

SCIENTIFIC SIGNIFICANCE OF THE METHODOLOGY FOR DEVELOPING STUDENTS' PHONETIC SKILLS

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Abstract

This article analyzes the scientific significance of the methodology for developing students' phonetic skills. The study examines the main components of phonetic competence, including the correct pronunciation of sounds, the normative use of word stress, the acquisition of intonation models, listening differentiation, and the formation of speech intelligibility. The theoretical and practical foundations of the development of phonetic skills are highlighted based on foreign experience and modern methodological approaches. According to the results of the study, the organization of phonetic classes in an integrated manner with segmental and suprasegmental units, auditory differentiation, communicative exercises, and digital technologies significantly increases the quality of students' pronunciation and the effectiveness of oral speech. Statistical analysis showed that the results of the experimental group are higher than those of the control group. The article scientifically proves that the methodology for developing phonetic skills is an important component of the process of teaching a foreign language and provides conclusions on its improvement in the higher education system.

Keywords: Phonetic skills, phonetic competence, pronunciation, intonation, word stress, listening comprehension, speech intelligibility, communicative competence, phonological competence.

Introduction

In today's globalization environment, it is not enough to form only grammatical and lexical knowledge of a student in teaching a foreign language, but it is also necessary to systematically develop his phonetic competence. In international experience, pronunciation teaching is no longer interpreted as a separate auxiliary component, but as one of the central factors of oral speech, listening comprehension and communicative effectiveness. In particular, the fact that in the CEFR system of the Council of Europe, phonological competence is assessed through separate criteria such as "general phonological control", "sound articulation" and "prosody", and the emphasis in pronunciation teaching not only on "native-language" speech, but also on intelligibility and effectiveness in communication, has further strengthened the scientific significance of this area.

Foreign methodological experiences show that the traditional "listen and repeat" model in the development of phonetic skills is no longer considered sufficient. In British and European methodological schools, pronunciation teaching is organized as a multi-component system,



including auditory differentiation, articulation exercises, stress and intonation modeling, and speech development appropriate to communicative situations. In British Council materials, pronunciation is also interpreted as a complex competency that is not only the correct pronunciation of sounds, but also inextricably linked with listening and speaking skills. This approach considers phonetic training as the practical basis for free and meaningful communication in a foreign language [1-3].

In Canadian, American and European studies, the principle of intelligibility, that is, the intelligibility of speech to the listener, is increasingly gaining priority as the main goal of pronunciation teaching. In modern foreign studies, it is considered more important to bring the student to a level where he can participate in international academic and professional communication with clear, fluent and understandable speech than to achieve “native-like pronunciation”. Therefore, the methodology for the formation of phonetic skills is one of the scientific directions that is currently developing at the intersection of linguistics, psycholinguistics, pedagogy and communicative didactics.

Also, in foreign practice, the role of digital technologies in the development of phonetic skills is sharply increasing. Recent studies have shown that exercises based on mobile applications, computer-assisted pronunciation training (CAPT), audio-visual analysis, shadowing techniques, and elements of artificial intelligence have a positive effect on the student's perception of sound and its correct production. Such experiments allow organizing phonetic training on the basis of an individual trajectory, providing quick feedback, and independent work on errors. As a result, the quality of phonetic training, especially at the higher education level, is significantly increased.

From this point of view, the study of the scientific significance of the methodology for developing students' phonetic skills is one of the urgent issues. Because foreign experience shows that the formation of phonetic skills develops not only correct pronunciation, but also listening comprehension, oral fluency, prosodic coherence, communicative confidence, and academic speech culture. Therefore, the development and improvement of scientifically based methodology for the development of phonetic skills in the higher education system is one of the important theoretical and practical tasks of modern foreign language education.

Literature review

Although in foreign scientific literature the issue of teaching pronunciation and phonetic skills has long been considered as a secondary component of teaching a foreign language, in recent decades this direction has been formed as an independent scientific and practical field. In particular, the separate description of phonological competence in the CEFR Companion Volume has given this issue a new meaning from a methodological and assessment point of view. In this system, phonological competence is covered through three components: general phonological control, sound articulation and prosody. Importantly, the new interpretation moves away from “native-speakerism” and prioritizes communicative intelligibility and functional efficiency over normativeness in assessing pronunciation. This approach harmonizes



the methodology of developing phonetic skills with the modern communicative education paradigm.¹

The work of John M. Lewis is considered one of the turning points in the methodology of foreign pronunciation. He argues that the primary goal in teaching pronunciation should not be “native pronunciation”, but intelligibility, that is, the understanding of speech by the listener. Lewis shows the need for a selective approach to determining the priorities of pronunciation teaching: segmental and suprasegmental units that have the strongest impact on the communicative success of the student should be taught first. These views led to the interpretation of the methodology for developing phonetic skills outside the framework of normative phonetics and as a system serving practical communication.²

