

The Impact of Phonology-Based Vocabulary Learning on English Language Skills in the Digital Era

Yulia Damayanti^{1*}, Hasbullah¹, Sarwadi¹;

¹English Education Department, Universitas Qamarul Huda Badaruddin Bagu, Indonesia

*Email: ylydamayanti@gmail.com

Abstract: *This study investigates the impact of phonology-based vocabulary learning on the English language skills of eighth-grade students at SMP Islam Nurul Qur'an in the academic year 2025/2026. Employing a pre-experimental design with a one-group pre-test and post-test structure, the research involved 20 students from class VIII A as participants. Data collection was conducted through vocabulary tests (pre-test and post-test) and student questionnaires. Statistical analysis was performed using a paired sample t-test in SPSS version 25. The findings revealed a significant improvement in students' English skills after the implementation of phonology-based learning. The mean pre-test score of 42.00 increased to 68.25 in the post-test, with the t-test showing a significance value of 0.000 (< 0.05). These results indicate that phonology-based vocabulary learning positively influences students' vocabulary mastery and pronunciation accuracy. Questionnaire data further confirmed students' positive perceptions, with an average score of 74.10, suggesting that the method enhanced motivation and learning engagement. The study concludes that integrating phonology-based strategies with digital media provides an effective approach to improving English language skills among junior high school students in the digital era.*

Keywords: *Vocabulary Learning; Phonology-Based; English Skills; Digital Era; Junior High School Students.*

Abstrak: Penelitian ini menyelidiki dampak pembelajaran kosakata berbasis fonologi terhadap keterampilan bahasa Inggris siswa kelas delapan di SMP Islam Nurul Qur'an pada tahun akademik 2025/2026. Menggunakan desain pra-eksperimental dengan struktur pra-tes dan pasca-tes satu kelompok, penelitian ini melibatkan 20 siswa dari kelas VIII A sebagai peserta. Pengumpulan data dilakukan melalui tes kosakata (pra-tes dan pasca-tes) dan kuesioner siswa. Analisis statistik dilakukan dengan menggunakan uji-t sampel berpasangan dalam SPSS versi 25. Temuan tersebut mengungkapkan peningkatan yang signifikan dalam keterampilan bahasa Inggris siswa setelah penerapan pembelajaran berbasis fonologi. Skor pra-tes rata-rata 42,00 meningkat menjadi 68,25 pada pasca-tes, dengan uji-t menunjukkan nilai signifikansi 0,000 ($< 0,05$). Hasil ini menunjukkan bahwa pembelajaran kosakata berbasis fonologi secara positif memengaruhi penguasaan kosakata dan akurasi pengucapan siswa. Data kuesioner semakin menegaskan persepsi positif siswa, dengan skor rata-rata 74,10, yang menunjukkan bahwa metode tersebut meningkatkan motivasi dan keterlibatan belajar. Studi ini menyimpulkan bahwa mengintegrasikan strategi berbasis fonologi dengan media digital merupakan pendekatan yang efektif untuk meningkatkan kemampuan berbahasa Inggris siswa SMP di era digital.

Kata kunci: Pembelajaran Kosakata; Berbasis Fonologi; Keterampilan Bahasa Inggris; Era Digital; Siswa Sekolah Menengah Pertama.

1. INTRODUCTION

The mastery of English in the digital era has become a critical requirement for academic and professional development across the globe. As a lingua franca, English proficiency opens pathways in education, technology, and cultural exchange, underscoring the urgency of effective language instruction at early educational levels [1]. Central to this proficiency is vocabulary mastery, which serves as the foundation for all four language skills: listening, speaking, reading, and writing. Inadequate vocabulary often results in significant challenges in communication, limiting students' academic progress and global competitiveness.

Traditional approaches to vocabulary learning are often perceived as monotonous, leading to reduced motivation and engagement [2]. Moreover, students frequently acquire vocabulary passively, focusing on definitions without mastering pronunciation or contextual application. Pronunciation errors further impede communication, highlighting the necessity of pedagogical strategies that address both lexical knowledge and phonological accuracy.

Phonology-based vocabulary learning offers a promising solution. By emphasizing the relationship between sound and meaning, this approach enhances pronunciation, fosters deeper memory retention, and enables learners to use vocabulary more effectively in communication [3]. With the support of digital media such as audio recordings and pronunciation software, phonology-based instruction aligns with students' cognitive development and their familiarity with technological tools.

Empirical evidence suggests that phonology-based approaches contribute significantly to learners' language competence. For example, Celce-Murcia et al. [4] argued that integrating phonology into vocabulary learning enhances fluency and accuracy, while Yavas [5] emphasized its role in overcoming mother-tongue interference. This study thus seeks to analyze the impact of phonology-based vocabulary learning on eighth-grade students' English skills at SMP Islam Nurul Qur'an, providing practical insights into its application within a digital learning environment.

2. RESEARCH METHOD

This study employed a pre-experimental research design with a one-group pre-test and

post-test approach [6]. The population included all students of SMP Islam Nurul Qur'an (N=128), while the sample consisted of 20 students from class VIII A, selected through random sampling.

