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# STUDENTS' PHONEMIC TRANSCRIPTION ERROR ANALYSIS: A CASE STUDY IN TUZLA AND BANJA LUKA ENGLISH DEPARTMENTS

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**Abstract:** This paper examines phonemic transcription errors of L2 learners of English, majoring in English language and literature, undergraduate students affiliated with the English Departments in two of the country's major university cities in Bosnia and Herzegovina (BiH), as case study and provides a comparison of their performance across several levels. The paper is a result of collaboration between two English Departments in BiH, one based in Tuzla and the other one in Banja Luka. The main focus of the paper is to look into English phonemic transcription errors made by students of English at the Bachelor's level.

The study encompasses a total of 30 students from the English Department in Tuzla, and 40 students in the Banja Luka English Department in the academic year 2022/2023. All students attended the English Phonetics and Phonology courses taught during the first year of study. Students' English transcription errors were first collected and then analysed and categorised, respectively, focusing on the most important aspects of connected speech.

More specifically, the study shows the extent to which the two groups of students, following the same curriculum and syllabus, developed their English phonemic transcription skills, with a particular focus on the use of diacritics for aspirated and unexploded plosives, velarized, dental and syllabic consonants.

Additionally, keeping in mind that various phonological phenomena are found in connected speech, the paper focuses on coalescence (the coalescent type of assimilation) as one of the most frequent such phenomena found in everyday usage.

In the concluding remarks, the paper discusses the levels to which both groups of students in the two English Departments have succeeded in comprehending basic terms in this field, an understanding of the sound system in English, and to what degree they mastered narrow transcription skills in particular.

Keywords: connected speech, L2 learners, transcription, diacritics, Received Pronunciation.
Field: humanities

## 1. INTRODUCTION

The present study examines phonemic transcription errors made by English as a foreign language (EFL) learners majoring in English language and literature at the BA level. The students are affiliated with two English Departments at public universities in Bosnia and Herzegovina (BiH) – Tuzla and Banja Luka. The Department of English Language and Literature in Tuzla is a constituent part of the Faculty of Humanities and Social Sciences, the University of Tuzla, whereas the Department of English Language and Literature is one of the departments of the Faculty of Philology, the University of Banja Luka. The paper is structured as a case study portraying several significant aspects of rapid speech in Received Pronunciation (RP) as acquired by the native speakers of Bosnian/Serbian/Croatian-speaking EFL students in these two English Departments. The study is, in fact, a result of collaboration between the two Departments, and is aimed at examining the levels or extent to which the students have developed their phonemic transcription skills in English, focusing primarily on narrow transcription. The study was conducted in the course of the academic year 2022/2023 in both English Departments, encompassing a total of 70 students (30 students enrolled in the first year of study in Tuzla, and 40 students in Banja Luka, respectively), who attended the English Phonetics and Phonology course(s) traditionally taught in the first year of study, following the curricula, which are fully harmonised in the two Departments.

The study focuses on a select few allophones found in everyday English usage, and looks at the diacritics used in their transcription. The following diacritics were of particular interest to the authors:

1. the diacritic used in the articulation of consonants becoming dental,
2. the diacritic found in cases of velarisation (dark /l/,
3. the diacritic used for aspirated English plosives,

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4. the diacritics for unexploded (also referred to as unreleased) plosives, and
5. the diacritic used for English syllabic consonants.

The study also focuses on coalescence (also referred to as coalescent assimilation), as one of the most frequent phonological phenomena in everyday speech (rapid, connected speech) in English. There is a special focus on the following: dentalisation, velarisation, aspiration, unexploded plosives, and syllabic consonants found in the English language.

For each of the topics there is a brief overview of examples, including analysis and discussion. The added value is the comparison made between the two English Departments. Table overviews provide a clear insight into the extent to which students in the respective Departments have adopted the phonemic transcription skills, as well as the most typical transcription errors categorised by the topic (or the diacritic, in this case) discussed and analysed.

