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An Innovative Phonetic Mapping of English Vowels and Consonants among EFL Learners

Yani Lubis [1], Elwan Rhidonta Sinulingga[2], Maimunah Apriani Ritonga[3], Milda Wahyu Arista[4]

[1,2,3,4] Universitas Islam Negeri Sumatera Utara Medan, Indonesia

Email: yanilubis@uinsu.ac.id[1], elwan0304232041@uinsu.ac.id[2] maimunah0304232033@uinsu.ac.id[3], milda0304233091@uinsu.ac.id[4]

ABSTRACT

This study explores the application of a phonetic mapping model designed to improve the pronunciation of English vowels and consonants among EFL learners. Recognizing that many students struggle with phonemes absent in their native language, the research investigates whether visual and articulatory-based phoneme mapping can enhance learners' phonological awareness and production accuracy. Using a descriptive classroom-based method, 30 intermediate-level EFL students were divided into control and experimental groups. The experimental group was taught using a phonetic mapping strategy that organizes sounds by articulatory features such as voicing, place, and manner of articulation. Data were collected through pre- and post-tests, learner recordings, and qualitative feedback. The results showed a significant improvement in pronunciation accuracy in the experimental group, with a 28.5% increase compared to 10.2% in the control group. Learners also reported increased confidence and better understanding of English sound systems. These findings suggest that phonetic mapping is an effective tool for improving pronunciation and fostering phonological awareness among EFL learners

Keywords: *Phonetic mapping, EFL learners, English vowels, English consonants, pronunciation instruction*

INTRODUCTION

Mastering the pronunciation of English involves more than just learning vocabulary and grammar; it requires a deep understanding of the phonological system, particularly vowels and consonants, which are the building blocks of spoken language. For English as a Foreign Language (EFL) learners, this aspect of language acquisition is often one of the most difficult to achieve. Many learners struggle with perceiving and articulating sounds that do not exist in their native language, leading to common pronunciation errors that can hinder oral communication, affect comprehension, and reduce learners' confidence in speaking English.

English has a complex phonetic inventory compared to many other languages. It includes a wide range of vowel sounds, including distinctions between tense and lax vowels, diphthongs, and subtle variations in vowel length and quality. Additionally, the consonant system in English features sounds that are particularly challenging for non-native speakers, such as the interdental fricatives /θ/ and /ð/, or consonant clusters that do not occur in many other languages. These phonological features often prove difficult for learners whose first language has a simpler or significantly different sound system. For instance, many learners from East Asian or Southeast Asian language backgrounds may substitute or omit certain English consonant sounds, while learners from Romance language backgrounds may struggle with English vowel contrasts.

Despite the recognized importance of pronunciation in communicative competence, pronunciation instruction often receives limited attention in many EFL classrooms. When it is taught, it is frequently approached through repetition drills, imitation, or isolated correction, without helping learners develop a broader understanding of how sounds function systematically in English. As a result, students may become dependent on rote memorization and fail to internalize the sound patterns needed for spontaneous and accurate speech. Furthermore, the International Phonetic Alphabet (IPA), though powerful, is often underutilized or taught in a way that feels abstract and detached from real-life communication, leaving students with a theoretical tool they do not know how to apply.

Recent developments in language teaching have emphasized the need for learner-centered approaches that actively engage students in discovering and understanding language patterns. One promising method is phonetic mapping, a technique that visually organizes phonemes in a spatial layout according to articulatory features such as tongue position, voicing, and place of articulation. This method allows learners to see and interact with the sound system as a whole, facilitating comparisons, pattern recognition, and self-correction. By providing a visual and conceptual map of the English vowel and consonant systems, students can make clearer associations between sound production and phonetic symbols, as well as identify which sounds are most similar or most different from those in their native language.

This study proposes an innovative phonetic mapping model tailored to EFL learners, aimed at enhancing both phonological awareness and production accuracy. The model integrates visual, auditory, and kinesthetic elements to support diverse learning styles and improve long-term retention. It is designed not merely as a teaching tool, but as a cognitive aid that helps learners internalize the structure of English sounds. The approach is especially valuable for learners who have had limited exposure to systematic pronunciation instruction or who come from educational contexts where pronunciation is not prioritized.

The purpose of this research is to explore how this phonetic mapping model can be effectively applied in the EFL classroom to address persistent challenges in English vowel and consonant acquisition. Specifically, the study investigates the impact of the model on learners' ability to identify, distinguish, and accurately produce English sounds, as well as its potential to increase learners' metacognitive awareness of their own pronunciation patterns. Through a combination of classroom experimentation, learner feedback, and pre-/post-assessment data, this paper aims to evaluate the pedagogical value of phonetic mapping and to contribute to the broader discussion on improving pronunciation instruction for EFL learners.

