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An exclusive phonological method of teaching a foreign language with a professionally oriented approach

Эксклюзивный фонологический метод обучения иностранному языку с профессионально-ориентированным подходом

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Abstract

The relevance of the topic of the article is due to the reassessment of the goals and objectives of professionally oriented language education at the undergraduate level in the light of UNESCO initiatives. The hypothesis: use of the proposed methodology in the course of teaching English with the indicated approach at a technical university can significantly improve pronunciation. The purpose is to determine the effectiveness of the phonological methodology in teaching a foreign language based on a professionally oriented approach.

Methodology: pilot experiment, comparison, observation, description, Wilcoxon's T-test, induction. The experiment in 2019-2020 involved 60 students of the Moscow Aviation Institute (National Research University).

Most relevant results: repeated control testing revealed an increase in the level of foreign language proficiency. The Wilcoxon t-test confirmed the significance of differences in the results: $T_{emp} < T_{cr}$ ($n=4$; $p \leq 0.01$)=1. Practical testing of this study showed that the vocalism technique provides effective opportunities for implementing an individual learning path.

Thus, future research suggested by the results will continue to improve the phonology of pronunciation.

The novelty of the study lies in the fact that this experiment was conducted for the first time at an aerospace non-linguistic university.

Анотація

Актуальность темы статьи обусловлена переоценкой целей и задач профессионально ориентированного языкового образования на уровне бакалавриата в свете инициатив ЮНЕСКО. Гипотеза: использование предложенной методики в процессе обучения английскому языку с указанным подходом в техническом вузе позволяет значительно улучшить произношение. Цель - определить эффективность фонологической методики в обучении иностранному языку на основе профессионально ориентированного подхода. Методология: экспериментальный эксперимент, сравнение, наблюдение, описание, T-критерий Вилкоксона, индукция.

В эксперименте в 2019-2020 годах приняли участие 60 студентов Московского авиационного института (национального исследовательского университета). Наиболее важные результаты: повторное контрольное тестирование выявило повышение уровня владения иностранным языком. Стьюдентный критерий Вилкоксона подтвердил достоверность различий результатов: $T_{emp} < T_{cr}$ ($n=4$; $p \leq 0,01$)=1. Практическая апробация данного исследования показала, что методика вокализма дает эффективные возможности для реализации индивидуальной траектории обучения.

Таким образом, будущие исследования, предложенные результатами, продолжают улучшать фонологию произношения. Новизна

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Keywords: phonetical aspect of speech, professionally-oriented approach, vocalism, Wilcoxon rank sum test.

исследования заключается в том, что данный эксперимент впервые проводился в аэрокосмическом неязыковом вузе.

Ключевые слова: фонетическая сторона речи, профессионально ориентированный подход, вокализм, критерий суммы рангов Уилкоксона.

Introduction

One of the main problems of teaching a foreign language, in particular English, is the difficulty in pronunciation, the difference in the sound of vowels and consonants in languages. In connection with this, a phonological method of teaching is required. On the one hand, a lot of methodological literature has been written by innovative teachers, but on the other hand, specific methods for improving pronunciation are not enough. The topic is quite debatable and discussed, since each language other than English has its own melody, rhythm, duration of sounds, softening, hardness, that is, its own specifics. These linguistic features make learning English as a foreign language quite difficult in terms of pronunciation. In addition, in non-linguistic institutions, the number of hours for a foreign language is less than for exact sciences. The question arises: how to solve the problem of pronunciation? Considering the teaching of students with a professionally oriented approach, we have developed an Exclusive phonological method of teaching a foreign language for students of technical institutes.

The purpose of the article is to determine the effectiveness of the phonological technique in teaching a foreign language based on a professionally oriented approach.

The object of the study was the improvement of intonation, in particular, of the English language.

An exclusive phonological method of teaching a foreign language with a professionally oriented approach is an innovative technology that has been tested at the Moscow Aviation Institute and researchers are ready to share the results and discuss the methodology for further teaching English to students in technical universities. The study contains six chapters: Abstract (summary). In this part, the relevance, hypothesis, justification of the goal and research methods are defined; Introduction. An approach to the topic to be discussed, and the reader is provided with information about the problem raised in the study and its rationale. Also in this part of the article, we have provided an extensive theoretical study of the problem by various authors and sources.

The reader can get acquainted with various points of view on the research of the phonological side of teaching a foreign language in particular and in general in linguistics; Methodology. Research methods, diagrams, tables with explanations, the structure of the experiment, the proposed training model, the difficulties that may arise during the experiment are reflected in this chapter. Moreover, the phonetic aspect of students' speech was assessed through the synthesis and analysis of control loci in the following categories: Locus of consonant control (LCC), Aggregate pronunciation indicator (API), Locus of vowel control (LVC), Locus of diphthong control (LDC); Results and Discussion. Description of the experiment in the control and experimental groups increasing the level of foreign language proficiency, student's Wilcoxon test confirmed the significance of differences in the results summarized in this chapter; Conclusions and Bibliographic references indicates the sources that were used in writing the article.

Literature Review

Learning and knowledge are commonly recognized the most valuable human re-sources deployed to bring variability into the teaching process during pandemics. A broad consultative process of the world community under the UNESCO International High-Level Commission has been brought up to realize this idea. It triggered the "Education Vision" program, according to which the periods before and after 2030 will be aimed at "providing inclusive and equitable quality education" (UNESCO, 2019).

Integration processes of today require the specialist to obtain professional knowledge as well as good command of foreign language essential in the process of the exchange scientific discoveries and maintaining fresh business relations. The institution of higher education, in its turn, are expected to provide trained specialists capable of using a foreign language for the purposes of communication, bearing properties of the knowledge trans-mission medium, means of personal development and

improvement personal qualities, as well as be the way of experience transfer and mastering the communication skills. Students have to integrate their language skills in process of learning a foreign language (Vepreva, 2012).

