

PRESENTATION/POSTER

PROGRESS TESTING AFTER TWO-SEMESTER PRONUNCIATION INSTRUCTION: SPELLING-PRONUNCIATION

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The primary aim of this study is to determine whether English Department students' pronunciation progressed during a one-year course of practical and theoretical phonetic instruction and, if so, to verify in what respects. A second intention was to discover what problems still remain despite the course. A self-designed diagnostic test was administered to 91 first-year students at the beginning (pre-test) and at the end of the course (post-test). The word-reading exercise encompassed 35 lexemes (43 aspects) that exhibited a variety of difficulties, including problematic letters, e.g. <o> in *oven* versus *protein*, <ch> in *charlatan* versus *archives* and words commonly mispronounced (*ancient*) together with examples showing frequent word-stress misplacement (*purchase*). The sentence-reading task (30 elements) comprised: weak forms, contractions (*mustn't*), a selection of 'trap' words (*dough*), words with difficult word stress (*determined*) and rendition of verb forms. This evidence-based testing method suggests that the one-year course is beneficial because it leads to the participants making overall progress ($r = 0.71$ for word-reading, $r = 0.75$ for sentence reading in pre-test and post-test). It also shows that contracted forms and some phonetically challenging words (*area*, *purchase*, *Niagara*) still call for attention.

INTRODUCTION

In the contemporary multidimensional approach to phonetic teaching, accent is interrelated with comprehensibility, intelligibility and fluency in communication. Spelling-pronunciation, inappropriate inference from orthography, has been found to have a negative effect on what the interlocutor understands and on ease of decoding a message. Wells (2008) provides a solution to spelling-pronunciation arguing that, "either we must reform English spelling [...] or teachers of English to speakers of other languages must *teach the pronunciation* of each word as well as its spelling" (p. 104).

Dickerson (2015) believes that spelling is a valuable resource for English as a Second Language (ESL) and English as a Foreign Language (EFL) learners, working for the benefit of their oral accuracy and fluency. He stresses the fact that the use of orthography serves prediction most directly and, through making good judgments, it serves perception and production. He indicates that orthography can be implemented for predicting the following: consonants, major word stress, major stressed vowels, compression, suffix forms and variability. He remarks that by giving students access to some orthographic rules we provide them with life-long knowledge of sound via spelling.

In a substantial number of recent studies on Polish-accented English, spelling-pronunciation is recurrently salient in the hierarchy of errors (Bryła-Cruz, 2016; Nowacka, 2016, 2018b; Porzuczek, 2015; Szpyra-Kozłowska 2013, 2015; Zajac, 2015). This research shows that spelling-

induced pronunciation errors and whole words with deceptive spelling hamper intelligibility and thus constitute one of the priorities in teaching pronunciation. For example, Bryła-Cruz's (2016) comprehensive research into the perception of Polish-accented English established a list of pronunciation priorities. These priorities include eliminating spelling-based errors followed by the dental fricatives, velar nasal, vocalic contrasts (STRUT vs. BATH vs. TRAP, FLEECE vs. KIT, NURSE vs. DRESS, NORTH vs. GOAT), word stress, maintaining voicing of lenis obstruents and weak forms. Because spelling-induced pronunciation errors proved critical to the four examined parameters included in Bryła-Cruz's study (i.e., accentedness, comprehensibility, intelligibility and irritation), the present study investigates the claim for the need to interrelate orthography with pronunciation during phonetic training. It also attempts to show that an explicit focus on phonetically challenging words and the inclusion of some orthographic rules in the phonetic training leads to the eradication of some spelling-induced pronunciation errors.

Research questions

This paper on summative assessment aims to determine phonetic attainment after one-year of pronunciation instruction. It intends to firstly provide evidence about the first-year English Department students' progress by comparing their initial and final performance of 73 phonetic items in word reading and sentence-reading and secondly, to adjust a syllabus and design materials to cater to learners' pronunciation needs. It seeks to answer the following questions:

1. Is there any progress in learners' pronunciation of 73 aspects in 61 phonetically challenging lexemes (and/or words with deceptive spelling) after the two-semester pronunciation instruction?
2. Which words and phonetic aspects have been learnt?
3. What phonetic problems still remain after the course?

METHODS

Participants

The research concerns a specific group of foreign language learners, 91 first-year students of English, at the University of Rzeszow, Poland, who were taught English phonetics and pronunciation by the author. 59% ($n=54$) were full-time and 41% ($n=37$) were part-time students of which females constituted 73% ($n=66$) and males 27% ($n=25$). Their age ranged from 19 to 36 years. Most students, 82% ($n=73$), were between the ages of 19 and 21. The mean length of compulsory institutional FL learning is 12 years. Most students report having learnt English for about 15 years.

The study participants were preparing to become English teachers and/or interpreters or were likely to work in a linguistic environment at schools, universities, etc. They studied phonetics only during the first year of their university studies. The total number of hours of phonetics the students receive at university depends on the type of the course and ranges from 40 hours (20 hours of English phonetics lectures and 20 hours of practical pronunciation classes) for part-time students to 90 hours (30 hours of English phonetics lectures and 60 hours of practical pronunciation classes) for full-time students. The lectures cover fundamental topics in phonetics (e.g., basic terminology,

articulators, production of speech, transcription) in both segmental (vowels, consonants) as well as suprasegmental phonetics (e.g. word stress, weak forms, rhythm, linking, elision and assimilation), while the practical course corresponds to the content of the lectures.

The course was delivered by one teacher, the author herself, which guaranteed that the participants received the same quality of instruction. In regards a typical study procedure from the very beginning, apart from regular work on English segments and suprasegments, during every lesson, 5 to 10 minutes were devoted to the explicit teaching of the relationships between spelling and pronunciation in the form of rules, concerning such issues as regular inflections in suffix forms, such as past tense/past participle *-ed*, and most typical letter-to-sound correspondences concerning a vowel or a consonant. Three to four complete lessons focused on words with deceptive spelling, the list of over 600 *Words Commonly Mispronounced* (Sobkowiak, 1996) and the relationship between orthography and pronunciation, such as summarized spelling guidelines (Collins & Mees, 2008).

Materials, test design and instructional items

The study implemented a diagnostic pronunciation test designed by the author which included two reading aloud tasks (see Appendix 1) to target a particular phonetic feature for evaluation.

The 61 lexical items, which included 73 selected phonetic targets, were covered during the one-year English phonetics instruction. They come from a variety of teaching materials, which supplement the main coursebook by Roach (2009) and a workbook by Mańkowska et al. (2009). In brief, these resources encompass: transcription of irregular verbs (Sobkowiak, 1996) and the above-mentioned commonly mispronounced words; transcription and awareness-raising exercises on deceptive spelling and challenging words (Sobkowiak & Szpyra, 2001); spelling guidelines (Collins & Mees, 2008); Nolst Trenité's poem *Chaos*, known for the inconsistencies of English spelling (Upward, 1994); contracted forms (Lewis, n.d.); strong and weak forms (Lecumberri & Maidment, 2000).

