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The Manifestation of English Dental Fricatives in Ghanaian Technical University Students' Spoken English

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Abstract

This study investigated the manifestation of the English dental fricatives /ð, θ/ in the speeches of Ghanaian students pursuing various HND programmes in one of the technical universities in the country. The study sought to identify the forms that the English voiced and voiceless dental fricatives manifest in the speech of the students using Distinctive Feature theory to explain the modifications. The researchers compiled sentences that contained words with the dental fricatives and made student participants read them for recording and transcription. The extracted pronunciations of the words containing the dental fricatives were compared to native speaker pronunciation using Merriam-Webster's English Dictionary. The analysis showed that at the word's initial position, the voiceless dental fricative /θ/ is articulated [t], while the voiced dental /ð/ is realised as [d]. At the word-final position, the voiceless dental fricative /θ/ occurs in the speech of the participants as either [t] or [f], while the voiced dental fricative /ð/ surfaces as [d] in all contexts, including word medial position. The study recommended that teachers adopt explicit teaching of English language phonemes to make students appreciate and master the articulation of these sounds to foster accurate pronunciation.

1. INTRODUCTION

The rise of English as a global lingua franca has significantly influenced individuals worldwide, compelling many to learn the language, even in non-English-speaking countries. This phenomenon is largely driven by globalization, which has integrated English into various domains such as business, education, and technology, making it essential for effective communication across cultures (Dewey, 2024; Melnyk & Kyselova, 2024; Akteruzzaman & Islam, 2017). Undoubtedly, people desire to learn and speak English because it has become a medium of international communication and a means of accessing modern technology and innovation (Shenbagam, 2024). In Ghana, every student takes the learning of the English language seriously because it is a crucial determining factor in one's advancement in education (Agbevivi, 2024; Anokye, 2022). Without a good pass in the English language, one is refused admission into tertiary institutions.

Regarding this, Ghanaian students are introduced to the learning of the English language from nursery (Anokye, 2022; Owu-Ewie, 2017). English is, therefore, a medium of instruction and a subject that is taught in all Ghanaian schools. However, as indicated by Mahmud (2018), the teaching of English to learners from non-native-speaking countries is becoming more difficult. The difficulty, as research findings have reported, arises from the efforts and energy teachers are required to invest in making their students overcome the problems they encounter in learning the language, especially in non-native speaking contexts. These challenges include linguistic issues such as grammar, vocabulary, and pronunciation, as well as non-linguistic factors like anxiety and lack of confidence. Addressing these obstacles necessitates a multifaceted approach (Agbevivi, 2024; Redjeki et al., 2023; Anokye, 2022).

English as a Second Language (ESL) learners often face significant challenges due to phonemic differences between their first language (L1) and English (L2). These challenges can lead to pronunciation errors, writing difficulties, and listening comprehension issues, primarily stemming from negative transfer effects of L1 phonetics and structure (Aryanika, 2024; Nuraini, 2024; Mirzayev, 2024). Thus, as pointed out by proponents of Contrastive Analysis, if it occurs that the target language and the native language of the learners are similar, the level of difficulty in learning the target language reduces (Tupamahu & Gaspersz, 2024). Unfortunately, however, as observed by Mahmud (2018, p. 3), "there are no two languages that are the same; even the same language may have several differences with regard to its use as might have been influenced by dialects." This observation about the learning of a second language has been emphasised by Ramelan (1985, p. 7), who explains that "the degree of difficulty in learning L2 is determined by the degree of difference between the L1 and the L2. The greater the similarity between the learners' mother tongue and the target language, the less difficult it will be for the L2 learners to learn and use the target language."

One of the core components of the English Language is phonetics and phonology, and the importance of this aspect has made it one of the core or compulsory subjects for students who are learning English. As a core aspect of the teaching and learning of English, students are required to develop knowledge of the articulation of the speech sounds in the target language (Aryanika, 2024; Nuraini, 2024). Teachers of English as a Second Language, therefore, need to adopt strategies and language teaching methods that can help their students obtain the skills needed for the articulation of the target language speech sounds, both vowels and consonants and how these sounds are produced with different phonetic characteristics. Supporting this observation, Roach (2009, p. 3) argues that "the theoretical material learned in phonetics and phonology is needed to understand the principles regulating the use of sounds in spoken English". Hence, Mahmud (2018) asserts that looking at the need for second language learners to develop the knowledge of English phonetics and phonology, "it cannot be denied that good pronunciation is the key to success in learning English". It goes to implicate the need for ESL to be meticulous in the selection and use of materials, course books, teaching methodology and skills so that their students can develop mastery of English phonetics and phonology if they want them to be consistent and accurate with their pronunciation of English words. Thus, as argued by Brown (2000), learners of English as a second language need to master the sound system and their acceptable combinations, as these imply their ability to pronounce English words correctly for effective communication. It becomes obvious, therefore, that the inability of learners of English as a Second Language to pronounce English words correctly constitutes a great barrier to their aim of achieving success in speaking English (Aryanika, 2024; Nuraini, 2024). The current study, therefore, explores how the various modifications L2 speakers of English in the selected technical university make to the English dental sounds result in the mispronunciation of English words that contain these sounds.