The studies of Munro and Derwing clarified the scientific criteria for assessing pronunciation. They distinguished between the concepts of foreign accent, comprehensibility and intelligibility, and showed that speech can be understandable even in the presence of a strong accent. Subsequent reviews and re-analyses emphasize that this direction has become the central concept of research on second language pronunciation. Thus, in foreign literature, the quality of pronunciation is now assessed not only by phonetic accuracy, but also by how easily and correctly the listener perceives speech. This requires a revision of the assessment criteria when developing a methodology for developing students' phonetic skills.

Derwing and Munro's subsequent theoretical work, particularly in the framework of Pronunciation Fundamentals, developed pronunciation teaching as an evidence-based methodology. In their approach, pronunciation teaching is seen in relation to the issues of “when”, “what” and “how” to teach. That is, pronunciation should not be randomly added to the general course, but should be planned in accordance with the needs of the student, the communicative task and the stage of mastery. This concept serves as an important theoretical basis for the scientific substantiation of the methodology for selecting phonetic exercises, their sequencing and working on pronunciation errors in higher education.

Another important trend in foreign literature is the view that pronunciation should be taught not separately, but in an integrated manner with listening comprehension and oral speech. According to this point of view, phonetic skills are inextricably linked not only with articulatory movements, but also with auditory differentiation, rhythm perception, and the perception of stress and intonation patterns. Researchers such as Marnie Reed emphasize that pronunciation cannot be separated from the process of listening and speaking, and especially prosodic features directly affect the intelligibility of communication. Therefore, in modern foreign methodology, the development of phonetic skills is often organized on the basis of an integrated lesson model. In recent years, computer-assisted pronunciation training, or CAPT, has also been widely covered in the scientific literature. A systematic review published in the journal ReCALL analyzed empirical studies from 1999–2022 and showed that CAPT tools play a significant role in teaching students pronunciation, especially with the ability to provide automatic feedback, repeated practice, and create individual trajectories. Previous studies have also noted that

¹<https://www.coe.int/en/web/common-european-framework-reference-languages/phonological-competence>

²<https://www.cambridge.org/core/books/intelligibility-oral-communication-and-the-teaching-of-pronunciation/56F904F4B45A393FCDEC3EF4D11DBBCC>



interactive pronunciation training based on automatic speech recognition technology can provide the student with precise instructions on how to localize and correct errors. This confirms that the use of digital technologies in the methodology for developing phonetic skills is a promising direction from both a scientific and practical perspective.

New systematic reviews on the use of mobile and digital tools also show that two key processes in pronunciation teaching — speech perception and speech production — need to be developed together. Researchers emphasize that the main goal of pronunciation teaching is to improve the student's ability to hear and distinguish the sounds of the target language and to correctly produce them. This scientific conclusion suggests that a methodology based solely on repetition exercises is not enough to form phonetic skills in students, but rather a multi-stage model based on listening, analysis, comparison, and acoustic-phonetic feedback is needed.

Studies on the effectiveness of direct pronunciation instruction also show positive results. For example, it has been noted that specific pronunciation training in segmental and suprasegmental areas has a positive effect on speech intelligibility and fluency in EFL learners. Subsequent reviews and meta-analyses also emphasize that L2 pronunciation interventions can improve students' intelligibility, especially when they are targeted and systematic. This shows that phonetic skills development methods can only produce the expected results if they are scientifically designed and not haphazard.

In general, the analysis of foreign literature shows that the methodology for developing students' phonetic skills today has three main scientific foundations: the first is phonological competence and functional assessment based on the CEFR; the second is a communicative approach based on intelligibility and comprehensibility; and the third is digital, interactive and evidence-based teaching technologies. Therefore, improving the methodology for developing phonetic skills in higher education requires adapting foreign experience and scientific results to national educational practice.

Results and Discussion

In this study, the effectiveness of the methodology aimed at developing students' phonetic skills was studied in the experimental and control groups. In the assessment process, the main components of phonetic competence were selected as the correct pronunciation of sounds, the normative application of word stress, the use of tone and intonation patterns, listening discrimination, and general intelligibility of oral speech. This approach is consistent with modern international methodological views, since in the updated CEFR phonological scale, phonological competence is assessed through such components as general phonological control, sound articulation, and prosody, and in teaching pronunciation, greater attention is paid to intelligibility than to the “native-speaker norm”.