The selected features in word reading regard segments and silent consonantal letters, stress placement and the suffix *-ate*. Among the short vowels there were the vowels DRESSⁱ (*sweat, threat*), TRAP (*chassis*), STRUT (*oven, sponge*), LOT (*foreign, cough*) and comma (*thorough, charlatan* - unstressed syllables). Long vowels were the vowels FLEECE (*protein, fiend, suite*), NURSE (*word, purchase, courteous*), GOOSE (*ghoul, feud*), THOUGHT, /ɑ:/ in American English, (*author, gnaw, hawk, saw, abroad*) and BATH/START (*draught, sergeant*). The analysis also comprises four diphthongs: the vowels in FACE (*ancient, failure, steak*), PRICE (*disciple*), GOAT (*protein, comb, folk*) and SQUARE (*area and scarce*). The consonants focused on the pronunciation of a diagraph <ch> (as /ʃ/ in *charlatan*, /ʃ/ (Br) or /tʃ/ (Am) in *chassis* and /k/ in *archives*) and silent consonantal letter(s) such as in *comb*, <l> in *folk* and <g> of initial <gn> in *gnaw*. Stress placement was examined in *foreign, protein* and *purchase* and in *accurate, area, chassis, disciple* and *satire*. An unstressed suffix *-ate* (/ət/, /-it/) was tested in *accurate*. The pronunciation of the 'whole words' encompasses stressed vowels and: unstressed syllables, e.g. in *ancient, area, chassis, courteous, disciple, failure, foreign, purchase, thorough*, or a set of aspects, e.g. in *archives* (START, /k/, PRICE), *draught* (final consonants), *satire* (TRAP, triphthong: PRICE + COMMA) and *sergeant* (<ge>≡/dʒ/).

In the classification of phonetic elements in sentence-reading there are contractions, weak/strong forms and content words. Contracted forms are controlled for: GOAT in *don't*, *won't*, STRUT and /s/ in *mustn't* and NORTH/CURE in *you're*. The weak form list comprises: *has*, *have*, *of*, *that*, *the* (as /ði/ before a vowel), *would* and one strong form *some*. The content words include: adjectives (*appalled*, *available*, *basic*, *determined*, *nauseous*), nouns (*chaos*, *course*, *dough*, *lager*, *leopard*, *Niagara*, *pint*, *prayer*, *pronunciation*, *yolk*) and verbs (*develop*, *draw*, *lay*, *risen*). In all monosyllabic and two disyllabic words the analysis is restricted to a vowel, e.g. NORTH in *course*, GOAT in *dough*, *yolk*, PRICE in *pint*, THOUGHT or PALM in *draw*, FACE in *lay*, SQUARE or DRESS/TRAP in *prayer* - referring to words of praying, and KIT in *risen*. One group of polysyllabic words focuses on at least two features such as vocalic and consonantal sound or a letter-to-sound correspondence, e.g. FACE and /s/ in *basic*; FACE, LOT or PALM and <ch> as /k/ in *chaos* and PALM and <g> as /g/ in *lager*. Yet another set of polysyllabic words examined stress placement, the quality of a stressed vowel and, except *appalled* (THOUGHT) and *determined* (NURSE), unstressed syllables, e.g. FACE in *available*, THOUGHT or PALM in *nauseous*, DRESS in *leopard*, TRAP in *Niagara*, STRUT in *pronunciation* and DRESS in *develop*. For reasons of brevity in the discussion of the results whole words rather than the specific phonetic feature or features examined in them are referred to.

Appendix 2 presents a detailed examination of each lexical item with the name of the teaching material it is taken from, referred to as a source, the description of an examined aspect or aspects and an example of an error as well as of accepted pronunciation.

Procedures

There were two stages of the data collection: a pre-test recorded in October 2017 in the first week of students' study encompassing task 1 (word reading: 43 items) and task 2 (sentence-reading: 30 items); and a post-test gathered in May 2018, in the final weeks of the second term. An evaluation of the respondents' renditions of words used the following protocol. The students were asked to produce the words and utterances in the diagnostic test in the way they found easiest to pronounce. We did not insist on a single pronunciation of a word but found it justifiable to accept the educated standard variants of British and General American English, the most frequently learnt varieties of English by Poles. Other inner-circle varieties of English were not observed to have been applied by the students in this research. The recordings were then evaluated over the period of two months by one rater, the author of the text, with a PhD in linguistics and over 20-years' experience in teaching and researching pronunciation of Polish students of the English language. Each student's speech was transcribed and then on the basis of a rendition of a word, a point or zero was assigned to a student for their enunciation of an examined aspect in a word, e.g. stress placement in *characterize* - 1 point for /'kærəktəraɪz/, zero for ≠ /kə'ræktəraɪz/ or ≠ /kə,ræktə'raɪz/. Then the following statistical tests were applied: Wilcoxon signed-rank test for correlation coefficient between the number of points in the pre-test and post-test and Cochran's Q test to check the statistical significance of the pre-test and post-test results. Both quantitative and qualitative data were gathered on the basis of this assessment. This paper focuses on the quantitative part and uses the qualitative data from transcriptions of errors to clarify the nature of the problems.

RESULTS

General progress

The answer to the first research question, which examined if there was any progress in students' pronunciation of 73 phonetic aspects in 61 lexical items after the one-year instruction, is positive. In both tasks, word reading and sentence reading, the coefficient of 0.71 and 0.75 respectively indicates a positive and directly proportional correlation.

The Wilcoxon signed-rank test was applied, and it revealed that in both tasks the difference between the two tests, pre-test and post-test, is statistically significant $p < \alpha$ ($p = 0.00000$). This paired difference test is a non-parametric statistical hypothesis test used to compare two matched measurements on a single sample to assess whether their population mean ranks differ. It can be used as an alternative to the paired Student's t-test when the population cannot be assumed to be normally distributed.

Figure 1 shows the mean number of points the respondents scored in Task 1 and 2 in pre- and post-tests. In word-reading the initial mean 17.2 grew to final 26.6 out of the maximum 43. The initial standard deviation 6.9 increased eventually to 7.8 while the pre-test minimum and maximum 3 and 38 moved up to a post-test of 5 to 41. In sentence-reading the mean rose from 13.4 (pre-test) to 19.5 (post-test) out of the maximum 30. The beginning standard deviation of 5.1 increased to 6.0 while the pre-test minimum of 5 stayed the same and the maximum of 29 rose to 30. A higher standard deviation in both post-tests shows that there is a greater differentiation. In other words, correct renditions are spread over a wider range of values.

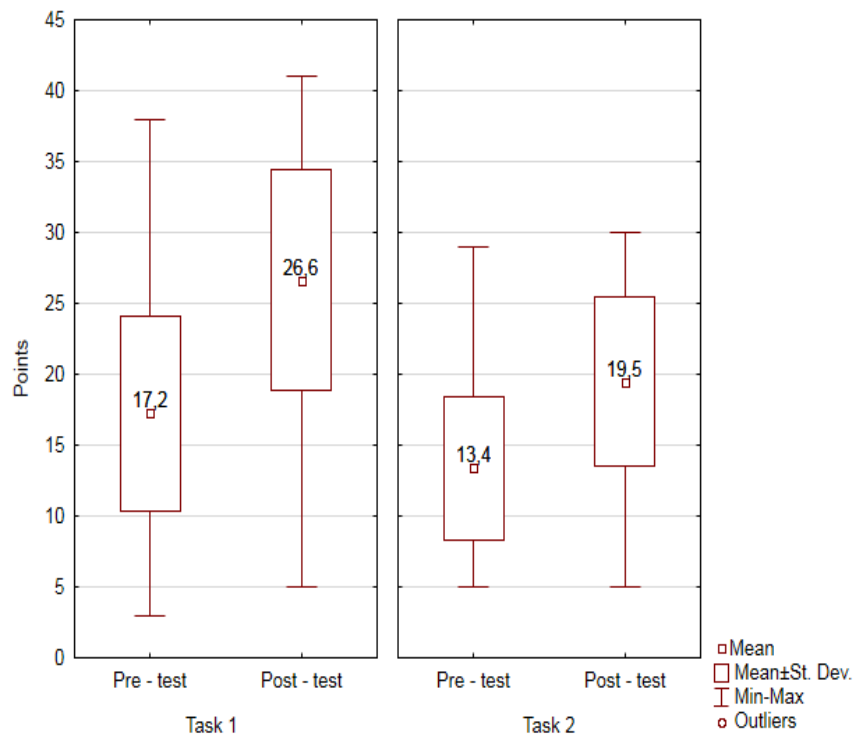


Figure 1. The mean number of correct renditions in pre-test and post-test in Tasks 1 and 2.