All the above mentioned facilitates productive usage of the professionally-oriented approach, which includes specific skills and experience together with understanding the importance of foreign language command and learning motivation of students developed through realizing the objectives of studies using the foreign language. The current foreign language program focuses on the formation and development of professionally significant general cultural and professional competencies. No less attention is paid to the development of the creative potential of students, preparing them to independently obtain new knowledge throughout their lives (Bygate, Skehan, & Swain, 2001).

A professional need to improve the pronunciation skills, constituting a fundamental feature of speech, is often realized by students as the basis for the development and perfection of all other foreign language skills. These skills presume the correct pronunciation of all phonemes in the flow of foreign speech being comprehended with the understanding of all sounds. Rhythmic intonation skills provide for intonation and rhythmically correct verbal image and, as a result, their understanding.

Specialists distinguish the phonetic side of foreign language speech as particularly important since speech is not only the goal of learning but also the main means of adapting cognitive and communicative activities. The phonetic side of speech stands out as an obligatory parameter of professional readiness and communicative skill. Success in communication depends on how comprehensively and clearly the speech is structured in a professional environment and how correctly the interlocutors perceive speech from a phonetic point of view. Therefore, students' speech must comply with generally accepted standards (Sheipak, Artyushina, & Zhurbenko, 2019; Li et al., 2021), which allow fixing phonetic material in dictionaries (Sheipak, Artyushina, & Zhurbenko, 2019).

The majority of students possess certain developed pronunciation skills and rhythmic intonation, although, not completely meeting the professional speech requirements (Tabakova, Maneshina, & Artyushina, 2017). The quality of pronunciation of future specialists may be

deteriorated due to several reasons, and some of them are not always associated with the method of teaching the phonetic side of foreign speech or vocalism. Vocalism is an integral system of vowels of a language, dialect, or subdialect and is studied (synchronously and in diachrony) aimed at improving the communication skills of students (Sapuntsova, 2018).

The English language may be confidently considered the most commonly studied in the course of professional orientation at the present stage of development of the global society and economy (Räisänen, 2020). Considering vocalism, it should be noted that modern British English distinguishes 12 vowel phonemes. Similarly, with German, English vowels vary in sounds quality (open/close) and duration (long/short). Among the distinguishing characteristics of phonemes, there is the degree of raising the back of the tongue (high/medium/low), the direction of raising the back of the tongue (front/middle/back), the participation of the lips (labialized / non-labialized vowels).

Many students tend to gradually forfeit their acquired pronunciation and rhythmic intonation skills (Mitchell, 2014), which affects all types of speech activity that students master within the framework of a communicative methodology. The vocalism system facilitates the improvement of pronunciation and ensures the correctness of foreign speech, and hence its accurate understanding. During the active practice of communication with native speakers, students begin to notice deviations from phonetic norms in their speech (Tabakova, Maneshina, & Artyushina, 2017). It is difficult to involve students in correcting errors in pronunciation since the deterioration in their performance is not significant in terms of unprofessional communication (Volodina, & Volodina, 2019). Nevertheless, students often make so many phonetic mistakes that they can be considered both a deviation from the norms of pronunciation, and factors hindering the very process of foreign language communication (Neverova, & Rybakova, 2017; Bai, & Yuan, 2019).

Before students start their first professional practice the indicated problem must be resolved. One of the ways implies the knowledge of the basics of the vocalism of a foreign language, accepting the learning process as a model of the communication process (Bezborodova, 2015). Pronunciation should be trained in real-time communication and, accordingly, serve as the

basis of speech, inextricably linked with mastering lexical and grammatical skills (Iaikaia, 2020). Thus, there is a constant need for professionally-oriented improvement of the phonetic aspect of speech among specialists using a foreign language. Still, insufficient theoretical and practical study of this issue makes the problem of this study the most relevant.

The purpose of the article is to determine the effectiveness of the vocalism methodology in teaching a foreign language based on a professionally-oriented approach in a technical university. The subject of the study is the mechanism of the formation of the correct pronunciation among students of a technical university. The object of the study is vocal-ism in teaching foreign languages in the implementation of a professionally-oriented approach.

Methodology

A proposed staged learning model to improve pronunciation among students of a technical university, which includes three stages of learning using authentic video materials shall facilitate the achievement of the research objective (Figure 1). At the first (initial) stage (Stage 1) a training complex is proposed considering the traditional approach, and consisting of two blocks of phonetic exercises. It includes exercises on imitation and re-production of sound patterns/intonation patterns, i.e., exercises for training articulatory breathing with accurate reproduction of stress, rhythm, and intonation. Exercises in this sequence provide for a gradual complication of activities with phonetic phenomena, from training sound in individual words to working out a sound and intonation model in a group of sentences. These exercises are aimed at preventing common mistakes in pronunciation and overcoming language interference.

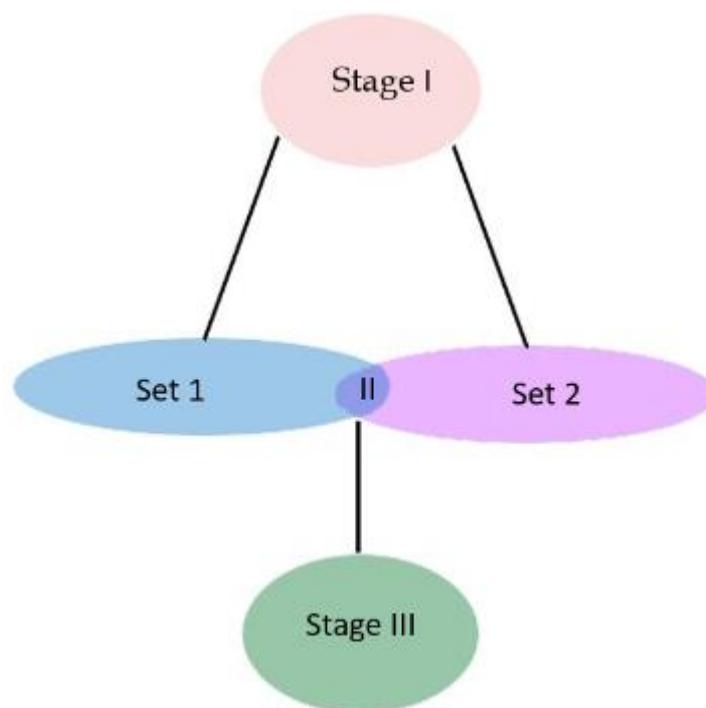


Figure 1. Vocalism methodology applied in stagewise foreign language teaching. (Source authors)

