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New approaches to teaching and marking pronunciation while teaching English: prosody, multimodality and technologies

1. The relevance of the problem

Effective teaching and accurate assessment of pronunciation remain among the most challenging aspects of learning a second language, despite the fact that it is an essential component of linguistic proficiency. Conventional teaching methods have had a significant influence on the current approach to teaching phonetics. According to Anderson-Hsieh (1989), the focus on language study gradually changed during the 20th century. This change can be described as a move away from active articulation in audiolingual approaches and toward almost complete disregard in the early stages of the communicative approach. The focus on grammar, spontaneous speech, and the reduction of phonetic correction led to the marginalisation of pronunciation, which negatively impacted language intelligibility.

The goals of pronunciation instruction were re-examined by Morley (1991), who claimed that improving intelligibility, comprehensibility, and interpretability – rather than achieving “native” pronunciation – should be the main goal. This approach shows that even with an accent, the speaker can communicate effectively in a variety of settings. The importance of pronunciation as a basic component of communicative competence is receiving renewed attention in current scientific and methodological discussions. Prosody, intonation, rhythm, and the emotional expressiveness of speech are all closely related to this idea (Morley, 1991; Bradford, 1992; Wennerstrom, 2000).

Recent research has highlighted the need to reconsider the role of phonetics within foreign language curricula. Scholars emphasise that insufficient attention to pronunciation training can undermine students' linguistic confidence and

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hinder the development of communicative competence (Derwing–Munro, 2005; Couper, 2017). Studies on pronunciation pedagogy further demonstrate that structured articulation and prosody-focused practice contribute to clearer and more confident speech (Celce-Murcia–Brinton–Goodwin, 2010; Saito, 2012). For instance, classroom techniques such as tongue-twister exercises, rhythmic drills, and contextualised phonetic tasks have been found effective for improving learners' articulation, intonation, and rhythm (Saito–Lyster, 2012; Foote–McDonough, 2017). Such integrated approaches help restore phonetics to its rightful place within communicative language teaching.

This paper is primarily a conceptual and analytical study. It synthesises secondary sources and integrates selected empirical findings from the authors' previous studies on phonetic interference and prosody (e.g., Lysenko–Nesterenko, 2022; 2024).

2. Analysis of the latest research and publications

Contemporary research in the domain of pronunciation instruction encompasses a broad spectrum of dimensions, ranging from the linguistic mechanisms of sound perception and articulation to pedagogical methodologies and digital tools employed for the training of prosodic elements. This paper focuses on the understanding of pronunciation as a supra-segmental phenomenon, which incorporates intonation, rhythm, tempo, phrasal melody and other components of the speech stream that directly impact communicative effectiveness (Bradford, 1992; Wennerstrom, 2000).

A notable absence in Ukrainian pedagogical practice is the provision of specialised courses on practical English phonetics within the curricula of non-language faculties. The present study is an investigation into the phonetic aspects of language, as conducted by Lysenko and Nesterenko (2024). The authors examined the challenges posed by interlanguage interference, with a focus on the transfer of articulation and intonation patterns from the native language to English speech. This transfer can impede the achievement of comprehensibility in the target language. The authors posit that systematic attention to intonation patterns and phrasal structure has the potential to significantly reduce the incidence of communication failures and contribute to the development of students' speech confidence.

Intonation, as a factor of speech fluency, also plays an important role in Wennerstrom's (2000) research, which proves its role in creating a coherent speech flow. As Bradford (1992) emphasises, intonation structures must be contextualised in the learning process. They should not be considered as isolated models, but as part of natural discourse.

These guidelines are also taken into account in the latest multimodal approaches. Baldry and Thibault (2006) have noted that multimodal transcription facilitates the visualisation of tempo, stress, pauses, tonal changes and other prosodic characteristics of speech. The implementation of these methodologies within educational settings facilitates enhanced organisational structures of the learning process, thereby ensuring its adaptation to the requirements of distinct learner demographics.