Detailed progress: Words and phonetic aspects

Research question two asked which words and phonetic aspects had been learnt. The Cochran Q test was applied to determine if there had been a change in the pronunciation of a given phonetic feature in a pre-test and post-test. In this non-parametric statistical test with a binary response, the variable takes only two possible outcomes, coded as 0 for failure and 1 for success.

The test revealed that p was less than α ($\alpha=0.05$), thus a significant change was observed, for most words in Task 1, except for the following: *chassis* <ch> (0.057), *draught* (0.057), *suite* (0.117), *charlatan_COMMA* (0.126), *scarce* (0.317), *protein_S* (0.423), *fiend* (0.601), *area* (0.705) and *satire* (0.808).

Figure 2 exemplifies that in word reading the highest rate of progress between pre-test and post-test was noted for: *comb* (80%), *sponge* (44%), *abroad* (43%), *author* (40%), *gnaw* <gn> (36%), *foreign_W* (34%); *failure*, *folk* <l>, *purchase_W*, *thorough*, *word* (32% each); *gnaw_V*, *saw*, *steak* (29% each); *accurate*, *hawk* (27% each); *folk_V*, *oven* and *protein_V* (26% each). The most striking improvement (i.e. of 80%) was noticed for the enunciation of *comb* , which might be due to awareness that was developed from the explicit training, learning a rule of a silent letter in a final letter combination <mb>, and the insertion of GOAT vowel. All cases of progress over 8%, with the exception of *suite* (10%) are statistically significant, thus the non-significant differences, marked in grey, include: *suite* (10%), *charlatan_COMMA* (8%), *chassis* <ch> (7%), *scarce* (7%), *draught* (7%), *protein_S* (4%), *fiend* (3%), *satire* (-1%) and *area* (-2%).

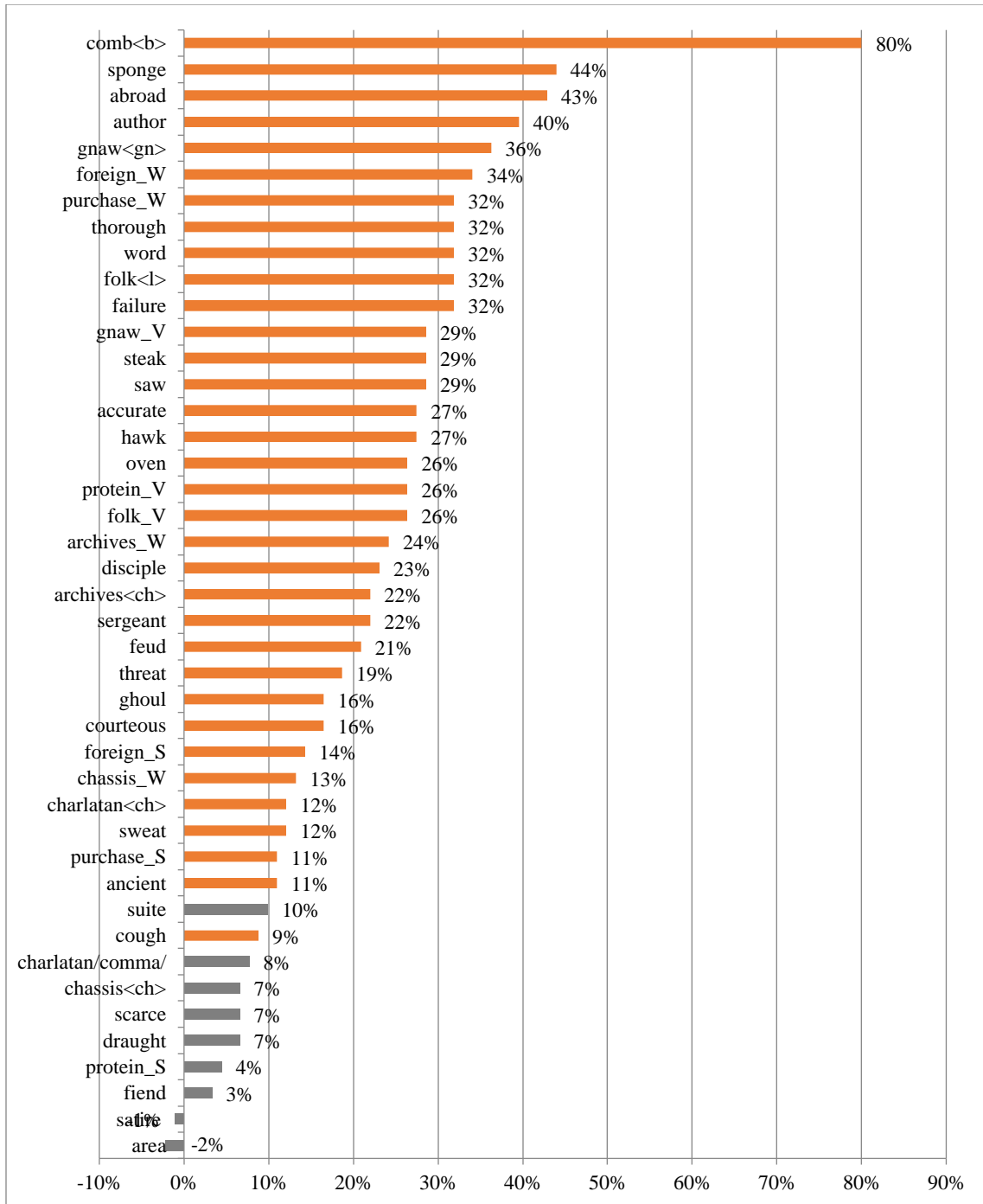


Figure 2. The percentage of progress between post-test and pre-test results in word reading.

In Task 2 the Cochran Q test revealed that p was less than α ($\alpha=0.05$), which means that the overall progress was significant in all words except *you're* (0.105), *would_l* (0.131), *don't* (0.165), *lay* (0.256), *basic* (0.512), *course* (0.831) and *mustn't* (1.00).

Figure 3 shows the rate of progress for phonetic aspects in sentence-reading. Three top words improved by more than 40%: *leopard* (45%), the two weak forms *have* (42%) in *I must have lost it* and *of* (41%) in *part of an egg*. Then, there is *pronunciation* (29%), a strong form of *some* (26%), a weak-form conjunction *that* (26%), *draw* and *determined* - both with 25%.

Other phonetic elements improved by less than 25%, except for *mustn't* which stayed the same and *course* (-1%) which regressed slightly. The progress rate in the following words ranges from 8% to 24%. Included here are *nauseous* (24%), *lager* (24%), *chaos* (23%), *have* in *I have ever seen* (22%), *of* in *the apple of my eye* (22%), *prayer* (19%) as 'words of praying', *risen* (19%), *yolk_V* (18%), *the* in *the apple* (18%), *dough* (18%), *pint* (18%), *won't* (18%), *Niagara* (16%), *available* (14%), *has* as in *The sun has just risen* (13%), *develop* (12%), *appalled* (11%), *would* in *she would come* (10%) and *the* in *the end* (8%). In only 7 cases, marked in grey at the bottom of the graph with the lowest scores, the difference between the final and initial pronunciation was of no statistical significance, except *the_e*.