The second (basic) stage (Stage 2) provides for receptive-reproductive exercises to develop the auditory and pronunciation skills assimilated at the initial stage with the help of authentic video materials, like poems, rhymes, songs, dialogues, monologues, podcasts of relevant topics. This type of exercise is aimed at developing the ability to perceive the system of foreign vowels from the video material.

At the third (creative) stage, students should create their own videos or podcasts with sound/intonation pattern training exercises. At this stage, it is recommended to organize interaction, as well as the exchange of experience with students from other educational institutions or majors and faculties. The creative stage is aimed at developing phonetic awareness, proper conscious learning processes, as well as

demonstrating, analyzing, and explaining speech patterns.

The study of 2019-2020 involved 60 first-year students of the Moscow Aviation Institute (National Research University). Experimental (30 people) and control (30 people) groups were allocated according to the levels of foreign language proficiency. Groups were divided based on Education First test scores. Two variants of the test were carried out, for 15 and 50 minutes. The first test contained tasks to assess reading and listening skills. The students had their motivation in a message that, by the results of the test they receive an e-mail certificate, which can be presented when applying for a job. An additional test included Reading & Listening (30 minutes) and

Pronunciation & Fluency (5 minutes) was conducted.

Further curriculum presumed equal numbers of classes, in particular, 8 weeks for 1.5 hours a week using the author's interpretation and a comprehensive structure of phased teaching of a foreign language in a technical university, taking into account the method-ology of vocalism.

The phonetic aspect of students' speech was assessed through the synthesis and analysis of control loci in the following categories: Locus of consonant control (LCC), Aggregate pronunciation indicator (API), Locus of vowel control (LVC), Locus of diphthong control (LDC) (Table 1).

Table 1.

Assessment of phonetic speech aspect with technical university students

Control loci	Peculiarities
Locus of consonant control	<p>a) [v] — [w], [s] — [θ], [z] — [ð], [f] — [θ], [w] — [ð], [t] — [θ], [d] — [ð]. The ambiguity of pronunciation between the words: thing - sing - think - sink, three - free, this - with, what - that, first - thirst, Zen - then, as well as the widespread replacement of English [w] with Russian «В» — «ВОТ» instead of "what" and, conversely, using the [w] sound where [v] should be, etc.</p> <p>b) Replacing English sounds with similar Russian sounds: [н], [л], [с], [з], [т], [д]. English sounds [n], [l], [s], [z], [t], [d] should be pronounced on the alveoli, and not on the teeth, like Russian ones. The absence of aspiration (breathing) in English sounds [p], [t], [k], [h] is also a mistake.</p>
Aggregate pronunciation indicator	<p>a) Assimilation, the absence of a connection between words in a phrase (for example, linking). Sounds such as [s] and [θ], [z] and [ð], [v] and [w] should be pronounced as two different sounds when they are side by side. A very common mistake is the incorrect assimilation of these sounds to each other, as, for example, in combinations: is this [ɪz zɪs] or [ɪð ðɪs]; of water [əv wɔ:tə] or [əw wɔ:tə]. Words in the flow of speech must be connected to each other.</p> <p>b) Word stress. In Russian, a word can have only one stress, but in an English word, there can be two or three stresses. This presents some difficulties because English learners need to learn how to pronounce words with several stresses. Therefore, it is important to know the basic trends and rules of word stress in order to pronounce words correctly.</p> <p>c) The use of Russian intonation patterns instead of English ones: rhythm pauses, stress, and intonation, namely, rising, falling tone (especially in questions). What has been taken into account:</p>
Locus of vowel control	<p>a) English vowels: pronunciation /ɜ:/, /ɒ/, /ɔ:/.</p> <p>b) Four types of reading English vowels in stressed syllables</p>
Locus of diphthong control	[eɪ] [aɪ] [ɔɪ] [iə] [eə] [eə] [aʊ] [əʊ]

(Source: authors)

Control loci were carried out by the methods of presentations, work with podcasts (listening to Luke's podcasts and compiling podcasts by the students independently at the last verification stage), reading literary texts with an aviation theme (in particular, Hailey "Airport", Bach "Biplane"). The volume of the presentation is 5-6 slides, the speaking time is 5-7 minutes.

Listening comprises 5-7 minutes, discussion time is up to 10 minutes. The reading volume makes 2000 characters, time is up to 5 minutes.

The following describes the features of a 5-grade system for assessing the phonetic side of speech:

- Speech is perceived easily, means, there are no unreasonable pauses; phrasal stress and intonation contours, pronunciation of words

without violations of the norm; no more than five phonetic errors are allowed, including one or two errors that distort the meaning, contributes to grade "5".

- Six or seven phonetic errors, including 3-4, distorting the meaning, contributes to grade "4".
- Speech is perceived with difficulty due to a moderate number of unnatural pauses, stutters, incorrect placement of stresses and errors in the pronunciation of words, or more than 8 phonetic errors made, or 5 or more phonetic errors made that distort the meaning, contributes to grade "3".
- Speech is perceived with difficulty due to a large number of unnatural pauses, hesitations, incorrect placement of stresses, and errors in the pronunciation of words, or more than 9 phonetic errors were made, or 6 or more phonetic errors were made that distort the meaning, contributes to grade "2".