RESEARCH METODHOLOGY

The title *"An Innovative Phonetic Mapping of English Vowels and Consonants among EFL Learners"* is best suited for a descriptive classroom-based study. The purpose of this research is to explore how a visual phonetic mapping strategy can improve EFL learners' understanding and articulation of English vowels and consonants. The descriptive method provides a comprehensive view of how phonetic visualization assists in phonological acquisition, particularly in a non-native learning environment. Data collection in this study involved multiple sources, including empirical observations, learner assessments, and theoretical frameworks from prior phonological research. The researchers reviewed previous studies and evaluated the process through which EFL learners acquire and articulate English vowels and consonants using phonetic mapping. This included examining articulatory patterns, learners' phonetic awareness, and the role of the first language (L1) in shaping English pronunciation. Thirty intermediate-level university students participated in the study. They were divided into an experimental group (using phonetic mapping) and a control group (receiving traditional instruction). Information was gathered through oral recordings, pre- and post-tests, and learner feedback. The goal was to describe and analyze how phonetic visualization aids in the development of accurate speech production, especially in distinguishing vowels and consonants that do not exist in the learners' native language. The descriptive method allowed researchers to provide a detailed interpretation of how phonetic mapping impacts learners' pronunciation ability, self-awareness, and confidence. It also enabled a broader discussion of the pedagogical implications of integrating visual phonetics into pronunciation instruction.

RESULT AND DISCUSSION

This study revealed several significant findings regarding the effectiveness of phonetic mapping in teaching English vowels and consonants to EFL learners. The data indicated a substantial improvement in learners' ability to recognize and produce problematic English phonemes after being exposed to the phonetic mapping method.

In the pre-test, many students struggled with differentiating between minimal pairs such as /iː/ vs. /ɪ/ (*beat* vs. *bit*), /æ/ vs. /ʌ/ (*cat* vs. *cut*), and voiced-voiceless pairs like /b/ vs. /p/ and /g/ vs. /k/. These errors were primarily due to interference from the learners' native phonological systems, which lacked similar contrasts.

After five weeks of intervention, the experimental group showed notable improvement in articulatory accuracy. Students began to accurately pronounce diphthongs such as /aɪ/ (*time*), /eɪ/ (*day*), and fricatives like /θ/ (*think*) and /ð/ (*this*), which are typically difficult for Indonesian EFL learners. These improvements were quantitatively supported by the post-test scores, which showed an average increase of 28.5% in pronunciation accuracy in the experimental group, compared to a 10.2% increase in the control group.

Moreover, qualitative feedback gathered through open-ended questionnaires indicated that students found the phonetic map helpful in visualizing sound relationships and articulatory positions. Many noted that the mapping made it easier to distinguish similar-sounding vowels and consonants, especially when reinforced through listening and repetition. One student remarked, *"I never understood why 'seat' and 'sit' sounded different until I saw where /iː/ and /ɪ/ are located on the vowel chart."*

Phonetic transcription analysis of students' recordings confirmed these self-reported improvements. Sounds previously mispronounced or substituted (e.g., /d/ for /ð/, or /e/ for /æ/) were corrected with greater consistency. This suggests that phonetic mapping not only improved recognition but also contributed to more accurate production through conscious articulatory adjustment.

The results of this research are in line with previous studies that emphasize the critical role of phonetic awareness in second language pronunciation (Celce-Murcia, Brinton, & Goodwin, 2010). By organizing sounds into a structured, visual map based on articulatory features, the learners in this study were better able to internalize contrasts that are often overlooked in traditional teaching methods.

The significant gains in the experimental group suggest that phonetic mapping enables learners to bridge the gap between abstract phonetic symbols and actual sound production. This supports the findings of Baker (2011), who noted that visual models of speech sounds facilitate both perception and production in L2 learners. The integration of mapping also allowed learners to self-monitor their output, which aligns with the *Noticing Hypothesis* (Schmidt, 1990), emphasizing that awareness of errors leads to improvement.

Moreover, consonants, which carry a heavier lexical load in English (Cutler et al., 2000), were among the phonemes that showed the most improvement. Learners in the

experimental group became more adept at distinguishing voicing contrasts (e.g., /f/ vs. /v/, /s/ vs. /z/) and articulation types (e.g., stops vs. fricatives). This confirms that when consonants are clearly mapped by place and manner of articulation, learners can better categorize and produce them.

The study also reaffirms the idea proposed by Nespor and Vogel (1986) that vowels often serve prosodic and syntactic functions, while consonants play a more direct role in lexical identification. This dual function was made clearer to students when visualized in a phonetic layout, improving both their linguistic understanding and communicative competence.

Furthermore, learners' increased self-confidence and motivation, as reported in the post-intervention feedback, reflect the pedagogical value of learner-centered pronunciation instruction. This aligns with Derwing & Munro (2005), who argue that pronunciation teaching should go beyond drilling to foster metacognitive reflection and self-correction.

CONCLUSION

This study concludes that phonetic mapping is a powerful and innovative tool for enhancing EFL learners' understanding and pronunciation of English vowels and consonants. By visually representing the phonetic system, the method helps learners perceive, compare, and produce sounds with greater accuracy and awareness. The mapping technique also promotes learner autonomy by encouraging self-monitoring and reflection on articulation. These findings have important implications for EFL pronunciation instruction. Teachers are encouraged to incorporate phonetic maps into their lessons, particularly for sounds that do not exist in the learners' native language. Future studies could explore the long-term retention effects of phonetic mapping and its application across different proficiency levels and L1 backgrounds.

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