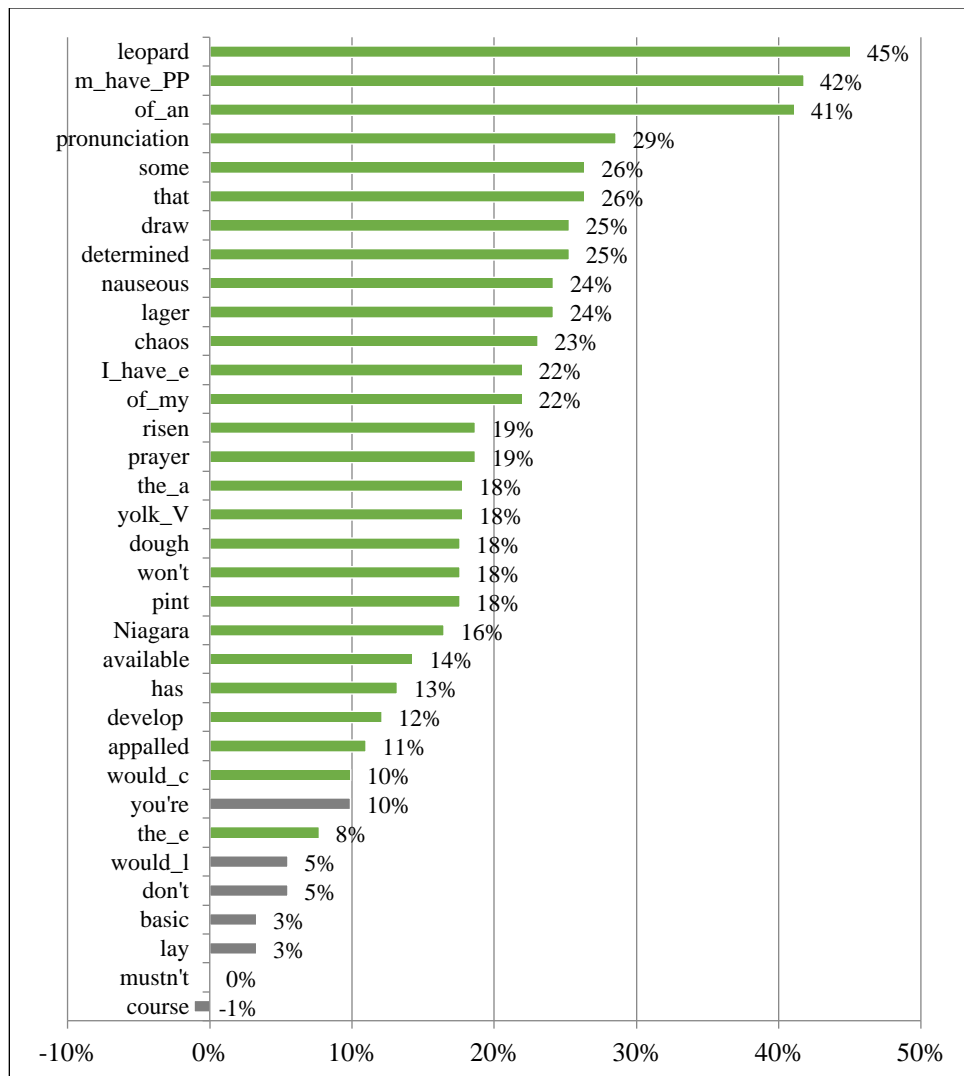


Figure 3. The percentage of progress between post-test and pre-test results in sentence-reading.

Word frequencies of occurrence as well as their rank ordersⁱⁱ were examined in iWeb, the largest existing corpus of the English language that is about 14 billion words in size, to see if they had affected the obtained results. The words selected for the analysis belong to the top 60,000 lemmas in the iWeb corpus. There were only eight medium frequency words (~ #25000 rankⁱⁱⁱ) such as *saw*, *fiend*, *draught*, *ghoul*, *nauseous*, *gnaw*, *appalled* and *charlatan*. This part of the study does not comprise low frequency words, which are around rank #45,000. In brief, having juxtaposed the word frequency and a rate of progress shows there is no straightforward linear correlation between the two variables, e.g. *comb* (#9454) improved by 80%, *sponge* (#7563) got better by 44% while *area* (#153) deteriorated by 2% and *satire* (#13877) by 1%. A detailed examination of these results is presented in an unabridged version of this study (Nowacka, in progress).

Progress in broad phonetic categories: Pre-test and post-test across two tasks

Having grouped individual phonetics items into five broader categories, which had been studied during the course, some improvement was observed in all cases between initial and final pronunciation. In word reading (Figure 4) the greatest progress of 25% is found in the rendition of ‘words commonly mispronounced’, followed by a substantial 19% increase in spelling-conditioned pronunciation (e.g. in *gnaw*, *archives*), that is, one’s familiarity with an orthographic rule, regarding for example the silent letter in a final <mb> sequence of letters as in *comb* and *bomb*. Words from the poem *Chaos* (e.g. *chaos*, *disciple*) improved by 16% and in other challenging words outside the previously discussed groups, such as *dough* and *Niagara*, an 11% increase in correctness was noted.

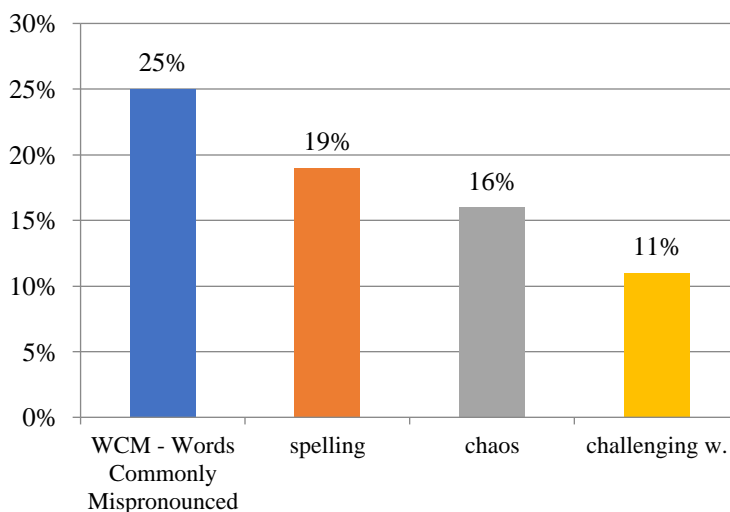


Figure 4. Cumulative progress for broader categories in word reading (WR).

In Figure 5, referring to sentence-reading, there is a 24% improvement with ‘Chaos’ and ‘other challenging words’. The correct rendition of weak and strong forms rises by 21%, verbs progress by 16%, ‘words commonly mispronounced’ by 12% and contracted forms by 8%.

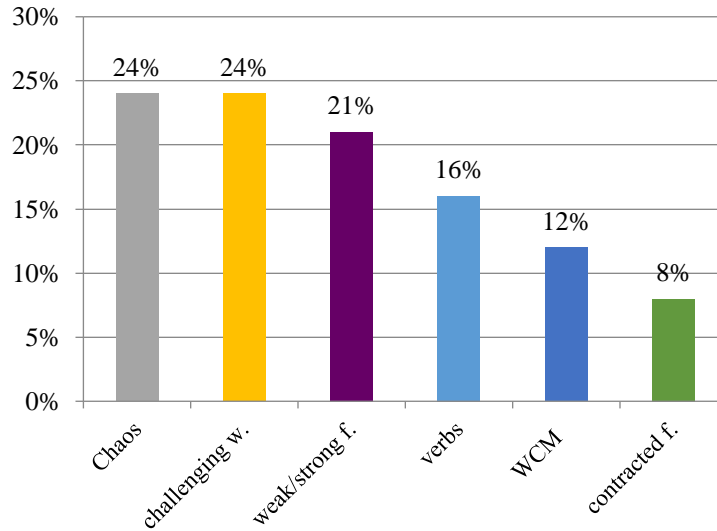


Figure 5. Cumulative progress for broader categories in sentence-reading (SR).