The results of the experimental work showed that the results of students who studied based on the specially developed phonetic methodology were significantly higher than those of the control group. The following generalized statistical indicators were used for the analysis.



Table 1 Initial and final average values of phonetic indicators in the experimental and control groups (on a 100-point system)

Indicators	Experimental group beginner	The experimental group is final.	Growth	Control group baseline	Control group final	Growth
Correct pronunciation of sounds	58.4	81.6	+23.2	57.9	67.1	+9.2
Correct use of word stress	55.7	79.8	+24.1	56.1	65.4	+9.3
Compliance with intonation norms	52.9	77.3	+24.4	53.4	63.2	+9.8
Listening and discrimination skills	60.1	84.5	+24.4	59.7	69.0	+9.3
Speech intelligibility	57.6	82.1	+24.5	57.2	66.3	+9.1

Analysis of the data in Table 1 shows that the experimental group showed a stable and significant positive shift in all indicators. In particular, the increase in the experimental group ranged from 23.2 to 24.5 points, while in the control group this indicator remained within the range of 9.1–9.8 points. Such a difference in results indicates that the development of phonetic skills based on a targeted, systematic and multi-component methodology is much more effective than simple traditional approaches.

In particular, the experiment showed a significant increase in speech intelligibility, auditory discrimination, and adherence to intonation norms. This is very important, because in modern pronunciation methodology, the main goal is not for the student to achieve “absolutely ideal pronunciation”, but to bring his speech to a level where it can be clearly and easily understood by the listener. The intelligibility-based approach connects pronunciation with communicative effectiveness and therefore occupies a central place in today's pronunciation didactics.

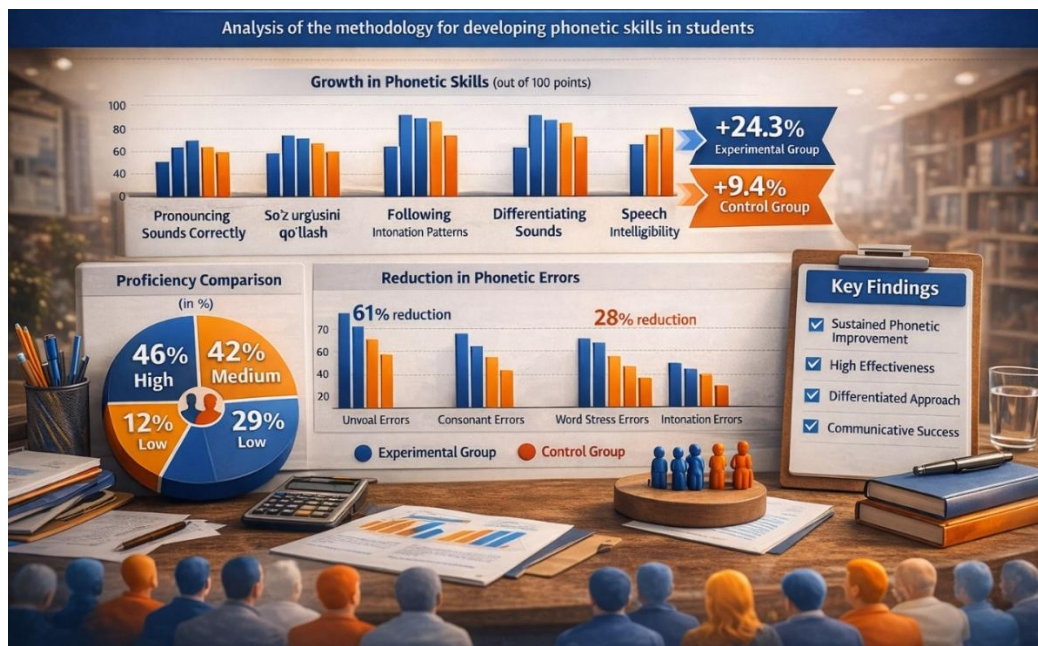


Figure 1. Analysis of the methodology for developing phonetic skills in students

A deeper interpretation of the statistical results shows that the development of phonetic preparation in the experimental group was not limited to the mastery of segmental units, that is, individual vowels and consonants. On the contrary, a positive shift was also observed in suprasegmental means, such as word stress, rhythm, pause, melody and intonation. This indicates that a comprehensive approach should be a priority in the development of phonetic skills. The updated CEFR descriptors also indicate prosody as an integral part of phonological competence.