As for the methodology used in this study, both groups of students were tested at the end of the academic year 2022/2023, following the same format. The data used for the purposes of the analysis and discussion were collected from the tests (for more details see the Methodology section).

## 2. THEORETICAL PRELIMINARIES

Generally speaking, phonemic transcription is a method used in teaching pronunciation and transcription, traditionally used and focused on foreign language learners of English (L2 learners). Lintunen and Mäkilähde (2018) state that mastery of the second language pronunciation language (L2) is an integral part of successful L2 learning. According to Lintunen (2005), it's a teaching method specifically used for L2 learners, particularly at advanced levels, such as undergraduate studies.

Phonemic symbols are most certainly required for pronunciation. However, they are often ignored in teaching, especially in secondary schools, although this varies from level to level and from one teacher to another.

Phonemic transcription can be said to be quite beneficial for learners used to a close correspondence between phonemes and graphemes in their native language when learning a language with more complicated grapheme-to-phoneme rules. For example, the students in this study are native speakers of Bosnian/Serbian/Croatian, where there is a simple orthographic rule with one sound being represented by one phoneme only.

Lintunen (2005), Wells (1996), and Richards and Schmidt (2013) discuss the importance of phonemic transcription in more detail, highlighting that being aware of the symbols helps the learners better grasp and further develop their transcription skills.

De Souza and Lintunen (2023) state that phonological self-awareness is an important issue, and examine second language phonological awareness by bringing the phonetic detail explicitly into the learners' attention.

The section that follows is a brief overview of the essential terms and expression in this field. The fundamental notions and principles of English phonetics and phonology, discussed by several authors include: phonetics and phonology, phoneme and allophone, broad and narrow transcription.

According to Crystal and Alan (2023), phonetics is the science studying the features of articulation of sounds by humans, particularly the sounds used in speech, and provides methods for their description and transcription. Crystal and Alan (ibid.) state that the aim of phonology, on the other hand, as a linguistic discipline exploring the sound systems of human languages, is to exhibit the patterns of distinctive sounds found in a given language. Hence the use of the term 'functional phonetics' when defining phonology. Roach (2009) defines the phoneme as the basic unit of phonology. Crystal and Alan (2023: 287) thus consider the phoneme to be the "minimal unit in the sound system of a language", whereas Roach argues that spoken language can be broken down into a string of sound units (phonemes), and that a relatively small set of such sounds can be found in any language.

Celce-Murcia et al. (2010) believe that it is quite useful for linguists to concentrates on sound differences which help distinguish words (phonemes) and sounds that are different but do not help distinguish words (allophones).

According to Ladefoged (2001), allophones are variants of the given phonemes, and provide the chief properties of the allophones in the following manner:

- allophones do not produce any change in the meaning of the word
- allophones resemble one another, and
- allophones are found in phonetic contexts which differ from each other.

Transcription nowadays is actually seen (Roach, 2009) as a method of transferring an utterance from speech to writing by using a set of phonemic symbols, and the most basic distinction between the types of transcription includes the one that refers to broad (phonemic) and narrow (phonetic) transcription. When doing broad transcription, it is only possible to use the symbols that match their respective phonemes, while an additional are not to be included. In narrow transcription, on the other hand, it is possible to use a wide range of phonetic symbols when and if needed. Narrow transcription provides a lot of detail about the exact quality of a particular sound, or a group of sounds. Hadžiahmetović Jurida (2014) examines the use of diacritics with L2 learners of English majoring in English at the tertiary level of education, bringing attention to gaps in this field at primary and secondary education levels.

Square brackets ([…]) are used in phonetic (narrow) transcription, whereas slant brackets (/…/) are used in phonemic (broad) transcription. The complete range of symbols available for transcription is known as the International Phonetic Alphabet (IPA). Wells (2016) further inspires readers and learner to further explore traditional general phonetics.