At the end of the experiment, statistical calculations were carried out in the experimental and control groups. The purpose of the calculations was to establish the reliability of differences in the results of testing students of the experimental group, obtained before and after the application of the proposed methodology, using a statistical tool for testing hypotheses.

Hypotheses put forward:

H0: The test results of the experimental group obtained after using the vocalism methodology are above the test results of the experimental group obtained before using the same.

H1: The test results of the experimental group obtained after using the vocalism methodology are below the test results of the experimental group obtained before using the same.

Testing the hypothesis about the reliability of differences in the results of testing the experimental group, obtained before and after using the proposed method, was carried out using the Wilcoxon rank sum test. This is a non-parametric statistical test to test for differences between two samples of paired or independent measurements on the level of some quantitative trait, measured on a continuous or ordinal scale. The implementation of the method involves comparing the absolute value of the severity of shifts in one direction or another. To do this, first, all the absolute values of the shifts are ranked, and then the ranks are summed up. If shifts in one

direction or another occur by chance, then the sums of their ranks will be approximately equal. If the intensity of shifts in one direction is greater, then the sum of the ranks of the absolute values of shifts in a certain direction will be significantly lower than it could be with random changes.

This technique was chosen among other alternatives as the most promising and accessible, since pronunciation is practiced every day. In practical classes in a foreign language, especially in non-linguistic institutes, it is important not only to improve the study and understanding of grammar, but also phonetics. Learn to speak correctly without dialects or accent. The experiment showed how and by what methods this can be done. There are also potential limitations of the purely phonological method of teaching a foreign language. We have looked at this method using a professionally oriented approach, but perhaps in alternative directions the methodology will be more specific. In addition, teaching pronunciation is important for developing students' listening and speaking skills. When reading, writing, listening, visual images become acoustic. They are combined with kinesthetic images, resulting in inner speech, which is then reproduced. And, as research has shown, it is vocalism and phonology that contribute to this process.

Results and Discussion

Before the experiment in the control group, positive assessments made 80%, in the experimental group they equaled 50%. After the end of the experiment, repeated control testing was carried out. Based on the results of the Education First tests, there was a determinately increased level of language proficiency. In the experimental group, the number of students at level A1 - Survival Level - Beginner and Elementary counted 2 people, A2 - Pre-threshold level (Waystage - Pre-Intermediate) there were 20 people, B - Independent User - 8 people. In the control group, the number of students of levels B - Independent User made 10 people and B1 - Threshold - Intermediate made 10 people, B2 - Threshold advanced level (Vantage - Upper-Intermediate) made 10 people.

After the experiment in the control group, positive assessments comprised 100%, in the experimental group it was 80%. Experimental data are presented in the form of histograms (Figures 2-5).

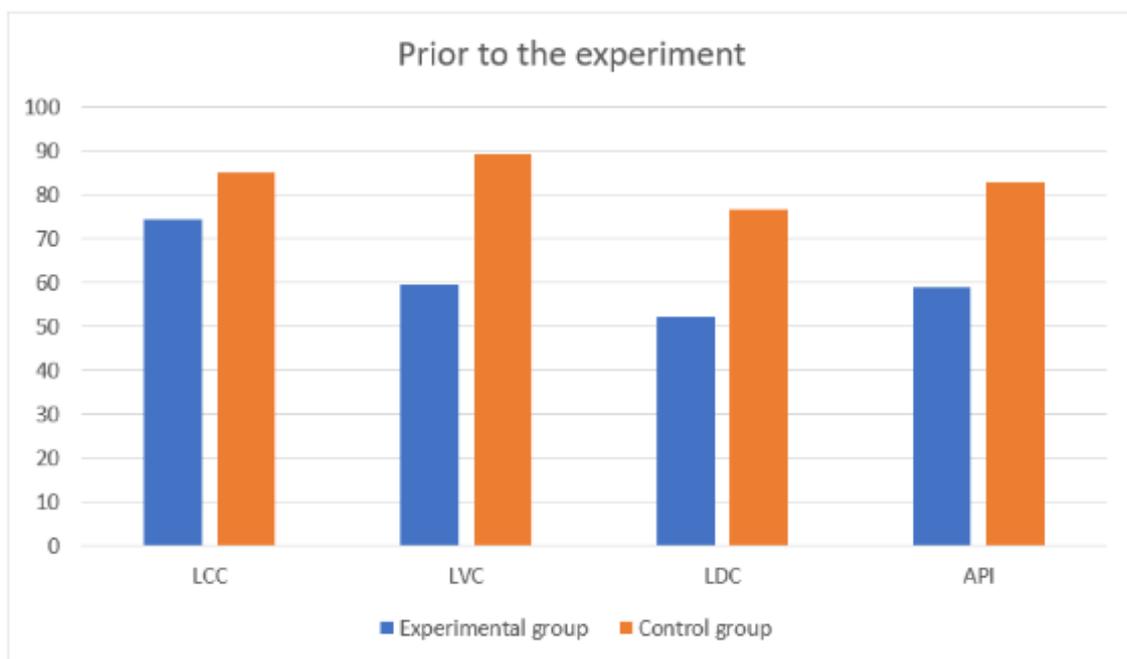


Figure 2. Control loci before the experiment in the experimental and control groups.
(Source: authors)