2. LITERATURE REVIEW

Phonetics and phonology of English is a staple part of the English language subject taught in the senior high schools of Ghana. Even though this aspect of the language is not explicitly named phonetics and phonology, students are taught the various speech sounds of the language and words within which they occur. Regarding this, one is right even to argue that the teaching of English speech sounds to students starts in primary school (Owu-Ewie, 2017). In senior high school, however, English speech sounds are taught under the broader aspect of Listening and Speaking, with the principal objective being the development of learners' skills in English sound articulation and pronunciation norms (Almihmadi, 2012).

Pardede (2019) observes that pronunciation instruction has long been so neglected in the field of second language (SL) and foreign language (FL) teaching. This has compounded the problems of L2 learners regarding the ability to obtain mastery of the correct pronunciation of English words (Almihmadi, 2012). It is observed that some English language teachers in Ghanaian schools have little interest in teaching pronunciation. This observation is confirmed by the fact that Listening and Speaking, the aspect of the English language syllabus that is intended to make students master pronunciation before they enter the tertiary level, is not given much attention as compared to the other aspects of the syllabus. This observation is consistent with the assertion of Gilbert (2010, p. 1) that pronunciation teaching in the second language teaching and learning context has become "something of an orphan in English programmes around the world." According to Celce-Murcia et al. (1996, p. 323), pronunciation instruction is "suffering from the Cinderella Syndrome—kept behind doors and out of sight" because it is the component of the SL/FL mostly excluded from all teaching programmes. Nonetheless, the importance of teaching phonetics and phonology of the target language (pronunciation instruction) in L2 classrooms, especially in classrooms that are communicative-oriented, cannot be overlooked (Aryanika, 2024; Nuraini, 2024). This is because the justifiable and pressing objective of teaching pronunciation is not to acquire native-like or 'perfect' pronunciation but to produce a comprehensible and intelligible speech (Gilakjani, 2012), in which intelligibility refers to "the extent to which a listener actually understands an utterance", and comprehensibility is "a listener's perception of how difficult it is to understand an utterance" (Derwing & Munro, 2005, p. 385).

Research has shown that learning English as a second language in a non-native-speaking context contributes to the learning difficulties learners encounter in the learning process. These learning challenges are reflected partly in the wrongful pronunciation of certain English words by L2 learners (Aryanika, 2024; Khasinah et al., 2024; Nuraini, 2024; Pardede, 2019; Almihmadi, 2012; Gilakjani, 2012). This implies that technical university students in Ghana are highly prone to pronunciation difficulties because they are non-native speakers of English and they are learning the language in Ghana, a non-native speaking context. What makes matters worse is the fact that Communication Skills, which is the English language course, does not have the teaching of phonetics and phonology or pronunciation as part of its content. The implication is that technical university students of Ghana do not receive any lessons on this aspect of the language.

Additionally, researchers, including Almihmadi (2012), have argued that the primary objective of teaching speech sounds to English as second language learners is to make them develop a thorough understanding of the various phonetic concepts that are necessary to appreciate points of similarity and contrast between their L1 and English and to improve their command over sounds and pronunciation norms of English. This implies that the lack of attention to the teaching of English sounds and pronunciation, in general, is a factor that triggers wrongful pronunciation of certain English words by non-native learners, including technical university students in Ghana.

In second language acquisition and learning, good pronunciation skills are considered very prominent in learners' ability to speak the target language and understand others during conversations. To ensure this, accurate production of L2 sounds is very crucial. According to Pardede (2018, p. 143), "without appropriate pronunciation, one's mastery of grammatical

rules and possession of rich vocabulary does not guarantee that he is able to speak effectively." Fraser (2000, p. 7) emphasises that "with good pronunciation, a speaker is intelligible despite his errors in other speaking subskills (vocabulary, grammar, and pragmatics); with poor pronunciation, understanding a speaker becomes very difficult, despite accuracy in other areas."

