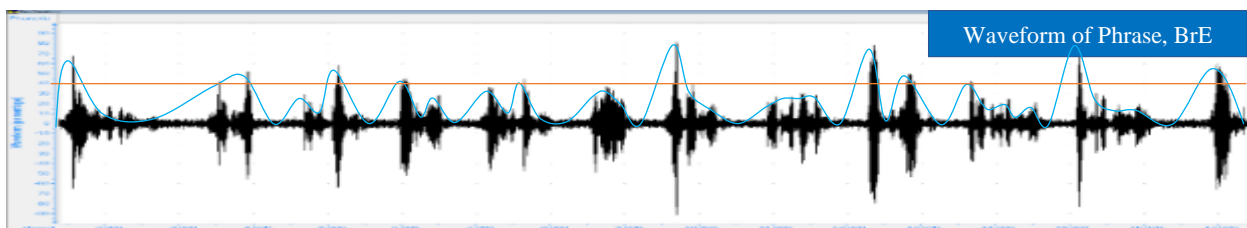


Figure 7: Waveform of BrE for phrases and idioms

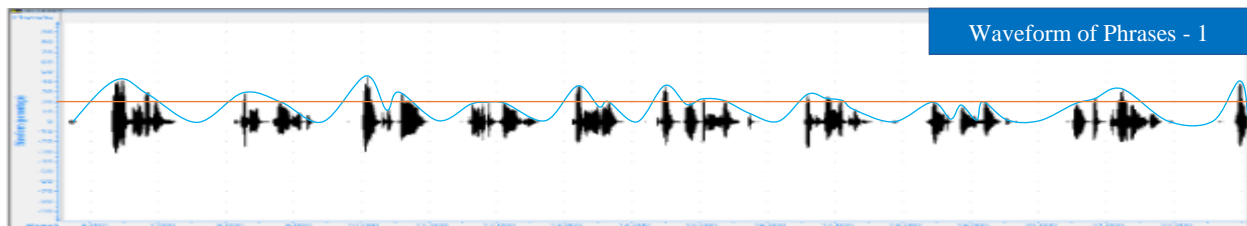


Figure 8: Waveform of the respondent-1 for phrases and idioms

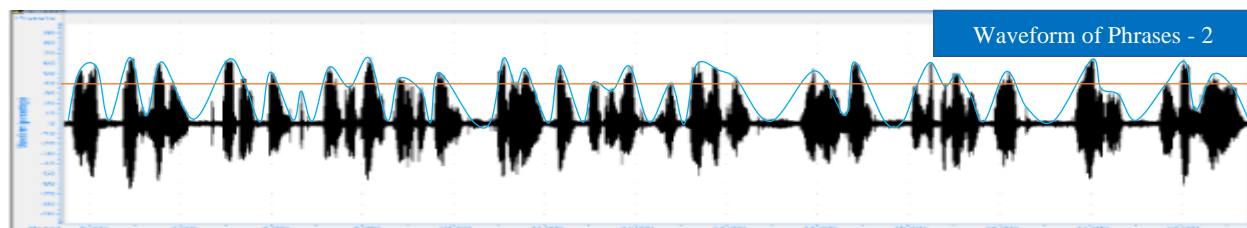


Figure 9: Waveform of the respondent-2 for phrases and idioms

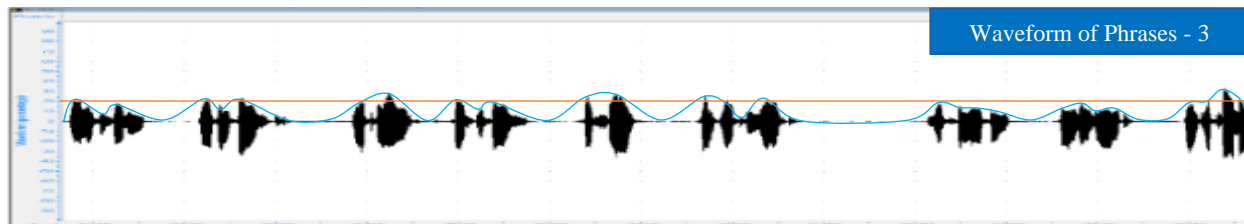


Figure 10: Waveform of the respondent-3 for phrases and idioms

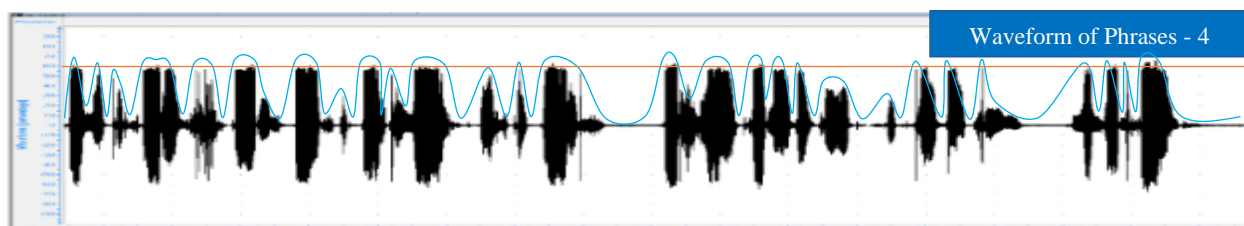


Figure 11: Waveform of the respondent-4 for phrases and idioms

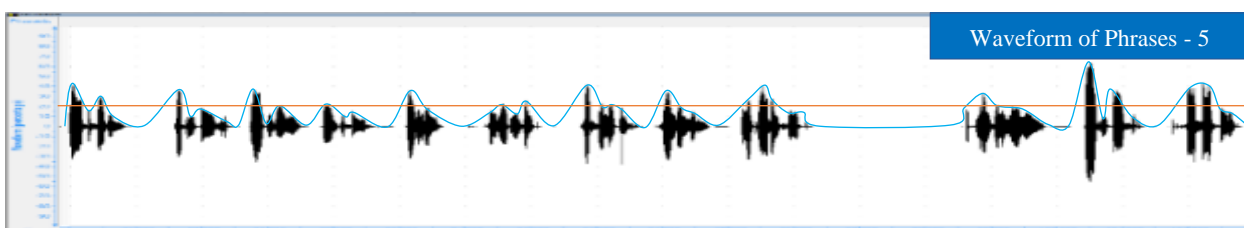


Figure 12: Waveform of the respondent-5 for phrases and idioms

Critical Analysis of Comparative Waveforms of British English and Participants' English

The analysis of the above waveforms is shown in Table 6. Specifically, we can see the comparative sound intensity of pronouncing segmental elements in English words, phrases, and idioms. The percentages, whether high or average in intensity, when pronouncing sounds in words, phrases, and idioms are shown below.

Table 6: The Intensity of Pronouncing Sounds in English

Audio materials	Result of BrE	Result of Respondent-1	Result of Respondent-2	Result of Respondent-3	Result of Respondent-4	Result of Respondent-5
Words	Max – 90% Ave – 40%	Max – 40% Ave – 20%	Max – 60% Ave – 40%	Max – 30% Ave – 20%	Max – 60% Ave – 60%	Max – 70% Ave – 25%
Phrases and idioms	Max – 80% Ave – 30%	Max – 40% Ave – 20%	Max – 65% Ave – 40%	Max – 30% Ave – 20%	Max – 60% Ave – 60%	Max – 60% Ave – 20%

The above wave pictures and Table 6 indicate that in the pronunciation of BrE for words, phrases, and idioms, the differences between the high peak and the average peak of sound intensity was nearly 50%. However, for Respondent-1, the difference is 20%; for Respondent-2, the difference is 20% to 25%; for Respondent-3, the difference is only 10%; for Respondent-4, there is no difference, and for Respondent-5, the difference is 40% to 45%. Only in the case of Respondent-5, the difference is comparable to the BrE standard. But the noticeable matter can be seen in Figure 6. The initial portion of the pronunciation of the words was equally high without any significant difference, and the last and large portion was equally low without major difference.