The results for cumulative phonetic categories across the two tasks presented in Figures 4 and 5 reveal that depending on the type of task and/or a selection of words the degree of progress varies.

Remaining phonetic issues

To answer research question 3 about phonetic problems that remain in spite of phonetic training, first we examined under 50% results in Figure 6 corresponding to word reading. In this group of words that are mispronounced by a majority of the informants, there are eight phonetically challenging words: *chassis_W* (18%), *courteous* (21%), *ancient* (25%), *sergeant* (27%), *thorough* (34%), *disciple* (35%), *archives_W* (41%), *feud* (44%); 2 problematic letter-to-sound correspondences regarding <o>, i.e. representing GOAT in *folk_V* (46%) and STRUT in *oven* (47%); and five more less frequent words with non-significant progress, such as *draught* (10%), *satire* (12%), *protein* (39%), *suite* (44%) and *scarce* (45%).

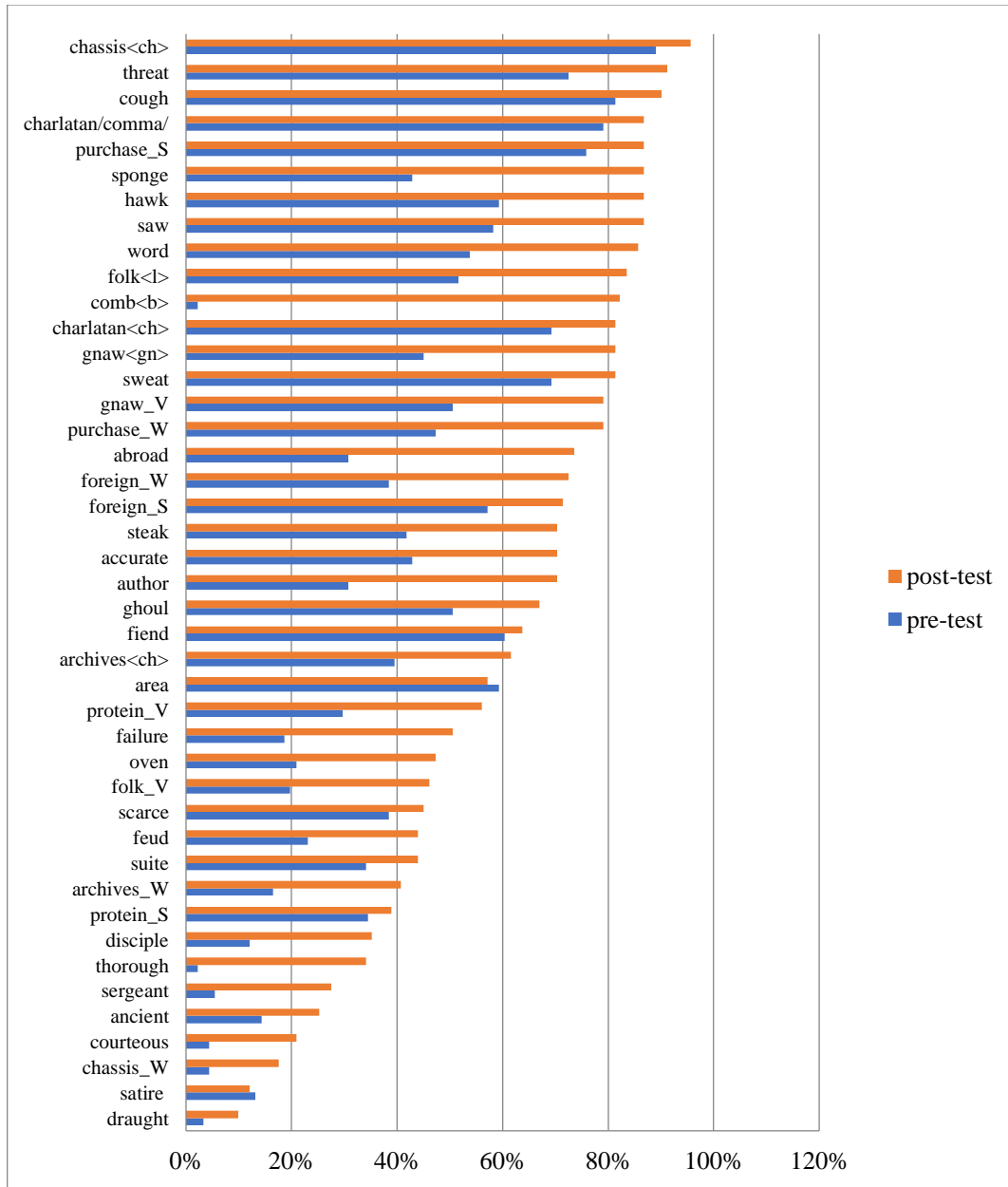


Figure 6. The pre-test and post-test results in word reading.

Figure 7 on sentence-reading reveals that the following items were not completely learnt by the majority of students. These include eight phonetically difficult content words, *prayer* (21%), *Niagara* (24%), *pint* (24%), *yolk* (29%), *developed* (38%), *appalled* (40%), *nauseous* (47%), *risen* (49%), four contractions, *don't* (14%), *won't* (26%), *mustn't* (36%), *you're* (49%), and two weak forms, *has* (25%), *of* (35%).

