



THE WORK OF THE ORGANS SPEECH

Teshaboyeva Nafisa Zubaydulla kizi

Jizzakh branch of the National University of Uzbekistan named
after Mirzo Ulugbek

The faculty of Psychology, department of Foreign languages

Phylology and foreign languages

Supervisor, nafisateshaboyeva@gmail.com

Usmanova Zarifa Tulkin kizi

Zarifa0823@gmail.com.

<https://doi.org/10.5281/zenodo.18052611>

ARTICLE INFO

Received: 21st December 2025

Accepted: 22nd December 2025

Published: 25th December 2025

KEYWORDS

organs of speech, articulation, phonation, respiration, vocal tract, vocal cords, tongue, lips, velum, resonance, speech production, airflow mechanism, articulators, phonetics, speech mechanism

ABSTRACT

This article provides an in-depth and original analysis of the work of the organs of speech, examining how various anatomical structures cooperate to produce human language. It discusses the roles of the respiratory, phonatory, articulatory, and resonating organs, highlighting how airflow, vocal fold vibration, and articulatory movements interact to generate speech sounds. The study explains the functions of major speech organs such as the lungs, diaphragm, larynx, tongue, lips, palate, and nasal cavity, emphasizing their coordinated activity in respiration, phonation, articulation, and resonance. Through descriptive and analytical approaches, the article demonstrates that spoken language is the result of a highly complex physiological system that transforms airflow into meaningful sounds. Understanding the work of the organs of speech is crucial for linguistics, phonetics, speech therapy, and language teaching, as it provides the foundation for analyzing pronunciation, correcting articulation, and treating speech disorders.

INTRODUCTION

This article provides a comprehensive and detailed exploration of the organs of speech and their coordinated role in producing human language. It examines the respiratory, phonatory, articulatory, and resonating systems that form the basis of spoken communication. Through physiological, phonetic, and linguistic perspectives, the study explains how airflow generated by the lungs is transformed into voiced and voiceless sounds through vocal fold vibration, and how the articulators shape these sounds into meaningful phonemes. Special attention is given to the role of the tongue, lips, palate, and jaw as primary articulators, as well as the influence of resonance in the oral, nasal, and pharyngeal cavities. The article also highlights the neurological control of speech production and the factors that affect clarity, voice quality, and articulatory precision. The analysis demonstrates that speech is a highly complex physiological process requiring perfect coordination between the brain and the speech organs. This work provides valuable insight for linguists, language teachers, speech therapists, and medical professionals specializing in ear, nose, and throat disorders.

MAIN BODY

Human speech represents one of the most sophisticated and defining characteristics of human communication. It distinguishes human beings from other species and enables the exchange of ideas, emotions, cultural values, and knowledge across generations. At the heart of this extraordinary ability lies a complex system of anatomical structures collectively known as the organs of speech. These organs form a coordinated biological mechanism that transforms simple airflow into articulate, meaningful linguistic units. Without the precise functioning of these structures, the production of language as we know it would be impossible. The process of speech production is multidimensional and involves several interrelated physiological systems. The respiratory system, consisting primarily of the lungs, diaphragm, and trachea, generates the airflow that acts as the fundamental energy source for speech. The phonatory system, located in the larynx, modifies this airflow through the vibration of the vocal folds, producing voiced sounds that carry pitch, loudness, and tone. The articulatory system—including the tongue, lips, teeth, jaw, and palate—shapes these sounds into distinct consonants and vowels. Additionally, the resonating cavities of the throat, mouth, and nose amplify and enhance the quality of the voice, giving it depth, clarity, and uniqueness. Speech production also depends on the neurological system, which provides the essential control over voluntary and involuntary movements of the speech organs. Specific areas of the brain, such as Broca's area, Wernicke's area, and the motor cortex, coordinate the timing, sequencing, and accuracy of articulatory movements. This neural coordination ensures that speech is not only physically produced but also meaningful, coherent, and context-appropriate. Thus, speech is a remarkable demonstration of the integration between physiological structures and cognitive processes. The study of the organs of speech holds significant importance in various disciplines. In phonetics and linguistics, it provides the foundation for understanding how speech sounds are produced, classified, and perceived. In language teaching, knowledge of articulation helps instructors guide learners in developing accurate pronunciation, reducing accent interference, and overcoming difficulties associated with unfamiliar sounds. In speech therapy and clinical phonology, understanding the work of speech organs is essential for diagnosing and treating articulation disorders, voice problems, and speech impairments. Medical fields such as otolaryngology and neurology also rely on this knowledge for treating structural or functional disorders affecting the vocal tract.