Table 6 and the display of the waveforms demonstrate that there was a substantial difference between the sound intensity of Standard British English (RP) and the participants of the Bengali learners. It reveals that the intensity and quality of the sound in pronunciation for Bengali learners were lower than British English standard. Again, the small or lack of distance or equal intensity between the high peak and the average peak of utterances (observed in the waveforms) does not reflect significant similarities or nearly similar rhythm when compared with the rhythm of RP. This indicates that the influence of the speaking pattern of (Bangla) syllable-timed language is strongly present. Therefore, the inability to practically execute practices of English segmental elements and influence of mother tongue were reflected prominently in the English pronunciation of those surveyed.

Discussion on Report from FGD

When asked about the number of vowel and consonant sounds in English, most participants answered incorrectly except for a few studying English literature and/or language, who could distinguish all 20 vowels and 24 consonants, but failed to recognize all 44 phonemes even though phoneme-chart was shown. This reveals that the 44 sounds were not taught in their academic English language classes, although this was supposed to have occurred. Regarding the motivation of their teachers for improving students' English pronunciation, most students answered negatively. However, they said they imitated the pronunciations of teachers, elders, and seniors. One or two students tried to develop pronunciation initially with the help of teachers as well as beyond academic institutions and online sources, but could not practice this properly due to the absence of a supportive environment. There were no resources or inspiration provided in academic classrooms, or their campus to practicing proper English pronunciation. Despite having interest in developing their pronunciation, students did not get proper academic or environmental support and guidance to do so.

Findings

The first finding of the study, shown in Table 1, indicates that 96.5% of students at tertiary level have a keen interest in attaining good pronunciation and that 80% of teachers think they need training to teach correct pronunciation; in recent years, a positive attitude has been developed among Bengali students and teachers with respect to English pronunciation.

The other findings of the study are listed below:

- Bengali students mostly start developing their English pronunciation from an early stage of life at schools, then, at colleges and universities without following the segmental elements. In most cases, they subconsciously substitute the lateral similar Bangla sounds for the exact ones, and their pronunciations do not attain the RP Standard.
- The Bangla language is a more vowel and consonant loaded language than English. These vowels and consonants substantially superimpose speakers' English pronunciation and shape their pronunciation to sound like their mother tongue (syllable-timed), in addition to the influence of local dialects.
- Bengali learners have very poor and scattered knowledge about the uses of segmental elements, insufficient practice, and lack of motivation to learn this at tertiary education level. They mostly tend to pronounce words based on spelling and deploy their own style, which does not match the RP Standard or pronunciation given with IPA symbols.
- Bengali students remain unfamiliar with the uses of segmental elements of English pronunciation from the early stage of their lives. Influence of their local languages was found prominently reflected in their English speaking.
- Almost all (96.5%) of learners at tertiary level have positive attitude towards learning correct English pronunciation for better communication, conveying proper meaning in conversation, building confidence, and obtaining better jobs or opportunities for higher studies in other countries but they lack sufficient guidance, scope, and support from their curricula, teachers, institutions, and other aspects of their lives.

- Of the students surveyed, 30.3% claimed that they had basic theoretical knowledge of segmental elements at the tertiary level but only 14.25% of the students could demonstrate this.
- Most students remain unfamiliar with the RP Standard or IPA symbols given in the dictionaries.
- The tertiary level educational environment was found to be favorable to only 25.5% of students for practicing correct English pronunciation.
- Learners had fewer problems in pronouncing diphthongs than monophthongs, and compared to vowel sounds, students had fewer problems pronouncing consonant sounds.
- The most frequently mispronounced long vowels were /A:, 3:, u:/ sounds and the comparatively less frequently mispronounced long sounds were /i:, O:/ sounds. In most cases, the participants failed to identify where these long sounds occur in pronunciation.
- /@/ (Schwa) sound was the most frequently mispronounced short vowel and comparatively less mistaken short vowels were /I, U, e, Q/ sounds. For all surveyed, the learners substituted /&/ sound for /@/ sound in the initial position of this sound. In the middle and final positions, they made it long, and made it sound similar to the /V/ sound. While pronouncing /I, U, e, Q/ sounds, the respondents made them unnecessarily long.
- /@U, U@, eI/ vowels were the most frequently mispronounced diphthongs and the comparatively less mistaken diphthong was /I@/ sound. The participants substituted /O:/ sound for /@U/ sound, /U, u:/ sounds for /U@/ sound, /e/ sound for /eI/ sound, and /I, i:/ sounds for /I@/ sound.
- The most frequently mispronounced consonant sounds were the /v, tS, dZ, S, Z, j/ sounds. Almost all learners failed to pronounce the combined /jU@/ sound in the words.
- In the Bangla language, the /i:, u:, A:, 3:, O:, @/, /I@, e@, U@/ vowel sounds are absent, creating problems for Bengali learners to pronounce these sounds.
- In most cases, students substituted other lateral equivalent sounds from their language for the exact ones. In the case of vowel sounds, this substituted percentage range was 50% to 100%, and for consonant sounds this range was 40% to 100%.
- Within words, the learners' correct uses of aspiration were 35.6%, and they were reduced up to 18% in pronouncing phrases and idioms.
- The /t/ sound seemed strongly prominent and increased from "words" to "phrases and idioms" with an intensity of 79.4% in words, and 83.5% in phrases and idioms.