In the context of the ensuing discussion, empirical research has demonstrated that the existence of negative transfer in the second language learning situation leads to mispronunciation of L2 words (Kramsch, 2007). Al-khresheh (2013) observes that one of the causes of pronunciation errors in the speech of L2 learners is substitutions of L2 sounds with L1 sounds, a negative transfer. For instance, it has been reported that the English word *think* is pronounced as [*fink*] by Polish and [*sink*] by Egyptians; *people* is realised as [*beoble*] by native Arabic speakers, while *native people of Saudi Arabia actualise love* as [*laugh*]. It is also reported that the English word *fish* is realised as [*fis*] in Malaysia and *thirty* as [*dirty*] in India (Al-khresheh, 2016). These examples confirm the argument of Odlin (2003) that L2 learners tend to commit pronunciation errors due to the absence of certain English sounds in the phonemic inventory of the learners' L1. These errors explain the idea that various kinds of negative transfer errors occur in the speech of L2 learners, as implied by the Contrastive Analysis Hypothesis. These errors occur as the language learners attempt to draw from their L1 knowledge to help them in learning and use the target language (Al-khresheh, 2016; Odlin, 2003).

Concerning pronunciation errors that the phonemic difference between L1 and L2 creates, Swan and Smith (2001) indicate that Arabic learners of English commit errors such as *It is a fery nice fillage*, where the absence of the voiced labiodental fricative /v/ in Arabic makes the learners mispronounce words containing the sound /v/ by replacing it with its voiceless counterpart, /f/. In another study, Akteruzzaman (2016) reports that the L2 learners in Bangladesh substitute English sounds that do not exist in their L1 with the closest counterparts in their L1, and this results in mispronunciation of English words. For instance, the findings show that the sound /tʃ/ is replaced with /s/ when it occurs at the onset position of a syllable, while the voiced alveolar fricative /z/ replaces the voiced palatal affricate /dʒ/ (Akteruzzaman, 2016). The phonological contrastive study of English and Ibibio languages by Ogunsiji and Olanrewaju (2010) revealed that the voiced velar plosive/g/ is not part of the phonemic inventory of Ibibio language; therefore, native Ibibio speakers tend to substitute /k/ for /g/ in their pronunciation of English words. They argue that because the voiced alveolar fricative, /z/ is absent in Ibibio language, there is a tendency for the speakers of Ibibio to substitute /s/ for /z/ in their pronunciation of English words that contain the voiced alveolar fricative, /z/. This confirms Andi-Pallawa and Alam's (2013) findings that L1 speakers of Bahasa Indonesia tend to articulate / s / as / z / in English words, causing mispronunciation. Regarding the dental fricatives, Ogunsiji and Olanrewaju (2010) observed further that the unavailability of the dental fricatives /ð/ and /θ/ in Ibibio language results in errors in pronunciation of English words by Ibibio speakers, as they tend to produce /t/ instead of /θ/ and /d/ instead of /ð/. Utama (2018) also report that Balinese people mispronounce English words that contain the dental /θ/ by replacing it with /t/. Similarly, research indicates that the common pronunciation errors among Sudanese learners of English include substitution of the dental fricatives with alveolar stops (Awwali et al., 2024). Fatima et al. (2025) report that Shina ESL speakers also face significant challenges with English dental fricatives /θ/ and /ð/ because these sounds do not exist in the Shina language, leading to mispronunciation and the use of Shina phonemes as substitutes. Finally, Metruk (2017) observes that English dental fricatives [θ] and [ð] pose significant challenges for non-native speakers, particularly Slovak EFL learners, due to their absence in many native languages causing them to be replaced with [t] and [d], respectively.

Regarding these pronunciation challenges phonemic contrast creates, Waya and Kwambehar (2014) remark that the greatest problem that confronts speakers of English as a second language is the sharp contrast between the L1 and English. Confirming the premise of Contrastive Analysis hypothesis that in the event whereby most of the features of a learners' L1 do not exist in the second language, learning and speaking the target language become more difficult. Waya and Kwambehar (2014) observed further that, most Africans struggle in achieving mastery of pronouncing English words because English differs largely from most African languages when it comes to the phonemic inventory. Consequently, learners of English who speak these African languages as their L1 encounter numerous pronunciation challenges, which eventually result in observable errors in their verbal production of English words (Khasinah et al., 2024).