2.1 Instruments

- **Vocabulary Tests:** 20-item multiple-choice tests administered before and after the treatment to measure students' vocabulary mastery.
- **Questionnaire:** A Likert-scale survey measuring students' perceptions of phonology-based vocabulary learning, focusing on motivation, understanding, and engagement.
- **Documentation:** Classroom photographs and records of learning activities.

2.2 Procedure

The research was conducted in three stages: (1) pre-test administration, (2) treatment through phonology-based vocabulary learning over four sessions using audio-visual media, and (3) post-test administration.

2.3 Data Analysis

Descriptive statistics, normality testing, and paired sample t-tests were conducted using SPSS 25. Validity was established through Pearson Product Moment correlation, and reliability was confirmed via Cronbach's Alpha (>0.60).

3. RESULTS AND DISCUSSION

3.1 Pre-test and Post-test Scores

The pre-test results indicated a mean score of 42.00, demonstrating limited vocabulary mastery. After treatment, the post-test mean score increased to 68.25. The paired sample t-test produced a significance value of 0.000 (<0.05), confirming the positive effect of phonology-based vocabulary learning.

Table 1. Analysis Results

Test	Mean Score	Highest t	Lowest t	Std. Deviation
Pre-test	42.00	65	25	11.74
Post-test	68.25	85	50	10.55

3.2 Questionnaire Results

The questionnaire yielded an average score of 74.10, reflecting positive student perceptions.

Students found the approach interactive, engaging, and helpful in remembering vocabulary. Scores ranged from 62 to 82, indicating consistent positive feedback.

3.3 Interpretation

The findings support the hypothesis that phonology-based vocabulary learning enhances students' English skills. The improvements were evident not only in test scores but also in pronunciation accuracy and learner confidence. These results align with Purwati's (2022) study, which highlighted the role of phonological awareness in reading comprehension, and with Sinulingga's (2020) findings on phonological elements in vocabulary mastery [7], [8]. The integration of digital media further amplified the effectiveness of phonology-based methods, making learning more accessible and engaging.

4. CONCLUSION

This study concludes that phonology-based vocabulary learning significantly improves students' English skills, particularly vocabulary mastery and pronunciation accuracy. The substantial score increase between pre-test and post-test, alongside positive student perceptions, demonstrates its effectiveness. Incorporating phonology-based strategies within digital platforms offers a sustainable approach to enhancing language proficiency in junior high school settings.

5. CLOSING STATEMENT

The researcher extends gratitude to SMP Islam Nurul Qur'an, the participating students, and academic advisors for their invaluable support. This study aspires to contribute meaningfully to English language pedagogy and inspire further innovations in phonology-based instruction.

REFERENCES

- [1] Djiwandono, S. (1996). *Psikologi Pendidikan*. Jakarta: Grasindo.
- [2] Yang, Y. (2024). "Interactive Vocabulary Teaching Strategies in the Digital Age," *Journal of Language Teaching Research*, vol. 15, no. 2, pp. 101–112.
- [3] Nation, I. S. P. (2001). *Learning Vocabulary in Another Language*. Cambridge: Cambridge University Press.
- [4] Celce-Murcia, M., Brinton, D., & Goodwin, J. (2010). *Teaching Pronunciation: A Course Book and Reference Guide*. Cambridge: Cambridge University Press.
- [5] Yavas, M. (2011). *Applied English Phonology*. Hoboken: Wiley-Blackwell.
- [6] Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.
- [7] Purwati, H. (2022). "The Effect of Vocabulary and Phonological Awareness on Reading Comprehension," *Journal of Applied Linguistics Research*, vol. 8, no. 3, pp. 45–58.
- [8] Sinulingga, J. B. (2020). "Improving Vocabulary Mastery through English Songs," *Indonesian Journal of Language Education*, vol. 5, no. 2, pp. 89–97.
- [9] X. Lu, "Empirical assessment of AI-powered tools for vocabulary acquisition in EFL instruction," *IEEE Access*, vol. 12, pp. 119842-119855, Aug. 2024, doi: 10.1109/ACCESS.2024.3440212.
- [10] F. M. Naeem and M. K. Khan, "Enhancing phonological awareness in early literacy through digital tools: A qualitative literature review on effectiveness and engagement," *Pak. Lang. Humanities Rev.*, vol. 8, no. 3, pp. 439-450, Sep. 2024, doi: 10.47205/plhr.2024(8-III)40.
- [11] F. Al-Shami and W. Cardoso, "Text-to-speech in high-variability phonetic training: Focus on L2 phonological awareness," *CALL-EJ*, vol. 26, no. 6, pp. 21-42, Dec. 2025, doi: 10.54855/callej.2025.26.6.02.
- [12] J. O'Brien, M. O'Brien, and K. Cullinan, "Cosmic Sounds: A game to support phonological awareness skills for children with dyslexia," in *Proc. 14th Int. Conf. Qual. Multimedia Experience (QoMEX)*, 2022, pp. 1-6, doi: 10.1109/QoMEX55416.2022.9900881.
- [13] S. Razmi, S. Jabbari, and M. G. Nooreini, "The relative impact of L1 and L2 glosses along with computer-generated phonological guidance on EFL learners' vocabulary learning," *Educ. Inf. Technol.*, vol. 25, no. 5, pp. 4355-4372, Sep. 2020, doi: 10.1007/s10639-020-10171-w.