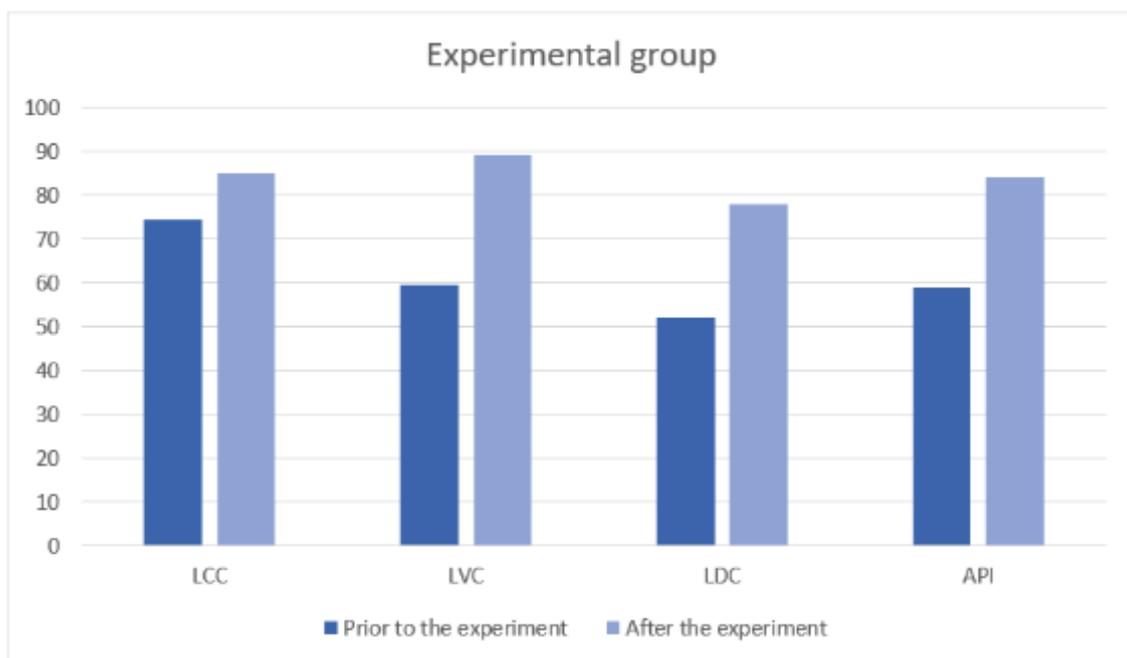


Figure 3. Control loci before and after the experiment in the experimental group.
(Source: authors)

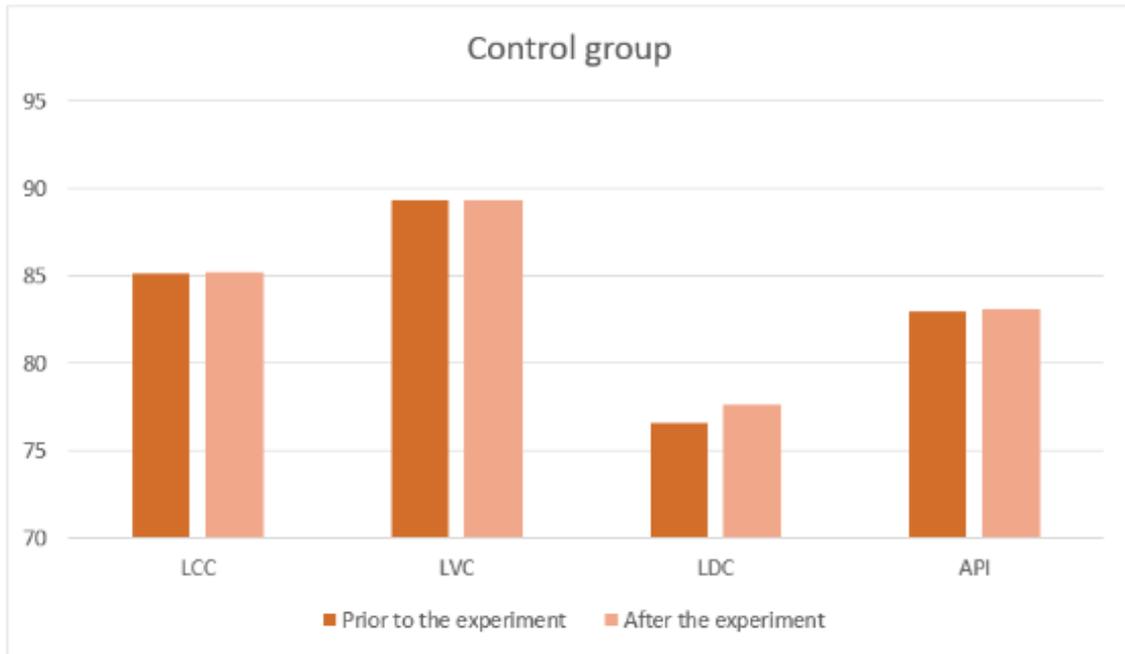


Figure 4. Control loci before the experiment in the control group.
(Source: authors)