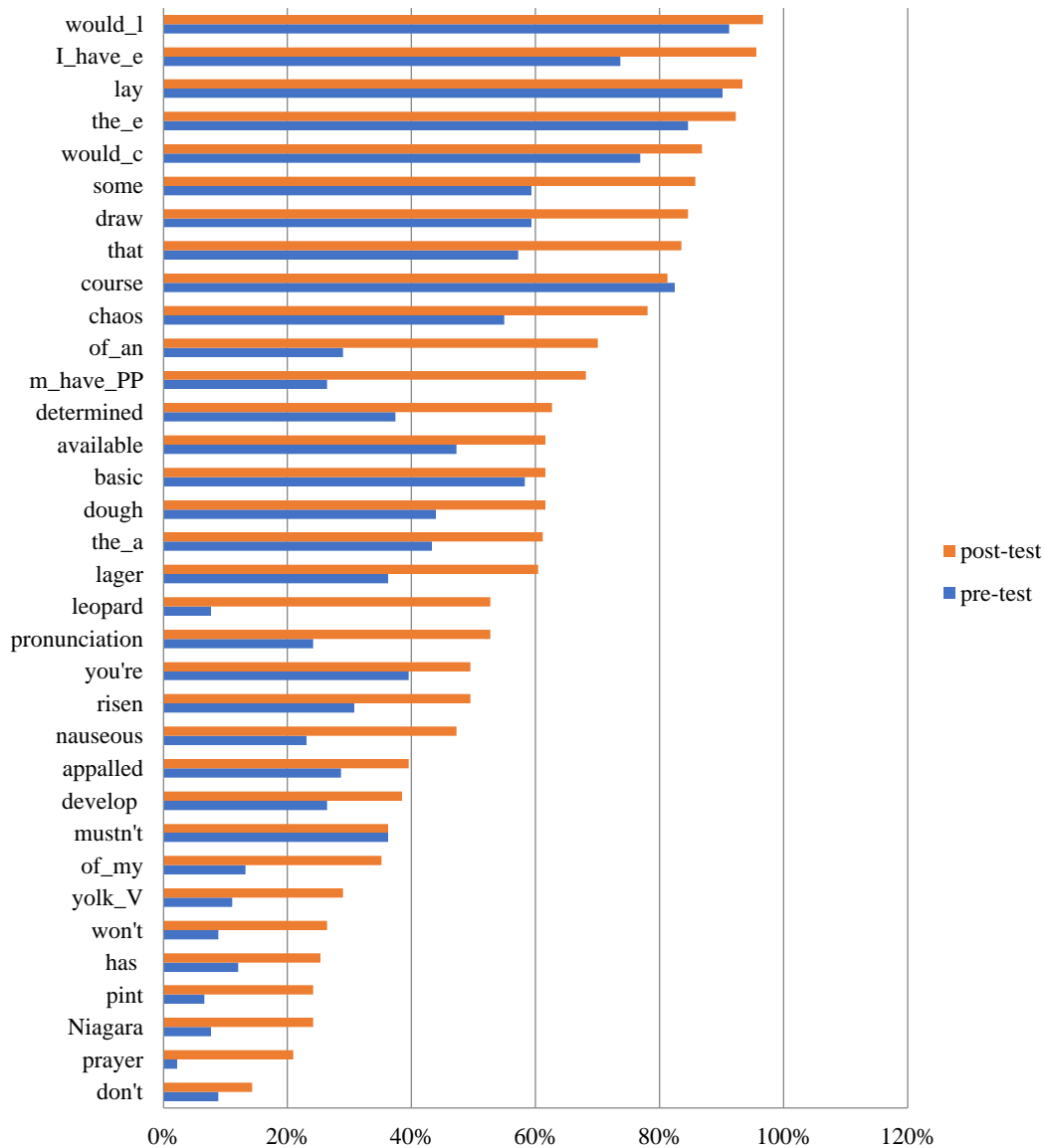


Figure 7. The pre-test and post-test results in sentence-reading.

DISCUSSION

There are several limitations to this study. The single rater assessment is a shortcoming as it does not allow for inter-rater reliability to be calculated. The two-month evaluation period was intended to eliminate the effect of fatigue on the rater’s assessment, however, it was not able to remove possible rater subjectivity or inconsistency. It is hoped that the representative sample of nearly 100 respondents might balance this imperfection. Another limitation is the lack of a control group. This research was meant as a progress test of a specific group of students undergoing phonetic instructions, thus it would be highly unethical not to teach pronunciation to the English Department students to have access to a research control group. Even without it, the scope of the research, with 73 phonetic elements scrutinized, offers an abundance to learn from.

The next step in this research is the analysis of qualitative data to shed light on the range of renditions of the tested material. This knowledge could be applied while preparing a multiple-choice task in a written test of pronunciation.

What needs to be checked is the progress of full-time and part-time students in search of similarities and differences that should also be reflected in the syllabus. The likely dissimilarity between them might have been caused by the difference in the number of hours of phonetics.

Although the study does not concern the flagship interference problems and focuses on rare words and minor phonetic issues, the findings might be useful for tertiary-school teachers working with future English specialists.

There are several practical implications of this research. For example, as an immediate ‘remedy’ to the problems observed, more attention in the form of explicit explanation or preparation of communicative tasks could be given to the words that are still mispronounced by the majority of the group, including: 20 phonetically difficult words (*chassis, courteous, ancient, sergeant, thorough, disciple, archives, feud, prayer, pint, Niagara, yolk, developed, nauseous, risen, draught, satire, protein, suite* and *scarce*; 4 contracted forms: *don’t, won’t, mustn’t* and *you’re*); 2 weak forms (*has* and *of*); problematic letters (<o>, i.e., representing GOAT in *folk* and STRUT in *oven*); and early lexical stress (e.g. *characterize*). The overall progress in contracted forms was the lowest (8%), therefore the teaching method concerning this category should be reconsidered.

Some other words such as *draught, mustn’t, protein* and *scarce* call for improvement because non-significant progress means the course has not affected their fossilized enunciation. Thus, among the teaching methods, apart from typical listen-and-repeat exercises and transcription of individual words, learners should be exposed to high variability input by means of utilizing such free online services as *YouGlish, playphrase.me, Yarn* and *Forvo* (Appendix 3). Needless to say, there should be more spontaneous and less controlled practice of the said words in context, prepared, e.g. with the use of British National or American Cocoa corpora pages with collocates and concordance lines.

It is possible that the pronunciation of some words such as *gnaw* <gn> (36%) and *folk* <l> (32%) might have significantly changed for the better because of the participant’s awareness of some spelling-governed pronunciation learnt during instruction. This means that in the classroom context we plan to continue teaching spelling-to-sound correspondence related to observed mispronunciations, such as *thorough* like Dickerson’s (2015) condensed graphic rule concerning the sounds represented by <th>: 1) thV^f =/ð/; 2) thern/.=/ð/; 3) V/rth+E=/ð/; 4) thew=/θ/ (see Nowacka’s (2018a) examination of spelling-to-sound correspondences in authentic materials to stimulate students’ phonetic awareness).

One can speculate whether or not progress in pronunciation by 8%, as in contractions, or by 25% in words commonly mispronounced, after a two-semester course should be regarded as success. It seems that phonetic instruction left a mark on the participants’ performance. The question that arises is what changes ought to be introduced in teaching these aspects to future students to help them remember what they studied and to be able to use accurate pronunciation whenever required without returning to a fossilized version.

Some implications of spelling-pronunciation research are more widely generalizable and explain how they can be applied in the teaching and research of teachers of English working with students of different L1s in other countries. The results of Nowacka's (2018b) study confirm the necessity for explicit instruction on the regularity of English spelling to eradicate pronunciation errors in the speech of 240 university students with six different L1s (Kazakh, Malaysian, Polish, Tajik, Turkish, and Ukrainian). The avoidable errors which have turned out to be the most numerous in the production task included such areas of English phonotactics as:

- the letters <-old> and <oll>,
- 'mute consonant letters' (all 6 L1s),
- two categories related to the reduction of unstressed syllables (the vowel in stress-adjacent syllables and in syllables following the stressed one to /ə/ or /ɪ/)
- 'reduced <-ous>, <-age>, and <-ate> in nouns and adjectives' (all 6 L1s)
- 'isolated errors'.

If spelling-to-sound relations are part of pronunciation training, the strain on the part of the students of memorizing phonetically challenging pronunciation exceptions will be reduced, including the ambiguous letter <o> (all 6 L1s), words with unpredictable pronunciation (all 6 L1s) and three 'unpredictable' categories: <-ough>', pronunciation of single vowel letters (all 6 L1s), and stress placement.

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Appendix 1. Diagnostic Test.

Task 1: word reading

1. saw	2. sweat	3. thorough	4. abroad	5. ghoul	6. cough	7. word	8. suite
9. threat	10. hawk	11. ancient	12. folk	13. satire	14. courteous	15. sergeant	16. protein
17. sponge	18. scarce	19. failure	20. author	21. accurate	22. comb	23. purchase	24. area
25. foreign	26. oven	27. steak	28. fiend	29. disciple	30. gnaw	31. archives	32. chassis
33. draught	34. feud	35. charlatan					

Task 2: sentence-reading

1. The sun has just risen.	11. It won't make sense.
2. She said that she would come.	12. Aren't you appalled?
3. Yolk isn't a white part of an egg.	13. You mustn't lay it on the floor.
4. Some people say English pronunciation is difficult.	14. He's the most determined player I have ever seen.
5. I would like to see Niagara Falls one day.	15. The basic course is not available.
6. My dad prepares the best pizza dough.	16. We need to develop a European rail network.
7. Don't draw a leopard on these walls.	17. I feel nauseous.
8. I swear I must have lost it.	18. What is chaos?
9. A pint of lager please.	19. Oh God hear my prayer.
10. You're the apple of my eye.	20. That is the end of the test, thank you.