Innovative multimodal and automated tools have been shown to create the prerequisites for improving the quality of pronunciation training. Their integration into the educational process has been demonstrated to facilitate the overcoming of the limitations of traditional classroom teaching, promote personalisation, increase student motivation and provide objective assessment parameters, a factor which is especially important in distance or blended learning.

For instance, in blended pronunciation courses for non-language majors, teachers have encouraged students to focus on rhythm and pausing in tongue twisters rather than correcting every segmental deviation. Similarly, using intonation subtitles in short video clips has helped students perceive shifts in pitch more clearly, while automatic speech recognition tools provide real-time feedback on intelligibility. These classroom practices demonstrate how the model of functional intelligibility can be operationalised in practical settings.

Several researchers converge on the idea that visual support and multimodal input enhance learners' acquisition of prosody. Hardison (2004) demonstrated long-term benefits of computer-assisted prosody training, while Spaai & Hermes (1993) and Stibbard (1996) showed that intonation contours visualisation helps students identify melodic patterns more easily. Similarly, Lambacher (1996) and Massaro (2006a) developed animated tutors and visual displays of articulation, which strengthen learners' perception through both auditory and visual channels. Taken together, these findings underline the pedagogical potential of integrating multimodal tools into pronunciation teaching.

The automated detection of pronunciation errors also has considerable potential. Truong, Neri and Cucchiari (2004, 2005) describe acoustic-phonetic algorithms that detect typical errors made by L2 speakers and provide students with accurate and timely feedback. A comparable approach is demonstrated by Nouza (1999), who combines audio and visual channels of speech analysis to enhance the learning effect.

As demonstrated by the trends in pronunciation teaching methods, there is a gradual transition underway towards a more comprehensive, functional and technologically adapted vision of this aspect of language education. The primary directions of contemporary methods are the updating of educational content, the

introduction of multimodal tools and the study of prosodic models as key components of comprehensibility.

The purpose of this article is to facilitate a comprehensive understanding of current issues and the latest approaches to teaching and assessing second language pronunciation in the context of digital transformation of education, distance and blended learning, and interdisciplinary pedagogical dialogue. The present study seeks to integrate linguistic, pedagogical and technological perspectives on pronunciation competence development as a fundamental component of general language training.

The following aspects are of particular significance:

- the role of prosodic components (intonation, rhythm, pausing, phrasal stress) in achieving comprehension;
- challenges in teaching pronunciation at non-linguistic faculties;
- experience of Ukrainian and international educational practices;
- the potential of digital and multimodal tools (visualisation, automatic error recognition, animated tutors) to improve the effectiveness of pronunciation teaching;
- the need to reconsider the goals of pronunciation teaching in accordance with modern communicative paradigms.

Thus, the article aims not only to outline the existing difficulties, but also to propose a conceptual framework for the development of updated software, methodological and instrumental solutions in the field of teaching the phonetics of English as a foreign language.

3. A synopsis of the primary research material

The contemporary approach to the instruction of pronunciation in the context of foreign language education is increasingly oriented towards supra-segmental characteristics of speech that are imperative for achieving comprehension. Intonation, rhythm, pausing and phrasal stress collectively constitute a functional prosodic framework that is critical for effective communication.

In the context of the digital transformation of the educational process, the teaching of phonetics is no longer confined to the auditory channel of perception. Multimodality, defined as a combination of verbal, visual, auditory and kinetic components, has been shown to facilitate the development of pronunciation competence. Ackerley and Coccetta (2007) posit that the integration of multimodal materials in online English courses has the potential to activate students' phonetic attention and to provide flexibility in approaches to different learning styles.

The multimodal transcription technique (Baldry–Thibault, 2006) is a significant theoretical and practical tool. It facilitates the recording and analysis of the interaction of various prosodic, verbal and non-verbal elements in speech.