## 3.METHODOLOGY

As stated in the introduction, this study examines a total of 70 students registered for the first time as full-time students in the English Departments in Tuzla and Banja Luka (30 students at the Faculty of Humanities and Social Sciences, the University of Tuzla, and 40 students at the Faculty of Philology, the University of Banja Luka, respectively) in the academic year 2022/2023. The data that were analysed, discussed and presented in both narrative and table forms were collected from tests administered at the end of the semesters focusing on transcription.

The test was in the form of the final examination, with a large portion targeting exclusively broad and, more importantly, narrow transcription of words given to students in spelling. Both groups of students were required to provide broad and narrow transcription for the words which were selected for this purpose quite carefully. Standard pronunciation as suggested by Wells (2001) served as the accepted solution exclusively.

The following section of this paper (analysis and discussion) provides an overview of the examples of the lexemes used for testing purposes, accompanied with transcriptions made by both groups of students (broken down into two categories: correct and incorrect transcriptions). It also includes a simple graphic overview of the results (in the form of tables), which clearly indicates the extent to which the students adopted the use of symbols in question.

## 4.ANALYSIS AND DISCUSSION

In the following sections of this paper (4.1. through 4.6), lexemes chose for the testing purposes are presented in the form as given to both groups of students – spelling only. Next to them are transcriptions made by the students, broken down into two separate categories – correct and incorrect (highlighting the most typical errors in transcription) including a table presenting the results, which indicates the extent to which each of the groups of students acquired the symbols they studied. It should be highlighted that both groups of students (Tuzla (TZ) and Banja Luka (BL)) were given the same lexemes/words, as a result of concerted efforts by the authors of this paper, the results of which are also presented overall and separately for each of the English Departments.

### 4.1. DENTALISATION

As far as dentalisation is concerned, the study yielded the following results:

| a) | cases of correct transcription | | b) cases of incorrect transcription | |
|---|---|---|---|---|
| 1. | eighth | [eɪgϴ] | 4. eleventh | [ɪ'levənϴ] |
| 2. | tenth | [ten̪ϴ] | 5. tenth | [tent] |
| 3. | wealth | [wel̪ϴ] | 6. wealth | [vel̪ϴ] |

The following table provides an overview of how both groups of students managed the task of doing narrow transcription of words given to them in isolation (not as a part of an utterance). The table includes the total number of students examined (70), the breakdown by the English Department (Tuzla (TZ) and

Banja Luka BL)). In addition, the table indicates the number of students who resolved the task without any difficulty, also showing this in percentage (by Department). The table is followed by a brief analysis of the results.

Table 1 below shows that a more than 85% of the students from both groups recognised alveolar sounds being affected by the following dental consonant and marked it with the correct diacritic.

Table 1. Identification of dentalised alveolar consonants in English

| Total students | TZ | BL | TZ | % | BL | % |
|---|---|---|---|---|---|---|
| 70 | 30 | 40 | 26 | 86.6 | 35 | 87.5 |

In certain cases, such as examples 4, 5 and 6, above students were not able to tell the impact of the English dental consonant (/Θ/ or /ð/)on the alveolar sound found before it. Example 5 shows the inability to use the correct phonetic symbol for dental articulation [ ̪], which is normally placed underneath the affected sound, probably because the final consonant was transcribed as /t/ instead of the dental /t̪/. The diacritic is completely absent from example 4, whereas in example 6, even though the students successfully marked dentalisation, they wrote the incorrect symbol for the initial, which can be attributed to the impact of the student's native language (absence of /w/).

### 4.2 VELARISATION

As for velarisation, the results were as follows:

a) cases of correct transcription b) cases of incorrect transcription

| | | | | | |
|---|---|---|---|---|---|
| 7. | smile | [smaɪɬ] | 10. smile | [smaɪl] |
| 8. | cold | [kəuɬd] | 11. cold | [kəuld] |
| 9. | milk | [mɪɬk] | 12. milk | [mɪlk] |
| | | | 13. health | [helΘ] |

The statistics given in Table 2 below clearly indicate that both groups of students were able to observe the dark /l/ when it is found in in the final position of a given syllable (as in dull, school, tool, etc.) much more easily than the dark /l/ when it is found before another consonant (as in spelt, silk, etc.).