Appendix 2. Words and phonetic aspects examined in Task 1 and 2 (source, error, accepted pronunciation).

Table 1.

Task 1

No.	Word ^{iv}	Source	Examined aspect ^v	Example of an error in this study	Example of accepted pronunciation
1.	<i>abroad</i>	WCM	<oa> ≡ THOUGHT PALM	/ə'brəʊt, e-/	/ə'brɔ:d/ /ə'brɑ:d/ ^{vi}
2.	<i>accurate</i>	WCM	<-ate> as /ət/ and stress on the 1 st syllable (henceforth syll.).	/'ækjʊreɪt/	/'ækjərət/, /- jər-, /-t/
3.	<i>ancient</i>	WCM	whole word (FACE followed by /n/)	/'eɪnfɪnt/, /'eɪfɪnt/	/'eɪnfənt/
4.	<i>archives_W</i>	spelling	whole word (START, /k/ PRICE)	/ɑ:(r)'tʃi:fs/	/'ɑ:(r)kaɪvz/
	<i>archives<ch></i>	spelling	<ch>≡/k/	<ch>=/tʃ/, <ch>=/ʃ/ /ɑ:(r)'(t)ʃi:fs/	
5.	<i>area</i>	WCM	whole word (stress on the 1 st syll., SQUARE DRESS/TRAP)	/ə'riə/	/'eəriə/ /'eriə/, /'æriə/
6.	<i>author</i>	WCM	<au>≡THOUGHT PALM	/'aʊθə, 'əʊ-/	/'ɔ:θə/ /'ɔ:θər/, /ɑ:- /
7.	<i>charlatan_COMMA</i>	spelling	COMMA in the 3 rd syll.	/'ʃɑ:lɪtən/	/'ʃɑ:lətən, -ən / /'ʃɑ:rlətən/
	<i>charlatan<ch></i>	spelling	<ch>≡/ʃ/	/'tʃɑ:rlətən/	/'ʃɑ:lətən, -ən/ /'ʃɑ:rlətən/
8.	<i>chassis_W</i>	spelling	whole word (stress on the 1 st syll., <ch>≡ /tʃ/, TRAP, /-si/)	/'tʃeɪsɪs, 'tʃæ-, /tʃæ'zi:s/	/'ʃæsi(z)/ /'tʃæsi(z)/
	<i>chassis<ch></i>	spelling	<ch>≡/ʃ/, /tʃ/	/'kɑ:sɪs/	/'ʃæsi/ /'tʃæsi/
9.	<i>comb</i>	WCM	silent 	/kɒmp, kʌ-/	/'kəʊm/ /'koom/
10.	<i>cough</i>	WCM	<ough>≡LOT, THOUGHT PALM and /f/	/kɒt/, /kɔ:t/	/kɒf/, /kɔ:f/ /kɔ:f/, /kɑ:f/

11.	<i>courteous</i>	WCM	whole word (NURSE, NORTH followed by /tiəs/)	/'kɔ:(r)tʃəs, 'kɜ:-/	/'kɜ:tiəs/, /'kɔ:tiəs/ /'kɜ:rtʃəs/
12.	<i>disciple</i>	Chaos	whole word (stress on the 2 nd syll., PRICE, weak syllables)	/'dɪsɪp(ɪ)l, (-ə)l/	/dɪ'saɪp ^ə l, də-/
13.	<i>draught</i>	challenging word	whole word (BATH followed by /ft/)	/drɔ:t/	/drɑ:ft/, /-æ-/ /dræft/
14.	<i>failure</i>	WCM	whole word (FACE, /j/ in a 2 nd syll.)	/'feɪlə(r)/	/'feɪljə/ /'feɪljər/
15.	<i>feud</i>	Chaos	whole word (GOOSE preceded by /j/)	/fəʊd/	/fju:d/
16.	<i>fiend</i>	Chaos	FLEECE	/faɪnd/	/fi:nd/
17.	<i>folk_V</i>	WCM	GOAT	/fɒlk/	/fəʊk/, /fəʊlk/ ^{vii}
	<i>folk<l></i>	WCM	silent <l>		
18.	<i>foreign_S</i>	WCM	stress on the 1 st syll.	/fɔ'reɪn/	/'fɔrən, -ɪn/ /'fɔ:rən, 'fɑ:-/
	<i>foreign_W</i>	WCM	LOT NORTH/START, SCHWA/KIT		
19.	<i>ghoul</i>	challenging word	GOOSE	/gɔ:l/	/gu:l/
20.	<i>gnaw_V</i>	spelling	THOUGHT PALM	/nəʊ/, /naʊ/	/nɔ:/ /nɑ:/
	<i>gnaw<gn></i>	spelling	silent <gn>		
21.	<i>hawk</i>	WCM	THOUGHT PALM	/həʊk/	/hɔ:k/ /hɑ:k/
22.	<i>oven</i>	WCM	<o>≡STRUT	/'əʊən/, /'əʊv(ə)n/, /'ɒv(ə)n/, /'aʊən/	/'ʌv ^ə n/
23.	<i>protein_S</i>	WCM	stress on the 1 st syll.	/prəʊ'ti:n/, /prə'teɪn/, /prɒ'ti:n/	/'prəʊti:n/, /'prəʊti:n/ /'prɒu-/
	<i>protein_V</i>	WCM	<o>≡GOAT, <ei>≡FLEECE		
24.	<i>purchase_S</i>	WCM	stress on the 1 st syll.	/pə(r)'tʃeɪs/	
	<i>purchase_W</i>	WCM	whole word (NURSE, SCHWA/KIT)		

25.	<i>satire</i>	WCM	whole word (stress on the 1 st syll., TRAP, triphthong: PRICE + SCHWA)	/sə'taɪə/	/'sætəɪə/ /'sætəɪər/
26.	<i>saw</i>	WCM	THOUGHT PALM	/səʊ/	/sɔ:/ /sɑ:/
27.	<i>scarce</i>	WCM	SQUARE DRESS/TRAP	/ska:rs/	/skeəs/ /skeʳrs/, / skæʳrs/
28.	<i>sergeant</i>	WCM	whole word (START, <ge>≡/dʒ/)	/'sɜ:rdʒənt/	/'sɑ:dʒənt/ /'sɑ:rdʒənt/
29.	<i>sponge</i>	WCM	STRUT	/spʌntʃ/	/spʌndʒ/
30.	<i>steak</i>	WCM	FACE	/stek/, /sti:k/, /stɪk/	/steɪk/
31.	<i>suite</i>	challenging word	FLEECE preceded by /sw/	/s(j)u:t/ ^{viii}	/swi:t/
32.	<i>sweat</i>	WCM	DRESS	/swi:t/	/swet/
33.	<i>thorough</i>	WCM	whole word (STRUT, SCHWA NURSE, GOAT)	/'θɔ:rəʊ/	/'θʌrə/ ^{ix} /'θɜ:rəʊ/ ^x
34.	<i>threat</i>	WCM	DRESS	/θri:t/, /θrɪt/	/θret/
35.	<i>word</i>	WCM	NURSE	/wɔ:rt/	/wɜ:d/ /wɜ:rd/