Moreover, the ability to analyze speech scientifically allows researchers to explore how different languages utilize the speech organs in unique ways. While all humans share the same basic anatomical structures, languages differ greatly in how they employ articulatory positions, airflow patterns, and resonance to create distinctive sound systems. This diversity highlights the adaptability and versatility of the speech mechanism. Given the essential role that speech plays in human interaction, a deeper understanding of the organs of speech is crucial. This article aims to present an expanded and detailed examination of these organs, their structure, their coordinated work, and the physical and cognitive processes involved in speech production. By exploring respiration, phonation, articulation, resonance, and neural control, the study seeks to provide a comprehensive overview of how human beings produce spoken language. Such knowledge contributes to improved linguistic theory, more effective language instruction, enhanced therapeutic practices, and greater appreciation of the biological brilliance underlying human communication.

THE PHYSIOLOGICAL BASIS OF SPEECH PRODUCTION

Speech is not a single action but a chain of interconnected physiological events. To fully understand how the organs of speech function, it is necessary to examine each system in depth and analyze how they interact to create continuous, meaningful communication.

1. The respiratory system: the power source of speech: The respiratory system provides the essential air pressure and airflow that make speech possible. Although breathing is primarily an automatic biological function, during speech it becomes consciously controlled, regulated, and modified.

1.1. The function of the lungs: The lungs act as the primary generator of energy for speech production. When the diaphragm contracts, the lungs fill with air (inhalation); when it relaxes, the air is pushed outward (exhalation). Speech sounds are produced almost completely during controlled exhalation, which is significantly slower and more deliberate than normal breathing.

1.2. The role of the diaphragm: The diaphragm controls the amount of air released from the lungs. Professional speakers, actors, and singers train the diaphragm to manage airflow with precision, allowing them to speak for longer periods without strain.

1.3. Airflow types in speech: Most languages use pulmonic egressive airflow—air coming out of the lungs. However, some languages also use:

- glottalic airflow (ejectives and implosives)
- velaric airflow (clicks in African languages)

These variations show the adaptability of the human speech mechanism.

2. The phonatory system: the voice generator: Speech cannot exist without phonation, the vibration of the vocal cords, which transforms airflow into sound waves.

2.1. Structure of the larynx: The larynx houses the vocal cords (vocal folds), two flexible muscle tissues that open and close rapidly during speech. The speed of these vibrations determines the pitch of the voice.

2.2. Types of phonation: Depending on how tightly the vocal folds come together, different phonation types emerge:

- Modal voice – normal speaking voice
- Breathy voice – loose vocal fold closure
- Creaky voice – irregular vibration
- Falsetto – elongated, thin vocal fold vibration
- Voiceless sounds – vocal folds remain open

These phonation types contribute to accents, styles of speech, emotions, and even social identity.

3. The articulatory system: shaping speech sounds: Articulation transforms raw sound into meaningful speech. This system includes both active and passive articulators.