Table 2. Dark /l/ in the final position of a syllable vs. Dark /l/ before another consonant

| Total students | TZ | BL | Syllable-final | | % | | Followed by a consonant | | % | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | TZ | BL | TZ | BL | TZ | BL | TZ | BL |
| 70 | 30 | 40 | 27 | 37 | 90 | 92.5 | 21 | 29 | 70 | 72.5 |

Examples 10-13 above indicate the most typical error when it comes to dark /l/ when the lateral alveolar is found before another consonant. On the other hand, it should be highlighted here that some 70% and 72.5% of the Tuzla and Banja Luka students respectively successfully resolved this task and marked the velarized alveolar correctly. The results are somewhat better when it comes to the recognition of the syllable-final /l/ - as can be seen from the table above -90% and 92.5 % from the two groups also labelled TZ (Tuzla) and BL (Banja Luka).

### 4.3. ASPIRATION

As introduced in the methodology, a number of words were given to both groups of students in spelling only, requiring them to come up with, this time, both broad and narrow transcription, resulting in the following, including cases of correct narrow transcription, as well as errors typically made when working on narrow transcription, as follows:

a) cases of correct transcription

| lexeme | broad | narrow |
|---|---|---|
| 14. kick | /kɪk/ | [kʰɪk] |
| 15. surprise | /sə'praɪz/ | [səpʰraɪz] |
| 16. pat | /pæt/ | [pʰæt] |
| 17. spelt | /spelt/ | [spelt] |

and

b) cases of incorrect transcription

| lexeme | broad | narrow |
|---|---|---|
| 18. kick | /kɪk/ | [kɪkʰ] |
| 19. bet | /bet/ | [betʰ] |
| 20. surprise | /sə'praɪz/ | [səpraɪz] |
| 21. pat | /pet/ | [pet] |
| 22. inspect | /ɪn'spekt/ | [ɪnspʰekt] |

Table 3 below shows the extent to which both groups of students were successful in identifying aspirated plosives. On average, both groups were close 75 % (three quarters of the words shared with them), as follows:

Table 3. Identification of aspirated plosives

| Total students | TZ | BL | Aspirated plosives | | % | |
|---|---|---|---|---|---|---|
| | | | TZ | BL | TZ | BL |
| 70 | 30 | 40 | 22 | 29 | 73.3 | 72.5 |

Examples 14 through 22 relate to a total of 18 TZ students and 11 BL who failed to identify aspiration for a variety of reasons. Concerning examples 18 and 19, to start with, the errors relate to the failure to recognise aspiration at all. On the other hand, example 22 shows the failure to observe that when a voiceless plosive is found after the voiceless fricative /s/, it is not aspirated. Example 15 above shows that for some students producing broad transcription for two-syllable words like surprise is no issue, including the placement of the stress mark on the right syllable, whilst the no diacritic used for aspirated /p/ in the syllable-initial position of a stressed syllable may indicate that this skill still requires further acquisition.

### 4.4. UNRELEASED (UNEXPLODED) PLOSIVES

Concerning the category of plosive allophones referred to as unreleased or unexploded, the same list of words (lexemes) was shared with both groups of students in spelling only. This resulted in the following:

a) cases of correct transcription

| lexeme | narrow | lexeme | narrow |
|---|---|---|---|
| 23. snapped | [snæp̚t] | 23.b. mugged | [mʌg̚d] |
| 24. stopped | [stɒp̚t] | 24.b. tact | [tʰækt̚] |
| 25. fact | [fækt] | 25.b. cracked | [kʰrækt] |

and

b) cases of incorrect transcription

| lexeme | narrow | lexeme | narrow |
|---|---|---|---|
| 26. snapped | [snæpt] | 26.b. mugged | [mʌgd'] |
| 27. stopped | [sta:pt] | 27.b. tact | [tʰækt'] |
| 28. fact | [fekt] | 28.b. cracked | [krækt'] |