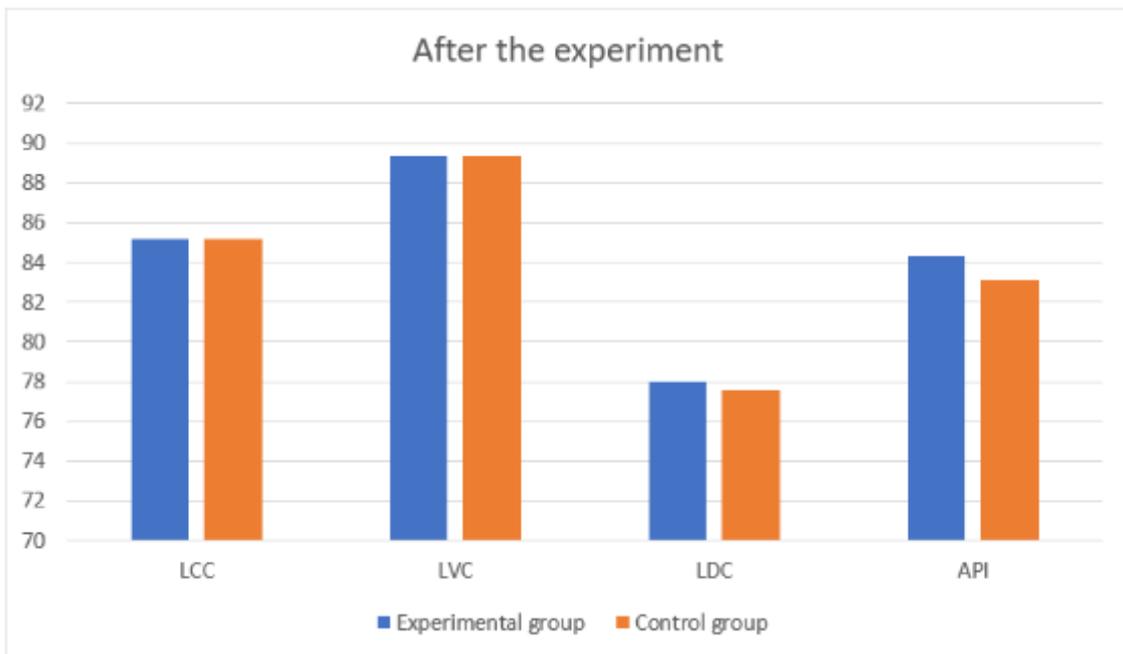


Figure 5. Control loci after the experiment in the experimental and control groups.
(Source: authors)

Table 2 provides statistical calculations in the experimental group, reflecting the results of

testing students before and after applying the vocalism methodology.

Table 2.

The results of testing students in the experimental group.

Testing results	Locus of consonant control	Locus of vowel control	Locus of diphthong control	Aggregate pronunciation indicator
Before experiment	72	65	51	70
After experiment	85	89	79	83

(Source authors)

The Wilcoxon rank sum test was applied to verify the hypothesis about the reliability of differences in the results of testing the experimental group, obtained before and after

using the vocalism methodology, was carried out using the Wilcoxon rank sum test. For this, each individual value "before" was first subtracted from the value "after" (Table 3).

Table 3.

Determination of differences in results and their absolute values in the experimental group

Before measurement, t before	After measurement, t after	Difference (t before-t after)	Absolute difference value
72	85	13	13
65	89	24	24
51	79	28	28
70	83	13	13

(Source: authors)

Since there are related ranks (the same rank number) of the 1st series, they are to be remodeled. It is implemented without changing the importance of the rank, i.e., the

corresponding ratios (greater than, less than or equal to) must be preserved between the rank numbers. The ranks remodeling is provided in Table 4.

Table 4.

Ranks remodeling in the experimental group.

Locations inside ordered series	Absolute difference of test results	New ranks
1	13	1.5
2	13	1.5
3	24	3
4	28	4

(Source: authors)

The results of the calculations and the total of ranks pairs are proposed in Table 5.

Table 5.

Calculation of rank pairs total in the experimental group

Before measurement, t before	After measurement, t after	Difference (t before-t after)	Absolute difference value	Difference rank index (Ri)
72	85	13	13	1.5
65	89	24	24	3
51	79	28	28	4
70	83	13	13	1.5
Total				10

(Source: authors)

Rank column total equals $\sum Ri=10$. Checking the correctness of the compilation of the matrix based on the calculation of the control sum:

$$\sum x_{ij} = \frac{(1+n)n}{2} = \frac{(1+4)4}{2} = 10$$

The column sum and the control sum are equal to each other; therefore, the ranking was carried out correctly.

Next, it is necessary to single out the atypical directions, in this case, the negative ones (that is, indicating deterioration in the test result after applying the vocalism methodology). The initial data of the experimental group do not contain atypical directions. The sum of the ranks of these atypical directions (R_{in}) is the empirical value of the criterion ($Temp$): $Temp = \sum R_{in} = 0$.

According to the table of critical values of the Wilcoxon rank sum test, the critical value of the criterion for $n=4$ and significance level $p \leq 0.01$ was determined: $T_{cr}(n=4; p \leq 0.01) = 1$. In the case under consideration, the empirical value of the Wilcoxon rank sum test ($Temp$) falls into the zone of significance: $Temp = 0 < T_{cr}(n=4; p \leq 0.01) = 1$, so the null hypothesis (H_0) is accepted.

Data on the results of testing the control group before and after the application of the vocalism methodology are presented in Table 6.

Table 6.
Test results of students in the control group

Testing results	Locus of consonant control	Locus of vowel control	Locus of diphthong control	Aggregate pronunciation indicator
Before experiment	79	82	74	72
After experiment	85	89	78	83

(Source: authors)

Features of the Wilcoxon rank sum test are provided in Tables 7, 8.

Table 7.
Determination of differences in results and their absolute values in the control group.

Before measurement, t before	After measurement, t after	Difference (t before-t after)	Absolute difference value
79	85	6	6
82	89	7	7
74	78	4	4
72	83	11	11

(Source: authors)

Table 8.
Calculation of rank pairs total in the control group

Before measurement, t before	After measurement, t after	Difference (t before-t after)	Absolute difference value	Difference rank index (R_i)
79	85	6	6	2
82	89	7	7	3
74	78	4	4	1
72	83	11	11	4
Total				10

(Source: authors)

Rank column total (rank difference number) equals $\sum R_i = 10$. Checking the correct-ness of the compilation of the matrix based on the calculation of the control total:

The column total and the control total are equal to each other; therefore, the ranking was carried out correctly.

The table of critical values reveals that the critical value of the Wilcoxon rank sum test for $n=4$ and significance level $p \leq 0.01$: $T_{cr}(n=4; p \leq 0.01) = 1$. In the case under consideration, the empirical value of the Wilcoxon rank sum test ($Temp$) falls into the zone of significance: $Temp = 0 < T_{cr}(n=4; p \leq 0.01) = 1$, so the null hypothesis (H_0) is accepted.