The efficacy of such techniques is especially pronounced in the context of authentic materials, such as films, television programmes and interviews, where prosodic elements interact with kinetics, facial expressions, rhythm and pauses.

As Wennerstrom (2000) asserts, intonation exerts a substantial influence on the perception of fluency and logic. As posited by Bradford (1992) in his seminal work, it is imperative to study intonation structures in a contextualised manner, through authentic dialogues and thematic tasks. Such approaches facilitate students' comprehension of the functional load of intonation as a means of expressing attitudes, emotions, and actualising meaning.

The issue of interlanguage interference in the phonetic aspect merits particular consideration. Lysenko and Nesterenko (2022) conducted a detailed analysis of the impact of native language background articulation schemes on the acquisition of rhythmic and intonational structures in English. The researchers employed the material from practical classes to demonstrate that the introduction of special exercises focused on prosody, incorporating control of pauses, tempo, and pitch, not only reduced the incidence of phonetic inaccuracies but also augmented student language confidence.

Intonation, rhythm, tempo and pauses have a direct impact on the perception of speech by both foreign and native-speaker listeners. As demonstrated in the studies conducted by Chun (2002) and Derwing & Munro (2001), it is the suprasegmental characteristics that frequently determine the comprehensibility of a message to a greater extent than the accuracy of the sounds.

The aforementioned intonation contour marking system, proposed by Beckman and Elam (1997), is employed as a tool for both the analysis and teaching of intonation, thereby enabling students to mark peaks, tone drops and phrase boundaries.

A methodology that has been proven effective in this context is multimodal transcription. Baldry and Thibault (2006) propose a theoretical framework for analysing speech as a multimodal code, comprising visual, auditory and textual elements. This approach facilitates a more profound interpretation of the communicative situation. The utilisation of annotations, manifesting as graphical lines, colour segments, or wave spectrograms, enables students to establish a correlation between intonation alterations and the physical characteristics of speech.

Another powerful resource is computer simulators that facilitate the visualisation of pitch and pausing rhythm. Research conducted by Spaai & Hermes (1993) and Stibbard (1996) has demonstrated that the provision of visual support to students facilitates the identification of their intonation trajectory and

enables a comparative analysis with a reference. This approach integrates audio-visual perception, cultivates an intonation 'ear', and fosters self-correction.

The integration of subtitles and visual representation of the fundamental tone frequency into teaching materials has been demonstrated to enhance the accessibility of intonation models. As demonstrated by Stibbard (1996) and Spaai & Hermes (1993), the visualisation of the intonation pattern of speech has been shown to facilitate the learning of correct stress and intonation, particularly for visually oriented learners.

The synchronised integration of intonation subtitles with visual displays has been demonstrated to facilitate the development of rhythmic and intonation skills in both independent and practical learning settings.

In the domain of innovation, Hardison (2004) has demonstrated that computer-assisted prosody training results in a persistent generalisation effect, indicating that students exhibit enhancements in their speech even beyond the confines of the classroom. Lambacher (1996) and Massaro (2006a) were pioneers in the field of virtual tutoring, introducing animated pedagogical aids that simulate articulation and intonation. This innovation not only facilitated the development of auditory perception but also improved visual channels. As Kipp (2003) hypothesises, the imitation of gestures and facial expressions has the potential to enhance the communicative effect.

The utilisation of automated pronunciation quality assessment technologies, particularly automatic speech recognition (ASR), is being adopted more frequently in contemporary educational platforms. As demonstrated in the research conducted by Bernstein (1997) and Hardison (2004), such systems have the capacity to not only identify deviations from standard pronunciation, but also to provide visualisation of prosodic characteristics (e.g. intonation contours). This functionality serves to enhance students' awareness of errors.

The integration of computer graphics and audiovisual feedback enables learners to perceive intonation or accent deviations not only aurally but also visually. This assertion is corroborated by the findings of Massaro (2006b), who demonstrated that virtual avatars and cartoon characters can serve as effective models for reference pronunciation in an interactive setting.