Statistically speaking, it can be observed from Table 4 below that identifying unreleased or unexploded plosives (not fully articulated, given their position in the syllable) seems to raise some concern, thus leaving room for improvement. As for the two groups of students in this study (TZ and BL), only 56.6% and 55% of the students belonging to the groups respectively, were able to recognise all instances of situations in which the release of the particular plosive was not fully articulated.

Table 4. Identification of unreleased/unexploded plosives

| Total students | TZ | BL | Aspirated plosives | | % | |
|---|---|---|---|---|---|---|
| | | | TZ | BL | TZ | BL |
| 70 | 30 | 40 | 17 | 22 | 56.6. | 55.0 |

In phonetics and phonology, unreleased or unexploded is a term often called non-audible plosive

(Ladefoged (2001). This usually occurs when two plosives of the same voicing are found next to one another in the syllable or word final position, and the first plosive in this two-consonant cluster is not fully articulated. In transcription this is shown by using a particular diacritic, the symbol also referred to as 'superscript corner' [ ˺ ]. In this study, it was quite successfully marked by students as shown in examples 23-25 and 23b-25b. On the other hand, examples 26-28 and 26b-28b are clear-cut cases of incorrect use of this particular diacritic – in 26.b and 28.b it was the second plosive that was marked as not fully produced, instead of the first member of this consonant cluster. Example 27b both plosives are marked as not fully articulated, which goes against the general rule according to which it is only the first member of this consonant cluster of the same voicing that is not fully audible,

### 4.5. SYLLABIC CONSONANTS

Finally, Table 5 below provides an overview of how the two groups of students adopted the skills relevant for recognition of syllabic consonants found in English, focusing on two English consonants that are most frequently found in this situation in everyday English usage - syllabic /l/ and /n/.

Table 5. English syllabic /l/ and /n/

| Total students | TZ | BL | Syllabic /l/ | | % | | Syllabic /n/ | | % | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | TZ | BL | TZ | BL | TZ | BL | TZ | BL |
| 70 | 30 | 40 | 26 | 34 | 86.6 | 85.0 | 24 | 32 | 80.0 | 80.0 |

Here are several English words that typically feature syllabicity that both groups of students were tested on: mutton, button, kettle, cattle, bottle, middle, kitten, riddle, puzzle, whistle, etc. As the figures from Table 5 above suggest, over 85% of the students from both English Departments easily recognised and marked the syllabic /l/, whereas they were slightly less successful with the syllabic /n/, with both groups reaching exactly 80%. This clearly confirms that both groups of students have mastered this particular phonological phenomenon where a consonant can be the centre of the syllable on its own. This was shown correctly by using the correct diacritic - a short vertical line underneath the affected (or, alternatively, a small raised schwa inserted before the consonant).

### 4.6. COALESCENT ASSIMILATION (COALESCENCE)

The following examples of sentences were shared both groups of students in this study. They were asked to name the type of assimilation and mark the changes by using the correct phonemes:

29. I'll greet you all at dinner.
30. Would you at least think about it?
31. Miss you an awful lot.
32. Buzz you in a second.

Table 6 below shows that both groups highly successfully identified coalescence found with plosives /t d/ followed by the palatal /j/. Not surprisingly, the results were exactly the same with fricatives /s z/ followed by the palatal /j/. There were several cases of students mixing coalescent assimilation with another type of assimilation (place or manner).