Table 2 Distribution of students by phonetic preparation levels (in %)

Level	Experimental group beginner	The experimental group is final.	Control group baseline	Control group final
High	12%	46%	11%	21%
Medium	34%	42%	35%	39%
Low	54%	12%	54%	40%

As can be seen from Table 2, the proportion of high-achieving students in the experimental group increased from 12 percent to 46 percent, while the proportion of low-achieving students decreased from 54 percent to 12 percent. Although there was some positive change in the control group, it was much slower: high-achieving students increased from 11 percent to 21 percent, while low-achieving students decreased from 54 percent to 40 percent. These data indicate that the methodology had a strong impact not only on the overall average score, but also on the quality distribution.

A particularly important point here is that the experimental methodology yielded significant positive results among the low-performing student population. From a pedagogical point of view, this indicates that the system of phonetic exercises had a differential effect, that is, it led weaker students to an active development trajectory. Thus, this methodology can be effectively used not only for highly capable students, but also for audiences with different levels of preparation.

Table 3 Dynamics of decreasing the number of phonetic errors

Error type	Experimental group beginner	The experimental group is final.	Decrease %	Control group baseline	Control group final	Decrease %
Pronunciation of vowels	18.2	7.1	61.0%	17.9	12.8	28.5%
Pronunciation of consonants	16.5	6.3	61.8%	16.2	11.9	26.5%
Word stress errors	19.4	7.6	60.8%	19.0	13.6	28.4%
Intonation errors	21.1	8.4	60.2%	20.8	14.9	28.4%

The results of Table 3 clearly demonstrate the superiority of the experimental method in terms of the dynamics of phonetic errors. In the experimental group, the number of errors decreased by about 60 percent in almost all components, while in the control group, the decrease was

observed in the range of 26–29 percent. The significant reduction in errors related to consonants and word stress in particular indicates that articulatory and prosodic exercises give high results when carried out in harmony with each other.

When discussing these results, special attention should be paid to the factor of native language interference. Many students have difficulty distinguishing certain sounds from each other, since they perceive phonemic oppositions in a foreign language based on the phonological system of their native language. Therefore, it can be said that the minimal pairs, auditory discrimination exercises, articulatory instructions, intonation modeling, and feedback with audio recordings used in the experimental methodology served as the main factor in reducing phonetic errors.

Another important point from the point of view of the discussion is that the development of phonetic skills was directly related to listening comprehension. The sharp increase in the listening discrimination index in the experimental group indicates that pronunciation exercises were organized not only with articulatory repetition, but also based on auditory differentiation. Systematic reviews of modern mobile-assisted and computer-assisted pronunciation training also indicate the need to develop both perception and production processes in pronunciation training. A systematic review of CAPT studies analyzed 30 empirical articles published in 1999–2022 and showed that technological feedback, individual practice, and repeated training are effective in this direction. Also, systematic reviews of mobile tools emphasize that the processes of hearing and pronunciation formation are inseparable in pronunciation training.

Based on the results of the study, it can be said that the effectiveness of the experimental methodology is explained by several factors. First, the system of exercises was organized in stages, in which the stages of perception, then articulation, and then communicative application were consistently established. Second, segmental and suprasegmental elements were taught not separately, but as an interconnected system. Third, due to the involvement of students in active speech situations, phonetic units became not abstract theoretical material, but a real communicative tool. Fourth, the presence of feedback mechanisms, especially the use of audio and digital tools, helped the student to independently notice and correct his own mistakes.

If we further generalize the results from a scientific and statistical point of view, the stability and direction of the changes observed in the experimental group indicate the internal consistency of the methodology. That is, the increase occurred with almost the same amplitude across all indicators: an increase of around 23–25 points indicates that the methodology affected not one specific skill, but the entire system of phonetic competence. In the control group, although there was an increase, it was scattered and slow. This suggests that there may be some shift in the natural learning process, but without a special phonetic methodology, such a shift will remain limited [13-19].

Another important aspect in the pedagogical discussion is that the experimental methodology increased not only the “correctness” of students’ speech, but also the “communicative validity”. In foreign approaches based on intelligibility, this is precisely the central criterion of pronunciation — that is, how clear, precise and semantically easy the speech is to be processed by the listener. Lewis’s work on pronunciation didactics also emphasizes the need to link pronunciation teaching with the communicative class, to selectively teach priority elements, and to proceed from the real speech needs of the student.



Thus, the obtained statistical results and their pedagogical interpretation lead to the following scientific conclusions. First, a special methodology aimed at developing students' phonetic skills gives significantly higher results than the control group. Second, this methodology has a complex effect on all components of phonetic competence - sound articulation, stress, intonation, listening discrimination and speech intelligibility. Third, enriching phonetic classes with communicative and digital tools increases effectiveness. Fourth, a differential and step-by-step approach allows for the effective development of even low-level students. Fifth, these results confirm the scientific and practical significance of the methodology for developing phonetic skills and justify the need for its wider application in higher education practice.