In this regard, the current study seeks to identify the realisation of the English dental fricatives, /θ/ and /ð/, in the pronunciation of English words by Ghanaian technical university students, and provide an explanation, using the Distinctive Feature theory, of the various modifications that the students make to these sounds in their speeches. The study also intends to ascertain whether the L1 plays a role in the realisation of the dental fricatives in the speech of the students.

3. METHODOLOGY

A research methodology emanates from theory, and both theory and method are entwined. Regarding this, the current study adopts Contrastive Analysis methodology because of the possibilities it provides in the understanding of the ontological manifestations of the effects of the unavailability of English sounds in the L1 of the students regarding their ability to pronounce English words correctly. The researchers employed purposive sampling method to obtain 40 Bachelor of Technology students offering programmes including Food Technology, Automobile Engineering, Agriculture and Environmental Engineering and Statistics and Finance. In drawing the sample, the researcher asked the students who were willing to participate in the study to write their names. After the interaction with the students, 50 wrote their names to participate in the study. However, on the day of data collection, only 40 of the students showed up. This includes 22 females and 18 males. Adopting a qualitative approach, the data was gathered from the reading of sentences by the research participants. The recordings were transcribed for identification and description of the realisations of the English dental fricatives. First of all, the researchers studied the phonemic inventory of English (Roach, 2009; Yule, 2010) and the L1 of the students, Ewe (Wornyo, 2016; Duthie, 1996) and Akan (Dolphyne, 2006; Agyekum, 2010). This enabled the researchers to confirm that the sounds /θ/ and /ð/ do not exist in the L1 of the student participants. Even though the research site comprises students from different linguistic backgrounds, those who speak Ewe and Akan constitute the majority, and the participants were sampled based on the criterion that Ewe or Akan is the L1. The assumption, according to Contrastive Analysis, is that the English phonemes which do not exist in the L1 of the students would cause the learners to mispronounce English words. The researchers then selected words which contain each of the English dental fricatives, /θ/ and /ð/, and used them to form sentences for the learners to read, with special attention given to the pronunciation of the words with the dental fricatives.

Additionally, the researchers ensured that the selected words have these sounds occurring at different syllable positions: initial, medial and final. As the words are pronounced through the reading of the sentences, the researcher recorded the students with an audio recorder for transcription and analysis. Thus, the study conforms to the assertion of Lampert-Shepel (2008, p. 214) that considering the methodology under which a study is conducted, the researcher "needs to find the basic concept or the so-called 'germ cell' (in this study, wrongful articulation of speech sounds in words) and follow the history of its development within the system of concepts". Lampert-Shepel (2008) explains further that the concept that is considered

the unit of analysis needs to be characterised with the inherent potential that makes it transformable from its original state to another. Therefore, the researchers considered the inability of the students to accurately articulate English dental sounds, /θ/ and /ð/, as a significant contributor to the students' mispronunciation of English words. Consistent with the assertion of Mackey and Gass (2015) that the activity which is considered the unit of analysis should be studied within its natural context, the researchers, apart from the sentences that contain the words with the dental fricatives, which the students were given to read, presented the students with the words to form their own sentences with them. These sentences were also read by the same student participants for recording and transcription. The output of the students, the transcribed words, were compared to native speaker pronunciation, using Miriam Webster's English Dictionary as the model of correct pronunciation of the words. Describing the realisations of the dental fricatives in the speeches of the research participants, distinctive features were employed.

In adhering to research ethics, the researchers ensured three key things: respect for research participants, beneficence and justice. In ensuring that the participants were respected, the researchers disclosed the nature of the study, the benefits and purpose of the study to them. The researchers allowed the participants to ask any question about the research that they needed clarification. None of the research participants was coerced to participate in the research. Regarding beneficence, the study participants were informed about the importance of the study. The researchers explained to them that the study was purely for academic purpose without any commercial gains. However, the researchers made it known to them that the findings of the study could help educational policy makers and inform change in our educational system, especially concerning the teaching of phonetics and phonology of English. Concerning justice, the researchers did not offer preferential treatment to some specific participants. The researchers ensured that all participants were given the same conditions and treatments during the study period. The study participants were adequately informed of the purpose of the study and assured of the confidentiality and anonymity of the information they provided regarding the study. In ensuring voluntary participation in the study, participants were informed that their involvement in the study was of their own free will and they could withdraw from the study at any point, even after the process had begun. The consents of participants were sought by entreating them to write their names on a piece paper and sign their signatures against their names as a form showing their consent, after the purpose of the study had been explained to them. The actual names of participants were replaced with pseudonyms to ensure anonymity and confidentiality.