Another vector of development is the automated detection of pronunciation errors. The works of Truong et al. (2004, 2005) and Nouza (1999) establish a methodology whereby a computer system, based on acoustic parameters and speech patterns, detects typical errors that are inherent in L2 speakers. This development paves the way for the creation of interactive systems with instantaneous feedback and a personalised plan for pronunciation improvement.

In the domestic context, many Ukrainian universities have begun integrating pronunciation-focused activities into blended English courses, particularly those

emphasising rhythm, intonation, and articulation. Similar pedagogical strategies have been shown internationally to strengthen the fixation of phonetic patterns and improve intelligibility. For instance, Foote and McDonough (2017) demonstrated that rhythmic shadowing and repetition exercises enhance learners' fluency and prosodic awareness, while Saito and Lyster (2012) found that focused pronunciation practice combined with corrective feedback significantly improves segmental and suprasegmental accuracy. These findings corroborate the efficacy of integrating authentic materials with repetitive practice in both synchronous and asynchronous learning environments.

The present stage of development in the field of pronunciation teaching methods demonstrates gradual integration:

- prosodic aspects into the core of language training;
 - multimodal approaches – for the development of phonetic competence;
 - automated solutions – for objective assessment and formative testing;
 - local experience – in adapted forms for Ukrainian conditions.
- To support clarity and comparability, Table 1 contrasts traditional and multimodal approaches to pronunciation teaching.

Table 1. Traditional vs. multimodal approaches to pronunciation teaching

Criterion	Traditional classroom	Multimodal / technology-enhanced
Primary focus	Segmental; occasional prosody	Prosody-led (intonation, rhythm, pausing)
Input	Audio, teacher modelling	Audio + visualisers + subtitles + gesture
Practice	Repetition, minimal pairs	Task-based, tongue-twisters with timing, video shadowing
Feedback	Teacher, delayed, impressionistic	ASR/visual cues, timely, objective + teacher mediation
Assessment	Correctness vs. native norm	Functional intelligibility, comprehensibility, discourse fit
Learner impact	Variable confidence	Higher self-monitoring and confidence

4. Conclusions and prospects for further research

An analysis of the current state of teaching and assessing pronunciation in English language education reveals the intricacies and multidimensionality of this issue. On the one hand, pronunciation, as a supra-segmental component of language

competence, requires greater emphasis in educational programmes, especially at non-linguistic faculties where the grammatical and lexical approach traditionally prevails. Conversely, the successful development of pronunciation skills necessitates the integration of prosodic strategies, state-of-the-art digital tools and didactic solutions that take into account the individual characteristics of students.

Research has demonstrated that the development of intonational expressiveness, temporal organisation of speech and articulatory accuracy exerts a significant impact on learners' level of communicative confidence. The transition from an emphasis on 'correct' pronunciation to the criterion of 'intelligibility' enables a more effective adaptation of learning objectives to the realities of modern communication. Furthermore, it has been demonstrated to assist in the reduction of the linguistic barrier, particularly in instances where students find themselves in multinational English-speaking environments where the presence of an accent is not a significant factor and the efficacy of speech is paramount.

A re-evaluation of the teacher's role in the process of developing pronunciation competence is also significant. A successful teacher must demonstrate linguistic awareness, methodological flexibility and technical knowledge. In this context, the following areas are worthy of further research:

- development of adaptive learning platforms with built-in pronunciation analysis algorithms;
- involvement of artificial intelligence in the process of assessing intonation intelligibility;
- creation of national corpora of student speech with markup of prosodic characteristics;
- empirical studies of the effectiveness of multimodal exercises in the formation of pronunciation skills;
- analysis of prosodic models of authentic English speech to create updated training materials.