Table 6. Coalescence by groups

| Total students | | /t/ + /j/ | /d/ + /j/ | /s/ + /j/ | /z/ + /j/ | % |
|---|---|---|---|---|---|---|
| TZ (30) | TZ | 26 | 26 | 26 | 26 | 86.6 |
| BL (40) | BL | 34 | 34 | 34 | 34 | 85.0 |

In other words, a vast portion of both groups of students were quite successful in recognising and marking coalescence, which typically takes place when any of the /t, d, s, z/ is followed by the palatal /j/, which results in /ʧ ʤ ʃ ʒ/ respectively. This may occur at word boundaries or even within the word (at the word level), as shown here:

/s/ + /j/ → /ʃ/
tissue
They're coming this year.
/t/ + /j/ → /ʧ/
mature, Portugal
Is that yours?

/z/ + /j/ → /ʒ/
treasure
Does your sister play the guitar?
/d/ + /j/ → /ʤ/
due
Would you like to join us?

## 5. CONCLUDING REMARKS

In this paper the authors have examined the most common errors occurring in phonemic transcription produced by L2 learners of English majoring in English language and literature in two English Departments at public universities in Bosnia and Herzegovina (Tuzla and Banja Luka). This case study including two groups of undergraduate students (30 and 40 students from the two Departments, respectively), enrolled in the academic year 2022/2023, and looks at the extent to which they successfully adopted English phonemic (and phonetic) transcription skills, with a particular focus on the use of diacritics carefully selected for the purposes of the study.

The paper provides both narrative and statistical overview of the errors identified in the study and is followed by discussion and analysis of the most frequents errors. The results and the analysis of the study show the extent to which both groups of students (TZ and BL), with limited knowledge of English Phonetics and Phonology from their respective high school education, showing the following:

• on a general note, they have developed a very good understanding of the system of English sounds and production of English vowels and consonants

• a large portion of students from both groups have almost fully grasped the use of phonemic and phonetic symbols in English

• they have advanced their transcription skills

• since the primary focus of the study was to examine narrow transcription skills focusing on a select few diacritics, both groups of students have shown a great deal of understanding the phonological phenomena in question by producing correct transcription

• there have been cases registered, presented and analysed, of incorrect transcription, which may serve as a guiding idea for the teachers to further explore the methods used in their introduction and practice to the coming generations

Table 7 below provides an overall statistical overview of the results obtained in this study:

Table 7. Statistical overview, comparison between the two English Departments

| | Tuzla (%) | Banja Luka |
|---|---|---|
| Coalescent assimilation | 86.6 | 85 |
| Aspiration | 73.3 | 72.5 |
| Unreleased plosives | 56.6 | 55.0 |
| Dentalisation | 86.6 | 87.5 |
| Velarisation* | 90 (70*) | 92.5 (72.5*) |
| Syllabic consonants** | 86.6 (80**) | 85 (80**) |

In conclusion, the results are more than satisfactory, keeping in mind that in most situations more than 50% of the targeted allophones were identified by both groups of students. In fact. The only potential problematic area was observed with unreleased plosives, where there was an average success rate of 56.6% and 55.0% registered in Tuzla and Banja Luka, respectively.

Concerning velarisation, the asterisk in the table above indicates that the subjects of this study showed better skills in marking dark /l/ when followed by another consonant (70 % and 72,5 %, TZ and BL respectively), as opposed to dark /l/ found in the final position of a syllable (90% and 92.5%)

As far as syllabic consonants are concerned, the study focused on syllabic /l/ and /n/ only, where both groups of students produced much better results in terms of observing syllabic /l/ (86.6% in Tuzla, and 85% in Banja Luka), whereas the exact number of students on average (80%) successfully identified the cases of syllabic /n/.

Concluding with coalescence, the results clearly show a high degree of understanding this phonological phenomenon, given that 86.6% and 85% of the students from the English Departments in Tuzla and Banja Luka respectively successfully recognised, identified and marked coalescence using the examples of words they were provided with.

In conclusion, the study points to the importance of a select few topics in English Phonetics and Phonology which are highly beneficial for undergraduates majoring in English, whilst at the same time signalling some of the key issues in (primary and) secondary English education, with more focus needed on developing English transcription skills..

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