Recommendations

Learners need more knowledge, practice, and practical application in communication. In teaching and learning of segmental elements of correct English pronunciation, the belief needs to be established among students that speaking English is interesting, fun, and necessary, rather than a source of humiliation. The following recommendations may be made for the concerned stakeholders:

Developing Segmental Elements

The number of segmental elements in English pronunciation is limited to 44. For developing these inseparable elements of English pronunciation, instructors can teach them by creating engaging methods, using real objects, and comparing them with the related Bangla phonemes in an interactive way so that the learners can distinguish, realize, and visualize the sounds.

Course Curriculum

The design of curriculum may put more emphasis on improving students' English pronunciation as these students have a strong interest in learning correct English pronunciation. Teachers involved in curriculum designing should be flexible and incorporate practical exercises to develop students' pronunciation skills.

Examination System

In the examination of English, there should be scope for testing listening and speaking skills with marks for good pronunciation, moving away from only written examination. Students always give importance to examinations; therefore, listening and speaking options in the examination can motivate the learners to better develop correct English pronunciation.

The Role of Teachers

Teachers should educate students to such a level in using segmental elements so that they can find and apply the pronunciation of the words written in the dictionaries using IPA. Teachers should teach learners that the English language is phonetic, or sound based, not phonemic or spelling based so that they are aware of the importance of using segmental elements of English pronunciation while speaking.

In the classroom, teachers should emphasize practical uses of segmental elements of English pronunciation and encourage learners to follow correct uses of segmental elements of English pronunciation in the classroom for good communication. To encourage students, teachers may allocate a portion of class test scores for good English pronunciation for oral presentations. Teachers may make a list of learners' mispronounced words and ensure that they practice correct pronunciation in class.

Teachers should also use modern technologies such as soft copies of English dictionaries, online dictionaries, and other resources in the classroom, and encourage students to use correct pronunciation outside classroom through practicing English when they speak with friends and others.

The Role of Students

The tertiary level students are adults, and therefore they should be more practical, conscious, concerned, and enthusiastic to overcome their problematic areas of English pronunciation. Students should also practice correct pronunciation and sounds outside classroom.

Environmental Issues

As correcting English pronunciation is a continuous and long process, the concerned authorities should create enough opportunities and a favorable environment for students to practice this on a regular basis.

Conclusion

This study has analyzed the theoretical knowledge and observed practical use of segmental elements of English pronunciation by tertiary level students in Bangladesh through an assessment of their overall performance regarding these elements. The study specifically showed comparative results of pronouncing segmental elements of English pronunciation by presenting established standards and comparing those to the present status of learners in Bangladeshi universities. It discussed teachers' roles in teaching, institutions' roles in designing syllabi, influence of local dialects, environmental issues, and learners' attitude towards learning and practicing segmental elements of English pronunciation. It also discussed problems found and the difficulties that learners face in using appropriate features of segmental elements of English pronunciation. Finally, the article discussed several recommended actions that could be taken by different stakeholders involved in this process.

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