3.1. Active articulators: Active articulators move to create speech sounds. They include:

- tongue – the most versatile articulator
- lips – used for bilabial and labiodental sounds
- lower jaw – controls mouth opening
- soft palate – raises/lowers to create oral or nasal sounds
- vocal folds – adjust for voicing or whispering

3.2. Passive articulators: These do not move but provide the surfaces needed for articulation:

- teeth

- alveolar ridge
- hard palate
- uvula

3.3. Articulation of consonants: Consonants are produced by constricting airflow. Their classification is based on:

- Place of articulation (bilabial, dental, alveolar, palatal, velar, glottal)
- Manner of articulation (plosive, fricative, nasal, lateral, approximant, etc.)
- Voicing (voiced/voiceless)

3.4. Articulation of vowels: Vowels are shaped mainly by:

- height of the tongue (high, mid, low)
- position of the tongue (front, central, back)
- lip rounding (rounded/unrounded)

Even slight adjustments in tongue height or lip shape significantly alter vowel quality.

4. The resonating cavities and voice quality: Resonance determines the color, richness, and distinctiveness of each person's voice.

4.1. Oral cavity: The shape of the mouth chamber influences most vowel qualities.

4.2. Nasal cavity: When the velum lowers, air escapes through the nose, producing nasal sounds /m/, /n/, /ŋ/.

4.3. Pharyngeal cavity: This cavity contributes depth and fullness to the voice. Skilled speakers modify pharyngeal resonance to project their voice more effectively.

5. The neurological control of speech: Speech depends not only on physical organs but also on the brain.

5.1. Broca's area: Controls speech production, grammatical structuring, and motor planning.

5.2. Wernicke's area: Responsible for comprehension and meaningful language formulation.

5.3. Motor cortex: Directs muscle movements of the articulators.

Damage to any of these regions can lead to serious speech disorders such as aphasia, apraxia, or dysarthria.

6. Factors influencing speech production: Speech can be affected by several factors:

6.1. Physiological factors

- respiratory illnesses
- vocal fold inflammation
- dental misalignment
- congenital anomalies (cleft palate, tongue-tie)

6.2. Psychological factors: Stress, anxiety, or emotional tension can cause stuttering, voice trembling, or hesitation.

6.3. Environmental factors: Background noise, acoustics of a room, and social context influence how loudly or clearly a person speaks.

7. Cross-linguistic perspectives: Although the anatomical structure of speech organs is universal, languages differ in how they utilize these organs. Examples:

- Arabic relies heavily on pharyngeal and uvular sounds.
- Mandarin uses tone, controlled by vocal fold tension.
- English distinguishes many vowels based on subtle articulatory differences.
- African languages like Xhosa use click consonants made with velaric airflow.

This variation shows the flexibility of the speech mechanism and the rich diversity of human languages.

CONCLUSION

The study of the work of the speech organs reveals the extraordinary complexity and precision required for human speech production. Speech is far more than the mere release of air from the lungs; it is the outcome of a highly coordinated system in which respiration, phonation, articulation, and resonance operate together seamlessly. Each organ involved—from the lungs and diaphragm to the vocal folds, tongue, lips, and resonating cavities—performs a unique and indispensable role. Only when these structures function in harmony can clear, natural, and intelligible speech be produced. The respiratory system provides the essential airflow that forms the energy source for speech, while the larynx regulates this airflow and transforms it into voice through the vibration or separation of the vocal folds. The articulatory organs—including the tongue, lips, jaw, teeth, and palate—shape this voice into consonants and vowels, producing the wide variety of phonemes found in human languages. Resonating chambers amplify and enrich these sounds, giving each individual a distinctive vocal quality. Equally important is the neurological control that governs timing, coordination, and meaning, without which the speech organs could not function with such precision. This analysis highlights that speech is both a biological and cognitive phenomenon. It depends not only on the physical functioning of the organs but also on the brain's ability to coordinate rapid, intricate movements with linguistic intention. Variations in physiological conditions, emotional states, environmental factors, and linguistic background can all influence the efficiency and quality of speech production. Understanding the work of the speech organs has significant implications for linguistics, phonetics, language education, speech therapy, and medical sciences. It provides a foundation for diagnosing and treating speech disorders, improving pronunciation in language learning, and enhancing vocal performance. As research in phonetics and neurolinguistics continues to advance, our understanding of speech mechanisms will grow even deeper, offering new insights into one of humanity's most remarkable abilities—the power of spoken language.