4. RESULTS

The data show that there are numerous instances in the speeches of the participants of the study whereby the voiced and the voiceless dental fricatives were not correctly articulated, leading to mispronunciations of the words that contain these sounds. As typical anterior sounds, these fricatives are appropriately articulated when the tip of the tongue occurs between the lower and upper teeth. Unfortunately, most of the participants had difficulty in making this articulatory gesture, leading to observable deviated forms of the sounds. These observable errors identified in the pronunciation of the participants conforms to the prediction of contrastive analysts that areas of differences between the L1 of the language learner and the target language would create learning challenges for the learner. Thus, in conformity to this prediction, the students who participated in the study subjected these two dental sounds in English to various processes of modification to make English words which contain /θ/ and /ð/ less marked to enhance their ease of pronunciation.

Table 1 below presents the realisations of the voiceless dental fricative at the initial positions of words. In Table 2, we present the realisations of the voiceless dental fricative at the word final positions in the speeches of the student participants.

***Table 1: Words with the sound* /θ/ at the initial position**

Word	***Received Pronunciation/ θ/***	***Deviated pronunciation /t/***
thief	*/θi:f/*	*[ti:f]*
theme	*/θi:m/*	*[ti:m]*
thank	*/ θæŋk/*	*[tæŋk]*
thin	*/θɪn/*	*[tɪn]*
thought	*/θɔ:t/*	*[tɔ:t]*
think	*/θɪŋk/*	*[tɪŋk]*
though	*/θɒf/*	*[tɔf]*
through	*/θru:/*	*[tru:]*
three	*/θri:/*	*[tri:]*
thing	*/θɪŋ/*	*[tin]*
thigh	*/θaɪ/*	*[tai]*
throw	*/θəʊ/*	*[troo]*
thirsty	*/θɜ:stɪ/*	*[tɛɛsti]*

Source: Field data, 2025

***Table 2: English words with final* / θ/**

Word	***Received Pronunciation/ θ/***	***Deviated pronunciation /t/***
tooth	*/tʊθ/*	*[tuf] or [tut]*
teeth	*/ti:θ/*	*[ti:f] or [ti:t]*
tenth	*/ tɛnθ/*	*[tɛnf]*
north	*/nɔ:θ/*	*[nɔ:f] or [nɔ:t]*
bath	*/bæθ/*	*[baf]*
oath	*/əʊθ/*	*[o:t]*
birth	*/bɛ:θ/*	*[tɔf]*
cloth	*/clɒθ/*	*[clof]*
health	*/hɛ:lθ/*	*[half]*
month	*/mʌnθ/*	*[mant] or [manf]*
smooth	*/smu:θ/*	*[smu:t]*
growth	*/grəʊθ/*	*[groof]*
death	*/dɛ:θ/*	*[dɛf]*

Source: field data 2025

As observable from Table 1 and Table 2, the voiceless dental fricative /θ/ has two main realisations. The same consonant has been realised as [t] and [f] by the student participants. At the word initial position, as shown in Table 1, the sound /θ/ is articulated as [t]. At the word final position, however, the same voiceless dental fricative /θ/ is realised as either [t] or [f]. From Table 2, it is observable that at the word final position one variant of the voiceless dental fricative occurs more in the students' pronunciations of English words than the other variant. For instance, in the pronunciation of the words *north /nɔ:θ/, teeth* /ti:θ/ and *tooth /tʊθ/,* the majority of the participants realised the phoneme /θ/ as [f] as these pronunciations were found in *[nɔ:f], teeth* *[ti:f], *tooth* *[*tʊf*], etc. Some of the students articulated the same sound in

these words as [t], as observable in the pronunciations of the words *[*tʊt*], *[ti:t] and *[*nɔ:t]* in the data.

From this observation, as noticeable in the data, we identify one change in terms of articulatory features for the change from /θ/ to *[f]. On this deviation, the manner of articulation, +Continuant, of the voiceless dental fricative is maintained, but the place of articulation is changed from dental to labio-dental. The phonation type of the sound /θ/ is also unaffected by the deviation, as the sound remains -Voice. The modification that occurs to the phoneme /θ/ in the students' pronunciation of English words that end with the *th* letters is presented in (1) below.