Table 2. Task 2

No.	Word	Source	Examined aspect	Example of an error	Example of accepted pronunciation
1.	<i>don't</i>	contracted form list	GOAT	/dɒnt/	/dəʊnt/
2.	<i>mustn't</i>		whole word (STRUT, /s/)	/mʌznt/	/'mʌsʰnt/
3.	<i>won't</i>		GOAT	/wɒnt/	/wəʊnt/
4.	<i>you're</i>		NORTH /CURE	/.ju 'ɑ:(r)/	/jɔ:ɪ, jʊəɪ/
5.	<i>has</i>	weak/strong form list	unstressed form, COMMA	/hæz, -s/	/(h)əz/
6.	<i>have</i>			/hæv/	/(h)əv/
7.	<i>of</i>			/ɒv, -f/	/əv/
8.	<i>that</i>			/ðæt/	/ðət/
9.	<i>the</i>		/ði/ before a vowel	/ðə/	/ði/
10.	<i>would</i>		unstressed form with COMMA	/wʊd/	/(wə)d/
11.	<i>some</i>		strong form	/sʌm/	/sʌm/
12.	<i>appalled</i>		WCM modified	whole word (stress, THOUGHT)	/ʌ 'pɑ:lɪd, e-, ə-/ ^{xi} , /e 'pi:lɪt, ə-, a-, 'pɪ-/
13.	<i>available</i>	WCM	whole word (stress, FACE, unstressed syllables)	/ʌ 'vɛɪəb(ɪ)l, e-', e 'veɪ-, /e 'veləb(ɪ)l, -li-/	/ə 'veɪləb ^ə l/
14.	<i>basic</i>	WCM	whole word (FACE, /s/)	/'beɪzɪk/	/'beɪsɪk/
15.	<i>determined</i>	WCM	whole word (stress, NURSE)	/'detəmaɪnd/, /də 'tɜ:(r)mɪneɪɪd/, /də 'tɜ:(r)mɪn 'eɪɪd/	/dɪ 'tɜ:(r)mɪnd, də-, -ənd/
16.	<i>nauseous</i>	Chaos	whole word (stress, THOUGHT PALM, unstressed syllables)	/'nɔ:si:s, -ʊs 'nɔ:zəs, -s-/ /'nɔɪz(j)əs, -es/, /'n(j)u:ʃəs/ /'nu:ʃəs/ - extremely varied	/'nɔ:siəs, -z- 'nɔ:ʃəs, 'nɑ:ʃ-; 'nɔ:ziəs, 'nɑ:z-/
17.	<i>chaos</i>	Chaos	whole word (<ch>≡/k/, FACE, LOT PALM)	/'kɑ:ɒs, 'h-, /'keɒs/	/'keɒs -ɑ:s/
18.	<i>course</i>	'Woodchuck' coursebook	NORTH	/kɜ:(r)s/	/kɔ:(r)s/

19.	<i>dough</i>	WCM	GOAT	/daʊ/, dɔ:/	/dəʊ/
20.	<i>lager</i>	'Woodchuck' coursebook	whole word (PALM, <g> ≡ /g/)	/'lɑ:dʒə/, /'leɪdʒə/	/'lɑ:gə/
21.	<i>leopard</i>	WCM	whole word (stress, DRESS, unstressed syll.)	/'liəpɑ:d/	/'lepə(r)d/
22.	<i>Niagara</i>	'Woodchuck' coursebook	whole word (stress, TRAP, unstressed syll.)	/niə'gɑ:rə/, /'niɑ:gərə/	/nɑr'æg(ə)rə, ni-/
23.	<i>pint</i>	WCM	PRICE	/pɪnt/	/paɪnt/
24.	<i>prayer</i>	Chaos	SQUARE DRESS / TRAP	/'preɪə/	/preə pre ^ə r, præ ^ə r
25.	<i>pronunciation</i>	Chaos	whole word (stress, STRUT, unstressed syll.)	/prə'naʊsi'eɪʃən/	/prə'nɑnsi'eɪʃən/
26.	<i>yolk</i>	WCM	GOAT	/jɒlk/	/jəʊk/ ^{xii}
27.	<i>develop</i>	WCM	whole word (stress, DRESS, unstressed syll.)	/'devələp, di:-, dɪ- -vɪ-/ , /'devələʊp/ /'devələʊp/	/dɪ'veləp, də-/
28.	<i>draw</i>	irregular verb list/WCM	THOUGHT PALM	/drəʊ/, /draʊ/	/drɔ: dra: /
29.	<i>lay</i>	irregular verb list	FACE	/laɪ/	/leɪ/
30.	<i>risen</i>	irregular verb list	KIT	/'raɪzən/	/'rɪz ^ə n/

Appendix 3

Task A. English versus Polish (*YouGlish*, *playphrase.me*, *Yarn* and *Forvo*)

Record your pronunciation of the following words:

ancient, archives, characterize, chassis, courteous, developed, disciple, don't, draught, feud, folk, has, mustn't, nauseous, Niagara, of, oven, pint, prayer, protein, risen, satire, scarce, sergeant, suite, that, this, thorough, won't, yolk and *you're*.

Then listen to them on: *YouGlish*, *playphrase.me*, *Yarn* or *Forvo*. Repeat the phrases after speakers. Compare your own pronunciation of these words with the one by native speakers. Transcribe the above-mentioned words.

Questions: Does your pronunciation of these words agree with the one you heard? If not, in what way does it differ? Is your pronunciation an example of mispronunciation or a variant form used in one variety of English?

Write down your answers.

ⁱ Wells' (1982) standard lexical sets for vowels are applied.

ⁱⁱ Rank order is marked with #. It shows which place a specific word occupies in the corpus, e.g. the rank order of #153 for *area*, means that it is the 153rd most frequent word of the 60,000 most frequent words in this corpus.

ⁱⁱⁱ Web's note on word frequency: "high frequency words (about word #5000 in the 60,000-word list), medium frequency (~25,000), and low frequency (~45,000) words.

On the basis of the above word frequency ranges the following scale regarding word frequency was applied in the present study: 1 – 14,999 high frequency words; 15,000 – 34,999 medium frequency words; 35,000 – 60,000 low frequency words.

^{iv} The letters and symbols which are used next to some words stand for: < > a letter included between triangular brackets concerns the rendition of this letter or letters, e.g. gnaw <gn> regards the silent letter <g> in *gnaw* /no:/ or <l> in *folk*; _S: lexical stress, _V: a stressed vowel, e.g. THOUGHT in *gnaw*, _W: the pronunciation of a whole word, stressed and unstressed vowels, e.g. *purchase* /'pɜ:tʃəs/.

^v The meaning of symbols used in this section is as follows: <=> a spelling correspondence between a letter/letters and a phoneme/phonemes, || the difference in pronunciation between British (on the left of the double lines) and American English (on the right side).

^{vi} Wells (2000) notes that *abroad* exhibits pronunciation unexpected for this spelling.

^{vii} The non-standard pronunciation with /l/ was not accepted.

^{viii} The pronunciation /su:t/ was regarded as a mistake although Wells (2000) reports that in AmE *suite* can be pronounced as /su:t/ in the sense 'suite of furniture'.

^{ix} The initial consonant 'eth' was not the focus of this assessment. Students were not penalised for substituting theta with /f, t/ therefore /'fʌrə/ (n=8) and /'tʌrə/ (n=1) was accepted as correct.

^x Wells (2000) makes a comment that in *thorough* RP and GenAm differ in an unpredictable and striking way.

^{xi} The American pronunciation of a word *appalled* is /ə'pɑ:ld/. The analysis was controlled for the British THOUGHT. If the enunciations /a'palt, e-, ə-/^{xi} (26%) have been accepted, it would give rise to the higher overall score of 66% for the word *appalled*.

^{xii} The silent /l/ in *yolk*, which is characteristic for British English, was included. However, this sound in the word is not a mistake in some American varieties /jook, joolk, jelk/.