REFERENCES:

1. Brown, H. Douglas. (2007). *Principles of Language Learning and Teaching*. New Jersey: Pearson Education.
2. Cahyono, Bambang. Yudi. et al. (2016). Indonesian Students' Writing Proficiency and Their Ability in Using Complex Sentences. *International Journal on Studies in English Language and Literature (IJSELL)*. Volume 4, Issue 9. September 2016, PP 22-23.
3. Dulay, et al. (1982). *Language Two*. New York: Oxford University Press.
4. Ellis, Rod. (2003). *The Study at Second Language Acquisition*. New York: Oxford University Press.
5. Frank, Marcella. (1972). *Modern English, A Practical Reference Guide*. New Jersey: Prentice Hall Inc. Englewood Cliffs.
6. Hogue, Ann. (1995). *Academic Writing*. New York: Longman

7. Teshaboyeva, N., & Mamayoboyeva, S. (2020). COMMUNICATIVE APPROACH TO LANGUAGE TEACHING. In МОЛОДОЙ ИССЛЕДОВАТЕЛЬ: ВЫЗОВЫ И ПЕРСПЕКТИВЫ (pp. 409-414).
8. Teshaboyeva, N. (2020). LINGUISTIC PERSONALITY, ITS STRUCTURAL
9. CHARACTERISTICS IN THE NEW PERSPECTIVE DIRECTIONS. In МОЛОДОЙ
10. ИССЛЕДОВАТЕЛЬ: ВЫЗОВЫ И ПЕРСПЕКТИВЫ (pp. 415-420).
11. Nafisa, T., & Marina, S. (2023). TEACHING AND LEARNING OF ENGLISH VOCABULARY IN TESL AND TEFL CLASSROOMS. International Journal of Contemporary Scientific and Technical Research, 465-469.
12. Nafisa, T. (2023). NOUNS AND THEIR GRAMMATICAL CATEGORIES. Новости образования: исследование в XXI веке, 2(16), 292-297.
13. Nafisa, T., & Marina, S. (2023). TEACHING AND LEARNING OF ENGLISH VOCABULARY IN TESL AND TEFL CLASSROOMS. International Journal of Contemporary Scientific and Technical Research, 465-469.
14. Nafisa, T. (2023). THE USA ECONOMY, INDUSTRY, MANUFACTURING AND NATURAL RESOURCES OF GREAT BRITAIN. INTERNATIONAL JOURNAL OF RECENTLY SCIENTIFIC RESEARCHER'S THEORY, 1(9), 94-97.
15. Nafisa, T. (2023). Secondary ways of word formation. In Conference on Universal Science Research (Vol. 1, No. 12, pp. 109-112).
16. Teshaboyeva, N. (2023). Compound sentences in the English language. Yangi O'zbekiston taraqqiyotida tadqiqotlarni o'rni va rivojlanish omillari, 2(2), 68-70.
17. Teshaboyeva, N. Z. (2023). Modifications of Consonants in Connected speech. In Conference on Universal Science Research (Vol. 1, No. 11, pp. 7-9).
18. Teshaboyeva, N. Z., & Niyatova, M. N. (2021). General meanings of the category of tenses. International Journal of Development and Public Policy, 1(6), 70-72.
19. Zubaydulla, T. N. (2023). THE CLASSIFICATION OF SYNONYMS AND THEIR SPECIFIC FEATURES." XXI ASRDA INNOVATION TECHNOLOGIYALAR, FAN VA TA'LIM TARAQQIYOTIDAGI DOLZARB MUAMMOLAR" nomli respublika ilmiy-amaliy konferensiyasi, 1(12), 126-131.
20. Teshaboyeva, N., & Yakubova, N. (2023). CHANGES OF MEANING OF WORDS. Центральноеазиатский журнал образования и инноваций, 2(12), 126-129.
21. Teshaboyeva, N., & Erkaboyeva, S. (2024). TEACHING LISTENING WITH TECHNOLOGY. Молодые ученые, 2(35), 46-49.