1 /θ/ → [f] /_____#

$$\begin{bmatrix} \text{-Voice} \\ \text{+Continuant} \\ \text{+Anterior} \\ \text{-Labial} \end{bmatrix} \rightarrow [\text{+Labial}] / \_\_\_\_\_\#$$

In this realisation of the segment /θ/ as [f], as displayed in (1), we notice that the targeted feature is -Labial.

The more drastic change of the sound /θ/ is observed in the pronunciations of some few students who at the same context of word final position realised the voiceless dental fricative as voiceless alveolar stop [t]. In this realisation, the students maintained only the phonation type of the sound and changed both the place of articulation and the manner of articulation as illustrated in (2).

2 /θ/ → [t] /_____#

$$\begin{bmatrix} \text{-Voice} \\ \text{+Continuant} \\ \text{+Anterior} \end{bmatrix} \rightarrow [\text{-Continuant}] / \_\_\_\_\_\#$$

Unlike the word final position, where the voiceless dental fricative is realised in two different forms, [f] and [t], the data in Table 1 shows that the sound /θ/ occurs only as [t] at the initial positions of words. For instance, in the pronunciation of the words, *thought /θɔt/, think /θɪŋk/ thank / θæŋk/, thief /θi:f/,* and *theme /θi:m/*, none of the participants replaced the initial phoneme /θ/ with the voiceless labio-dental fricative, [f] in his or her pronunciations of the words. However, all the student participants pronounced the words with the initial *th* letters which segmentally represent /θ/ as [t] as portrayed in the pronunciations of the words *thought *[tɔt], think *[tɪŋk] thank *[tæŋk], thief *[ti:f],* and *theme *[ti:m]*. This modification made to the voiceless dental fricative /θ/ at the word initial position is presented in (3) below.

3 /θ/ → [t] /#_____

$$\begin{bmatrix} \text{-Voice} \\ \text{+Continuant} \\ \text{+Anterior} \end{bmatrix} \rightarrow [\text{-Continuant}] / \# \_\_\_\_\_$$

Concerning the voiced dental fricative /ð/, it prevailed in the data that all the participants pronounced the words which contained this sound wrongly by articulating the sound as though it were the voiced alveolar plosive /d/. Table 3 below exemplifies the pronunciation deviations observable in the speeches of the student participants as the phoneme /ð/ is replaced at the initial positions of English words.

Table 3: words with the initial sound /ð/

Words	***Received Pronunciation***	***Deviated Pronunciation***
them	*/ðɛ:m/*	*[dɛm]*
the	*/də/*	*[dɛ]*
this	*/ðɪs*	*[dis]*
though	*/ ðəʊ/*	*[dəʊ]*
they	*/ ðeɪ/*	*[deɪ]*
these	*/ ði:z/*	*[di:s]*
then	*/ ðɜ:n/*	*[dɛn]*

Source: Field Data, 2025.

From Table 3, it is observed that the student participants failed to accurately articulate the voiced dental fricative /ð/. The failure of the participants to accurately realise the voiced dental fricative at the word initial position creates pronunciation deviations. These pronunciation deviations could be observed in the words *them* /ðɛm/, *though /ðəʊ/*, *the* /ðə/, among others, as captured in Table 3. We notice that the students realised these words wrongly as *them* *[dɛm], *though *[doo]* and *the* *[dɛ], respectively. The illustration in example (4) shows changes in the articulatory features of the sound /ð/ when it occurs as the initial phoneme of the words.

4 /ð/ → [d] /#_____

$$\left\{\begin{array}{l}\text{+Voice}\\ \text{+Continuant}\\ \text{-Syllabic}\\ \text{+ Anterior}\end{array}\right\} \rightarrow \text{[-Continuant] /\#\_\_\_\_\_}$$

It needs to be mentioned that the voiced dental fricative, in English, occurs as medial sound in certain words. In Table 4, we present the data on the realisation of the phoneme /***ð/*** when it occurs in the medial position of English words.