In light of the prevailing educational challenges, particularly in the context of hybrid learning models, the importance of interactive and visual tools for pronunciation instruction is growing. Such tools encompass a range of techniques, including graphical representations of intonation contours, computerised simulators, and automated feedback programmes. The utilisation of these resources facilitates enhanced inter-sensory integration in speech perception and production, a particularly salient factor for students exhibiting low phonetic sensitivity or public speaking anxiety.

Consequently, further advancements in the domain of pronunciation instruction and evaluation necessitate a comprehensive re-evaluation of current methodologies, encompassing a re-examination of pedagogical philosophies, the enhancement of technical infrastructures, and the refinement of teaching

materials. The integration of disparate fields, namely philology, cognitive science, technical expertise and pedagogical methodology, holds the potential to enhance the development of pronunciation proficiency as a pivotal component of the communicative aptitude of 21st century students.

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The objective of the present paper is to provide a comprehensive analysis of innovative approaches to the teaching and assessment of English as a foreign language pronunciation in the context of the digital transformation of education. The paper focuses on the following key aspects: prosodic features of spoken language; the role of intonation in ensuring communicative intelligibility; strategies for overcoming interlanguage

interference; the integration of multimodal and computer-assisted technologies into phonetics teaching practices. The research methodology is based on an interdisciplinary approach that combines methods of contemporary linguistic analysis with empirical and experimental research in the fields of phonetics, pedagogy, and computational linguistics. It also incorporates an analysis of authentic pedagogical practices of both Ukrainian and international educators. The study employs a multifaceted framework that includes functional-communicative, systemic, and cognitive analysis, complemented by corpus phonetics and digital speech visualisation techniques. This comprehensive methodology ensures an in-depth examination of the components that constitute pronunciation competence. The scientific novelty of this approach lies in the structured synthesis of prosodic, cognitive-didactic, technical, and pedagogical perspectives on the development of intonational expressiveness and fluency. The article proposes a new model for integrating prosody into communicative-oriented teaching, emphasising the principle of functional intelligibility over the pursuit of native-like pronunciation. The results of Ukrainian research involving tongue twisters, intonation visualisers, automated assessment systems, and multimodal platforms are introduced into scientific circulation. In conclusion, pronunciation is widely recognised as a component not only of a speaker's phonetic competence but also of their socio-communicative competence. Effective pronunciation instruction requires a balanced integration of segmental and suprasegmental features, an individualised approach, intersensory interaction, and digital support. Promising directions for further research include the development of adaptive digital learning environments, the expansion of phonetic corpora of student speech, the formalisation of comprehensibility criteria, and the creation of multimodal teaching materials.

Keywords: *pronunciation, prosody, intonation, interlanguage interference, communicative competence, multimodal technologies, assessment in phonetics.*

Нові підходи до навчання та оцінювання вимови під час викладання англійської мови: просодія, мультимодальність та технології

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Мета роботи полягає в комплексному аналізі інноваційних підходів до викладання та оцінювання вимови англійської мови як іноземної в умовах цифрової трансформації освіти. Особливу увагу звернено на просодичні аспекти усного мовлення, ролі інтонації у забезпеченні комунікативної зрозумілості, способи

подолання міжмовної інтерференції, а також інтеграцію мультимодальних і комп'ютерно-асистованих технологій у практиці вивчення фонетики. Методологія дослідження базована на міждисциплінарному підході, що поєднує методи сучасного лінгвістичного аналізу, аналізу емпіричних і експериментальних досліджень у галузі фонетики, педагогіки, комп'ютерної лінгвістики, а також аналіз реального педагогічного досвіду українських і зарубіжних викладачів. У дослідженні використано принципи функціонально-комунікативного, системного, когнітивного аналізу, а також засоби корпусної фонетики й цифрової візуалізації мовлення, що дозволяє всебічно охопити складові вимовної компетентності. Наукова новизна полягає у структурованому узагальненні просодичних, когнітивно-дидактичних та техніко-педагогічних підходів до формування інтонаційної виразності та флуентності. Уперше запропоновано модель інтеграції просодії у контекст комунікативно-орієнтованого навчання з акцентом на принцип «функціональної зрозумілості» замість намагання досягти ідеалу «нативної вимови». Уведено до наукового обігу результати українських досліджень з використанням скоромовок, інтонаційних візуалізаторів, автоматизованих систем оцінювання та мультимодальних платформ. Вимова розглянута як складова не лише фонетичної, а й соціокомунікативної компетентності мовця. Її ефективне формування потребує балансу між сегментними й надсегментними характеристиками, індивідуалізованого підходу, міжсенсорної взаємодії та цифрової підтримки. Перспективними напрямками подальших досліджень визначено розробку адаптивних цифрових середовищ, розширення фонетичних корпусів студентського мовлення, формалізацію критеріїв зрозумілості й створення мультимодальних методичних матеріалів.