The study determined the following:

- the observed differences in pronunciation before and after using the vocalism methodology in the experimental and control groups are statistically significant;
- indicators of pronunciation control after the application of the vocalism methodology is above values of the indicators before its use;
- the use of the vocalism methodology in the course of teaching a foreign language can significantly increase the effectiveness of phonetic exercises.

It is supposed, that the authors Setter (2019), Mat Nayan & Setter (2016), Derakhshan (2015), Bebina (2015), Maksaeva (2016), and Voronina (2017), Anisimova et al., (2020). bring up a correct idea, that pronunciation is the main feature of foreign language speech, the basis for improving other foreign language skills. Accordingly, the success of foreign language communication depends on the clear and comprehensive structure of specialists' speech in a professional environment and how accurately interlocutors perceive this speech from a phonetic point of view. In this regard, teaching the phonetic material of a foreign language based on a professionally-oriented approach should be carried out in stages to develop both auditory pronunciation skills and rhythmic intonation (Furman et al., 2018).

This approach is recommended in teaching English pronunciation in specific speech situations so that students could demonstrate and train new patterns of sound and into-nation in any given context. Obviously, in a speech stream, sounds represent a single phonetic system, and outside of any given context, they become disconnected. Linguists know that German, English, and Dutch are vocal languages, while Belarusian, Polish and Russian are considered consonant-type (Neverova, & Rybakova, 2017; Sokolyanskiy, 2017). This difference is based on the specifics of vocalism since the opposition of vowels in duration is attributable to the phonological systems of the Slavic languages. On the other hand, the softening of consonants when pronouncing vowels does not have a typical impact on Germanic vocalism.

Differential characteristics of vowels include various gradations of quality and duration, as well as their combinations. For example, quality includes closed, half-closed, half-open, open (Andronov, 2020). The participation of lips in the formation of vowels in the vocalism of the English language is much weaker than in

German. Labialized vowels are formed with relatively less labialization and no lip protrusion. English does not have labialized first row vowels. The differential feature of labialization in the articulation of diphthongs in German is inherent only in back vowel phonemes through the protrusion of the lips. It is noteworthy that the labialized vowels of the first row, characteristic of vocalism in German and Dutch, are absent in English. The degree of construction of English phonemes is also lower than that of German. In addition, when articulating vowels, the tip of the tongue does not come into contact with the lower incisors. The body of the tongue is pulled back, especially when pronouncing a vowel sound. It should be added that in English, unstressed vowels can change their duration and quality or experience complete elimination (Murtazina, 2010).

An analysis of the traditional approach to teaching phonetic material shows that the learning process runs as follows: a single phoneme, a combination of phonemes or a phrase, a phrase, or an intonation structure is chosen as a learning unit. By explaining the correct articulation and training it with the help of analytical simulation exercises, students develop the necessary quality of pronunciation (Medvedeva, & Bezborodova, 2016).

It is believed that foreign language teachers of technical universities should organize effective training to improve the pronunciation of each student, through an individual approach and due consideration of the principle of continuous learning. Such training should be carried out at the initial stage starting from the first semester, when graduates of schools and colleges are divided into groups and subgroups, by the level of foreign language proficiency. Pronunciation and intonation training should consist in repeating and systematizing the rules of pronunciation, correcting pronunciation, and in some cases, the formation of pronunciation skills among students. Starting from the second semester, systematic training aimed at improving pronunciation should be conducted throughout the year. Students, as future foreign-language speaking professionals, should go through a deep study of the features of vocalism, phonetic phenomena, and sound correction techniques together with practice in reproducing the correct intonation.

It is interesting to note, that the process of understanding or listening to the foreign-language speech means an active and purposeful action associated with the complex mnemonic

actions, being the more successful the higher concentration of attention is (Bezborodova, 2015). Attention is buildup and developed through emotions. However, human emotions always appear along with volitional processes. A teacher of a technical university should build the educational process with maximum reliance on the active mental activity of students, and use various teaching methods that promote internal motivation, directing students' attention to the main elements of the vowel system, to completely improve the phonetic aspect of foreign speech through the perceived material.

It goes without saying, that the success of the communicative approach of teaching a foreign language in a technical university depends on how effectively modern pedagogical and teaching methods are applied. In particular, the authors single out authentic video materials as a basic tool that allows careful observation of the use of a foreign language in real communication and training pronunciation features. Video material should be frequently employed by the teachers to intensify the learning process, enrich its content and increase motivation to learn a foreign language.

The success factors in the course of foreign-language speech improvement mainly depend on the level of learned phonetic skills, volume of gained and processed knowledge, and dynamic interference of these components on the background of overall linguistic and acquired phonetic awareness (Volodina, & Volodina, 2019). It must be stressed that phonetic awareness is the ability of people to practically use mastered pronunciation and intonation skills by building their own system of phonetic knowledge. This is the ability to consciously record and recognize sound units of different levels, their features and models of formation and functioning; analyze the phonetic aspect of vocalism in the speech and draw appropriate conclusions regarding the presence of serious deviations from the standard vowel pronunciation system, identify their causes, and choose effective ways to overcome them with the help of a teacher.

Conclusions

The phonetic aspect of foreign-language speech is developed by the specialists as a result of the use of the vocalism methodology in a technical university in the course of a professionally-oriented approach considering communicative activity. Whenever authentic video materials are included in the training process, learning a

foreign language be-comes interactive and exciting. The three stages of learning using authentic video materials include both traditional and communicative methods. This type of learning intensifies the process of obtaining phonetic knowledge and phonetic awareness of the vowel system and, therefore, is a fundamental component in the formation of professional competence among foreign language learners. The prospect of further research entails the development of new ways of using interactive methods to train the phonetic aspect of foreign-language speech. These include online chats with native speakers and learning together with students from other countries, which significantly expands the range of opportunities for studying and developing foreign phonetics mastering, but as yet remains insufficiently included in educational activities.