Table 4: Words with medial /ð/

Words	***Received Pronunciation***	***Deviated Pronunciation***
worthy	*/wɜ:ðɪ/*	*[wɜ:dɪ]*
clothing	*/kləʊðɪŋ/*	*[kləʊdɪn]*
mother	*/mʌðə/*	*[mada]*
although	*/ɔ:lðəʊ/*	*[ɔldəʊ]*
brother	*/brʌðə/*	*[bɔda] or [brada]*
father	*/fœðə/*	*[fada]*
breathing	*/bri:ðɪŋ/*	*[bri:fɪn] or [bri:dɪn]*
weather	*/wɛ:ðə/*	*[wɛ:da]*
northern	*/nɔ:ðɪn/*	*[nɔ:dɪn]*

Source: Field data, 2025.

From Table 4, it is observable that the voiced dental fricative is substituted with the voiced alveolar plosive /d/ when it occurs at word medial position. In (5), we present the change that is made to the phoneme /ð/ in the speeches of the research participants.

5 /ð/ → [d] /_____ vowel

$$\begin{Bmatrix} +\text{Voice} \\ +\text{Continuant} \\ +\text{Anterior} \end{Bmatrix} \rightarrow [\text{-Continuant}] / \_\_\_\_\_ [\text{+Syllabic}]$$

In (5), we notice that the manner of articulation of the sound has been changed from +Continuant to -Continuant. This indicates that the manner of articulation of the phoneme has been changed from a fricative into a plosive. From the analysis, we observe that the phonation type of the phoneme has been maintained during the articulation process.

From the data, we identify two instances whereby the voiced dental fricative has occurred at word final position. Like the already discussed contexts, the phoneme /ð/ is realised as [d] by the study's participants. The two instances that the voiced dental fricative occurred at word final position have been presented in Table 5.

Table 5: English word with final sound /ð/

Words	***Received Pronunciation***	***Deviated Pronunciation***
clothe	*/kləʊð/*	*[kləʊd]*
breathe	*/bri:ð/*	*breed /bi:d/*

Source, Field Data, 2025.

From Table 5, it is observable that even though in spelling, these verbs end in the letter ***e,*** *that letter is silent. This implies that in the pronunciation of the words, the sound* /ð/ becomes the final sound. As the pronunciation of other words explains, the students struggle articulating the voiced dental fricative, and this has resulted in the replacement of this sound at different contexts. At the final position also, as observable in Table 5, the voiced dental fricative /ð/ has been replaced with voiced alveolar plosive [d]. The replacement process has been explained with distinctive features, as shown in (6).

6 /ð/ → [d] / vowel_____#

$$\begin{Bmatrix} +\text{Voice} \\ +\text{Continuant} \\ +\text{Anterior} \end{Bmatrix} \rightarrow [\text{-Continuant}] / [\text{+Syllabic}] \_\_\_\_\_ \#$$

5. DISCUSSION

The findings on the English anterior sounds and the mispronunciation problems they pose to Ghanaian technical university students are consistent with a study conducted by Aryanika (2024) and Tiono and Yostanto (2008) on mispronunciation of English words by Indonesian

English learners. On the voiceless and voiced dental fricatives /θ, ð/, Tiono and Yostanto (2008) indicated that these segments are substituted with their closest counterparts in Indonesian when the learners are pronouncing English words which contain them. In the current study, the analysis shows that the participants replace the voiced dental fricative with the voiced alveolar stop /d/, while its voiceless counterpart is substituted with either the voiceless labiodental fricative [f] or the voiceless alveolar stop, [t] depending on the context. The findings of the current study are also consistent with the findings of Ogunsiji and Olanrewaju (2010) that because the speakers of Ibibio language do not have the voiceless and the voiced dental fricatives, they tend to replace them in their pronunciations of English words that contain them. That is, the unavailability of the dental fricatives /ð/ and /θ/ in Ibibio, Akan and Ewe results in errors in pronunciation of English words by native speakers of these languages, as they tend to produce /t/ instead of /θ/ and /d/ instead of /ð/.