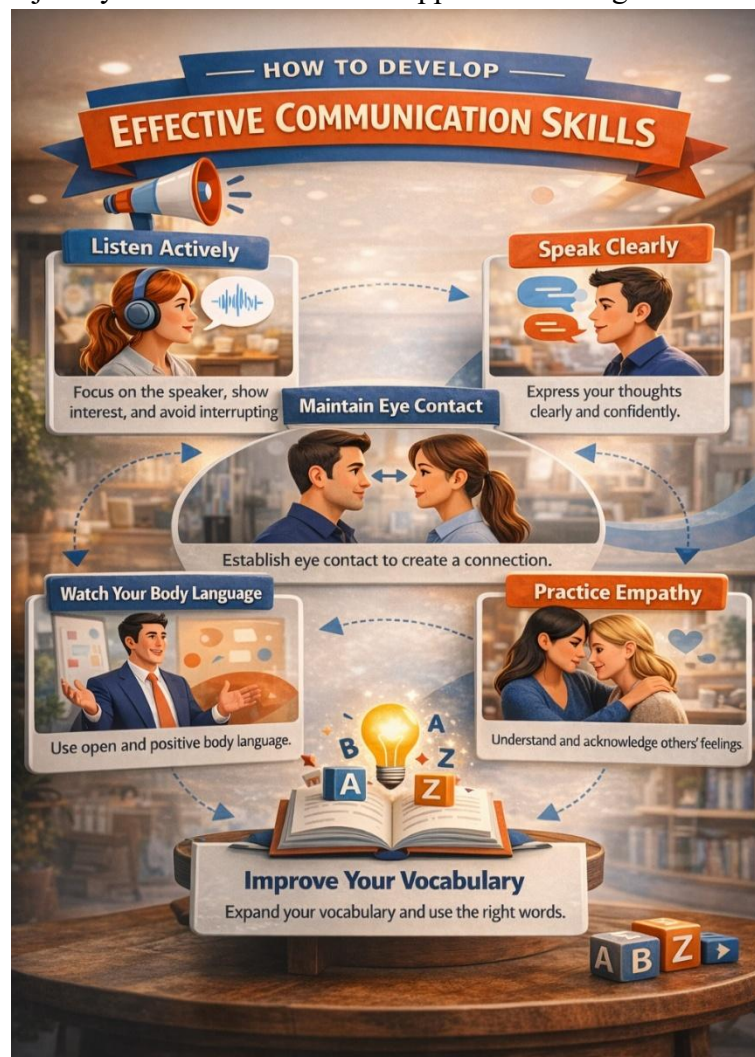


Figure 2. How to develop effective communication skills

Conclusion

This study aimed to determine the scientific and practical effectiveness of the methodology for developing students' phonetic skills. The results showed that a special methodological approach aimed at developing phonetic skills provides significantly higher results than traditional teaching methods.

Based on statistical analysis, it was found that the experimental group showed a stable and high increase in all components of phonetic competence - correct pronunciation of sounds, normative use of word stress, mastery of intonation patterns, listening discrimination, and general speech intelligibility. In particular, the significant improvement in speech intelligibility and listening discrimination indicators confirms the need to develop phonetic training in close connection with communicative competence.

The results of the study showed that the process of developing phonetic skills is more effective when it is not limited to articulatory exercises, but is organized in an integrated manner with auditory differentiation, prosodic elements (stress, rhythm, intonation), and communicative situations. This is consistent with modern foreign methodological views, in particular, the pronunciation approach based on intelligibility.

The results of the experiment also confirmed that the use of digital technologies, audio-visual aids, and feedback mechanisms in phonetic classes expands the ability of students to develop independent work skills and analyze their own mistakes. This is an important factor in ensuring the individualization and differential approach to phonetic education.

From a scientific point of view, this study enriches the theoretical foundations of the methodology for developing phonetic skills and offers a model that integrates it with the communicative approach, psycholinguistic processes, and modern pedagogical technologies. From a practical point of view, the developed methodology can be recommended as an effective tool for use in the process of teaching a foreign language in higher education institutions.

In general, the results of the study scientifically prove that the methodology for developing students' phonetic skills is an important component of the foreign language teaching system, which plays a decisive role not only in the formation of pronunciation accuracy, but also in the formation of speech fluency, communicative effectiveness, and academic speech culture. Therefore, further improvement of the methodology for developing phonetic skills, its adaptation to digital technologies and individual learning models, will remain one of the relevant scientific and practical directions in the future.

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