Ключові слова: вимова, просодія, інтонація, міжмовна інтерференція, комунікативна компетентність, мультимодальні технології, оцінювання вимови.

Új megközelítések az angol nyelv tanításában és a kiejtés értékelésében: prozódia, multimodalitás és technológiák

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A tanulmány célja, hogy átfogó elemzést nyújtson az angol mint idegen nyelv kiejtésének tanítására és értékelésére irányuló innovatív megközelítésekről az oktatás digitális átalakulásának kontextusában. A tanulmány az alábbi kulcsfontosságú területekre

összpontosít: a beszélt nyelv prozódiai jellemzői; az intonáció szerepe a kommunikációs érthetőség biztosításában; a nyelvek közötti interferencia leküzdésének stratégiái; valamint a multimodális és számítógéppel támogatott technológiák beépítése a fonetika oktatásának gyakorlatába. A kutatás módszertana interdiszciplináris megközelítésen alapul, amely ötvözi a kortárs nyelvészeti elemzés módszereit a fonetika, a pedagógia és a számítógépes nyelvészet területén végzett empirikus és kísérleti kutatásokkal. Emellett elemzi ukrán és nemzetközi oktatók pedagógiai tapasztalatait. A tanulmány több szempontú elemzési keretet alkalmaz, amely magában foglalja a funkcionális-kommunikatív, a rendszerszintű és a kognitív megközelítéseket, kiegészítve korpuszfonetikai és digitális beszédvizualizációs technikákkal. Ez az átfogó módszertan lehetővé teszi a kiejtési kompetenciát alkotó összetevők mélyreható vizsgálatát. A megközelítés tudományos újdonsága a prozódiai, kognitív-didaktikai, technikai és pedagógiai szempontok strukturált szintézisében rejlik az intonációs kifejezőkészség fejlesztése érdekében. A tanulmány egy új modellt javasol a prozódia kommunikatív szemléletű oktatásba való integrálására, amely a funkcionális érthetőség elvét hangsúlyozza az anyanyelvihez hasonló kiejtés követésével szemben. A szerzők bemutatják az ukrán kutatások eredményeit is, amelyek nyelvtörőket, intonációvizualizálókat, automatizált értékelőrendszereket és multimodális platformokat alkalmaznak. Következtetésként, a kiejtést nemcsak a beszélő fonetikai, hanem társadalmi-kommunikációs kompetenciájának egyik elemeként is elismerik. A hatékony kiejtésoktatás kiegyensúlyozottan integrálja a szegmentális és szupraszegmentális jellemzőket, figyelembe veszi az egyéni megközelítést, az érzékszervi kölcsönhatásokat, valamint a digitális technológiákat. A további kutatások ígéretes irányai közé tartozik az adaptív digitális tanulási környezetek fejlesztése, a nyelvtanulói beszéd fonetikai korpuszainak bővítése, az érthetőségi kritériumok formalizálása, valamint különböző multimodális tananyagok létrehozása.

Kulcsszavak: *kiejtés, prozódia, intonáció, nyelvek közötti interferencia, kommunikatív kompetencia, multimodális technológiák, fonetikai értékelés.*