As observed in the analysis of the data, the change of the dental fricatives in the various contexts to their respective forms could not be attributed to any assimilatory process. In other words, there are no phonetic or phonological triggers for the observable changes /θ/ and /ð/ are subjected to in the speech of the student participants. The implication is that the changes that the students make to these dental fricatives are attributable to their inability to accurately articulate these sounds because they are unavailable in their native languages. This observation is in conformity to the proposition of Contrastive Analysis that in the context of second language acquisition and learning, L2 sounds that do not exist in the L1 of the learners are potential challenges for the learners as they would not be able to articulate them. Regarding this, the findings of the current study is in consonance with the argument of Odlin (2003) that L2 learners tend to commit pronunciation errors due to the absence of certain English sounds in the phonemic inventory of the learners' L1. These errors explain the idea that various kinds of negative transfer errors occur in the speech of second language learners as the language learners attempt to make use of their knowledge of the L1 to aid them in learning and using the target language (Al-khresheh, 2016; Odlin, 2003). This implies that the student participants of the current study committed pronunciation errors regarding English words that contain the dental fricatives because of the unavailability of these dental consonants in the L1. Hence, the participants, for ease of pronunciation, tend to replace /θ/ and /ð/ with their closest counterparts to enable them to pronounce the English words that contain them. This conclusion agrees with the observation of Waya and Kwambehar (2014) that most Africans struggle in achieving mastery of pronouncing English words because English language differs largely from most African languages, with the phonological system of the language being the most prominent.

This current study has demonstrated that the greater the variation between the phonemic systems of the L1 of the students and English language, the more phonemic interference observable in the pronunciations of the learners when they are speaking the target language. Regarding this, the findings of the current study strengthen the argument of Contrastive Analysis, which establishes that elements in the target language which do not exist in the learners' native language become difficult for the learners to learn. The findings of the current study also affirm the claim of Contrastive Analysis that while learning a second language, the learners bring with them the already acquired L1 knowledge (Ahmed, 2018). This negative transfer the learners make concerning phonemic segments, results in mispronunciation of English words, which eventually impedes effective communication in English by the students (Aryanika, 2024; Nuraini, 2024; Mirzayev, 2024).

6. CONCLUSION AND RECOMMENDATION

This study has examined the realisations of the English voiced and voiceless dental fricatives in the pronunciations of students in a Ghanaian technical university. The analysis of the data revealed that the student participants have challenges articulating /θ/ and /ð/ because these

dental sounds are unavailable in the phonemic inventory of their L1. The data analysis has shown that at word initial position, the voiceless dental fricative /θ/ is replaced with the voiceless alveolar plosive [t], while the voiced dental fricative /ð/ is replaced with the voiced alveolar plosive [d]. At the word final position, the current study has demonstrated that the voiceless dental fricative /θ/ is replaced with [f] in certain contexts, while in some contexts too, it is replaced with [t].

Regarding the voiced dental fricative, it is always replaced with [d] at the word final position. Even though the voiceless dental fricative /θ/ does not occur intervocalically, its counterpart, /ð/ occurs. It has been shown that, at the medial position too, the phoneme /ð/ is replaced with voiced alveolar fricative [d]. The study concludes based on the findings, that the replacement of these dental sounds with their closest counterparts creates mispronunciation of words in the speeches of the students.

Regarding the mispronunciation of English words by the student participants, the current study adopts the suggestion of Nuraini (2024) and Aryanika (2024), which emphasizes the need to bring non-native speakers' pronunciation as close as possible to native norms by providing assistance through effective, explicit teaching and learning methods. These methods should enable L2 learners of English to attain a competence level reflected in their ability to accurately pronounce words during oral communication. As confirmed by studies on second language acquisition and learning, acceptable pronunciation of L2 words is one of the basic requirements for second language learners' communicative competence (Tupamahu & Gaspersz, 2024). Following Fraser's (2000) proposition, the current study recommends that English language teachers at various second-cycle schools in Ghana be provided with courses and materials that specifically support pronunciation instruction. Although integrating pronunciation into curricula is a practical step, it often lacks specificity regarding effective classroom implementation. Therefore, to make pronunciation instruction actionable, teachers should be trained in and encouraged to use strategies such as minimal pair drills to help students distinguish and produce closely related sounds. Also, articulatory training to enhance students' awareness and control of speech organs, and repetition and shadowing exercises to improve rhythm and intonation patterns are highly recommended. Furthermore, pronunciation-focused listening activities that can help learners recognize and reproduce target sounds more accurately should be adopted by teachers. It is also recommended that second language education research extend its focus beyond merely affirming the importance of English pronunciation instruction to addressing effective methodologies for delivering it. Since explicit instruction can significantly improve students' pronunciation at the segmental level, English language teachers at both the senior high school and tertiary levels should treat understandable pronunciation as a key instructional objective, recognizing it as a necessary component of communicative competence. In this regard, it is further recommended that technical universities integrate structured pronunciation lessons into the Communication Skills course content.

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