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: title; Table S1: title; Video S1: title.

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Bibliographic references

- Andronov, A. V. (2020). "Labialization" versus "Reverse labialization". *Bulletin of St. Petersburg University, Language and Literature*, 17(4), 543-556. <https://cyberleninka.ru/article/n/razgublenno-st-protiv-ogublenosti>
- Anisimova, O. V., Bobodzhanova, L. K., Kolobova, K. S., & Makarova, I. S. (2020). Integration of Internet tools to enhance pronunciation skills: Effectiveness of educational content on YouTube. *Integrating Engineering Education and Humanities for Global Intercultural Perspectives. IEEEHGIP 2020. Lecture Notes in Networks and Systems*, 131. <https://acortar.link/CjTgd2>
- Bai, B., & Yuan, R. (2019). EFL teachers' beliefs and practices about pronunciation teaching. *ELT Journal*, 73(2), 134-143.
- Bebina, O. I. (2015). *The use of audio and video materials in the English lesson: study method*. Flinta: Moscow. <https://www.rosmedlib.ru/ru/book/ISBN97859765238521.html>
- Bezborodova, M. V. (2015). Phonetic analysis of the vocalism system (on the example of British English). *Bulletin of the Moscow State Linguistic University*, 15(726), 40-49. (In Russian)
- Bygate, M., Skehan, P., & Swain, M. (2001). *Researching pedagogic tasks: Second language learning, teaching, and testing*. London / New York: Routledge.
- Derakhshan, A. (2015). Helping adult and young learners to communicate in speaking classes with confidence. *MJSS*, 6(2), 520-525.
- Furman, N., Frantcuzskaia, E., Sheveleva, S., Bogdanova, A., Slesarenko, I., Fedorova, N., & Polonskaya, M. (2018). Building phonological competence of international students at a technical university for their further training in Russian as a medium of instruction. *11th International Conference of Education, Research and Innovation*, (pp. 9310-9317). IATED.
- Iaikaia, T. L. (2020). Vocalism as an articulatory-acoustic component of speech sounds. *Student*, 18-3(104), 57-60. <https://sibac.info/journal/student/104>
- Li, S., Ouyang, B. B., Liao, D. X., Xia, S. P., Li, L., & Hong, Q. Y. (2021). End-to-end multi-accent speech recognition with unsupervised accent modelling. *2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2021)*. 6418-6422. DOI: 10.1109/ICASSP39728.2021.9414833
- Maksaeva, A. E. (2016). *Sociocultural experience in the practice of teaching a foreign language: monograph*. Moscow: Flinta. (In Russian)
- Mat Nayan, N., & Setter, J. (2016). Malay English intonation: the cooperative rise. *English World-Wide*, 37(3), 293-322.
- Medvedeva, T. V., & Bezborodova, M. V. (2016). Changes in the modern system of the British pronunciation standard (on the example of vocalism). *Bulletin of the Moscow State Linguistic University. Humanitarian sciences*, 15(754), 166-174. (In Russian)
- Mitchell, R. (2014). Language teaching research and language pedagogy. *ELT Journal*, 68(3), 357-360.
- Murtazina, E. M. (2010). Communicative orientation in teaching English pronunciation (on the example of vocalism). *Bulletin of the Kazan Technological University*, 3, 443-449. <https://acortar.link/47mxuv>
- Neverova, N. V., & Rybakova, L. V. (2017). Fundamentals of the formation of communicative competence in the process of foreign language communication among students of a non-linguistic university. *Pedagogy and psychology of education*, 2, 96-101. (In Russian)
- Räisänen, T. (2020). The use of multimodal resources by technical managers and their peers in meetings using English as the business lingua franca. *IEEE Transactions on Professional Communication*, 63(2), 172-187.
- Sapuntsova, A. V. (2018). Vocalism of Russian homonymous clitics as a means of grammatical differentiation. *Proceedings of the Institute of the Russian Language. V. V. Vinogradova*, 17, 68-82. (In Russian)
- Setter, J. (2019). *Your Voice Speaks Volumes: it's not what you say but how you say it (paperback edition)*. Oxford University Press.
- Sheipak, O. A., Artyushina, G. G., & Zhurbenko, N. L. (2019). The influence of modern information technologies on the motivation of students in teaching foreign languages. *18th International Conference "Aviation and Cosmonautics - 2019"*, 312-313. (In Russian)
- Sokolyanskiy, A. A. (2017). The concept of distinctive feature in Moscow phonological school. *Issues of Cognitive Linguistics*, 2, 127-136. URL: <https://acortar.link/xPPNqE>
- Tabakova, T. G., Maneshina, V. V., & Artyushina, G. G. (2017). Change of predicatives in translation. *Advances in chemistry and chemical technology*, 31(14 (195)), 83-85.



- <https://cyberleninka.ru/article/n/smena-predikativov-pri-perevode>
- UNESCO. (2019). *Report of the Commission on Education*. General Conference, 40th session of UNESCO, Paris. <https://acortar.link/81oSdV>
- Vepreva, T. B. (2012). Teaching professionally oriented foreign vocabulary to students of non-linguistic specialties based on an integrated approach. (Ph.D. Thesis). St. Petersburg State University (In Russian)
- Volodina, E. V., & Volodina, I. V. (2019). Professionally oriented teaching of a foreign language in a technical university in the dynamics of the development of science, production and education. *Business. Education. Law*, 4(49), 414-419. (In Russian)
- Voronina, L. A. (2017). *Practicum on foreign language teaching technologies*. St. Petersburg State University: St. Petersburg. (In Russian)