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Refining Indonesian Language Sound Pronunciation Skills Using InPhA (Indonesian Phonetic Alphabet)

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ABSTRACT

Interference from regional language pronunciation results in imperfections in pronouncing Indonesian language (IL) sounds. This phenomenon is experienced by students taking the Indonesian Language Phonology course (ILPC), where using IL pronunciation media is needed to enhance personal correction skills. The average scores for consonant, vowel, and diphthong pronunciation phonemes are low. Hence, this research aims to achieve three main objectives: (1) Enhancing students' vowel sound pronunciation skills using InPhA in the ILPC; (2) Enhancing students' consonant sound pronunciation skills using InPhA in the ILPC; and (3) Enhancing students' diphthong sound pronunciation skills using InPhA in the ILPC. This research employs a qualitative research design by implementing Classroom Action Research procedures. The data sources include 67 students from the Indonesian Literature Department, A Public University in Malang, Batch of 2022. The data includes scores for the Assessment of Indonesian Vowel, Consonant, and Diphthong Pronunciation in the pre-cycle, cycle one, and cycle two phases. The research findings indicate that the Average Improvement of Indonesian vowel allophone sound pronunciation consisting of [i], [I], [u], [U], [e], [ɛ], [Ə], [o], [ɔ], and [a] is 35.54%; the Average Improvement of Indonesian consonant sound pronunciation involving 23 consonants namely /p/, /b/, /m/, /f/, /w/, /t/, /n/, /l/, /r/, /ḍ/, /ʃ/, /s/, /z/, /c/, /j/, /ɲ/, /y/, /k/, /g/, /ŋ/, /x/, /h/, and /ʔ/ is 11.5%; and the Average Improvement of Indonesian diphthong sound pronunciation comprising four allophones namely [aI], [ai], [aU], and [oi] is 11.5%. All three aspects demonstrate that using InPhA media can enhance Indonesian vowel, consonant, and diphthong sound pronunciation skills in the ILPC.

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1. INTRODUCTION

Indonesia is comprised of various ethnic groups, each with its own regional language. Campbell (2008) noted that Indonesia possesses 742 regional languages, with 737 of them still actively spoken by their respective communities, according to Matras (2020). This condition creates the potential for language contact, leading to the interference of pronunciation patterns from one language to another. Suryansyah (2017) identified three forms of phonological interference from the Bima language in

Indonesian, including vowel interference leading to the omission of consonant phonemes, the omission of vowel phonemes, and the substitution of vowel phonemes. These phenomena contribute to the imperfect pronunciation of Indonesian language sounds.

Based on the problem study, this phenomenon is also experienced by students enrolled in the Indonesian Language Phonology course within the Department of Indonesian Literature, Faculty of Literature, A Public University in Malang, among the 67 students of Class A and C, Batch of 2021, 40 exhibits phonological interference from their regional mother tongues into their Indonesian pronunciation. This interference is particularly evident when pronouncing consonant sounds and allophonic vowels in Indonesian, which is influenced by the Javanese language.

Cases of Javanese interference in Indonesian have garnered attention from several researchers, who qualitatively described them in various contexts, such as onset consonant cluster pronunciation by Dini (2021); student storytelling activities by Susanti 2013); the Use of Indonesian by primary school students in Tlogomulyo District by Kurnia, Samingin, & Asmara (2018); the Korean Reomit YouTube channel (Sociolinguistic Studies) by Anggraini, Nuryantingisih, & Nurharyani (2021); and adolescent Javanese speakers in Purworejo, Central Java by Harini (2008).

Based on interviews and observations over two weeks, it was revealed that most students who struggle to articulate sounds accurately do so due to their failure to position their articulation at the correct point and place of articulation. This issue is compounded by the fact that Indonesian lacks standardized pronunciation resources like the International Phonetic Alphabet (IPA, 1999), Ladefoged (1990), Brown (2012), and Smith (2000) present in other languages, which could serve as tools for correcting pronunciation accuracy.

Since 2014-2023, there have been several research titles related to the development of Indonesian phonetic applications, including (1) "Development of Indonesian Phonetic Transcription Application Based on IPA (The International Phonetic Association) for BIPA" by Setiowati, Bertalya, and Ningsih (2014), (2) "Search and Retrieval Method for Names Based on Phonetic Similarity" by Primasari (2015), (3) "Development of Soundex Algorithm in Indonesian Language Spell Checker" by Ningrum, Yamin, and Samsul (2016), (4) "Development of Protatik (Phonetic Table Program) Based on a Website as a Pronunciation Practice Learning Media" by Retnomurti and Octavita (2017), and (5) "Designing Phonetic Alphabet for Bahasa Indonesia (PABI) for the Teaching of Intelligible English Pronunciation in Indonesia" by Karlina, Rahman, and Chowdhury (2020).

This research differs from the five studies above despite sharing a similar topic. First, the research by Setiowati, Bertalya, and Ningsih (2014) was applied to a Windows-based application, and the researchers were experts in computer science, emphasizing computer programming rather than the theoretical details of phonetic content. Additionally, the amount of word data, transcription results, and pronunciation examples could have been much higher. In contrast, this research was applied to an Android application, which offers convenience, effectiveness, and data storage capacity advantages. The collaboration between linguists and computer scientists allowed for a more balanced development that combined phonological practices and computational expertise. In terms of data quantity, menu variations, and pronunciation examples, this research encompassed the entirety of Indonesian phonetic applications. Pronunciations were packaged using various technologies, including Windows-based computer applications, SIL Language Technology based on exe files, internet websites, and the Soundex algorithm. Consequently, applying technology to Indonesian phonetics can provide authentic pronunciation examples, minimizing the influence of other languages (language interference).

Second, the five studies mentioned earlier were aimed at the benefit of Indonesian for Foreign Speakers (BIPA) and foreign language learners, adapting linguistic knowledge from the English language. In contrast, this research aimed to develop Indonesian Phonology knowledge based on authentic Indonesian language data and adopt the latest technology as a reflection of a culture tech solution. Third, the detailed data in most of those previous studies were based on word pronunciations. In contrast, the data concentration in this research focused on differences in the pronunciation of vowel sounds, consonants, and diphthongs within words. Thus, no authentic research has produced a

Phonetic Pronunciation Media Product for Indonesians based on an Android application. Based on this literature review, the five pronunciation products were packaged using various technologies, including Windows-based computer applications, SIL Language Technology based on exe files, internet websites, and the Soundex algorithm. Consequently, applying technology to Indonesian phonetics can provide authentic pronunciation examples, minimizing the influence of other languages (language interference).

InPhA stands for Indonesian Phonetic Alphabetic and is registered under Intellectual Property by Jayanti et al. (2022). The InPhA application encompasses features for pronouncing vowels, consonants, diphthongs, and cluster phonemes, accompanied by explanations of their articulatory points and places. It serves as a personal correction medium and can be embedded in mobile devices, granting access anytime and anywhere.

The use of educational media has been elucidated to offer ten benefits by Larassati (2020), Rahardja et al. (2012), Andrizal and Arif (2017), Priyambodo et al. (2012), and Hendriyani et al. (2018). These benefits include: (1) enhancing student engagement, (2) clarifying abstract concepts, (3) fostering more profound understanding, (4) improving retention abilities, (5) accommodating diverse learning styles, (6) facilitating dynamic lectures, (7) enhancing technological skills, (8) ensuring accessibility and flexibility, (9) enabling effective communication, and (10) preparing students for the workforce. As pronunciation is a practical skill that becomes less abstract with proper media support, these benefits are pertinent.

In general, the importance of this research focuses on enhancing students' proficiency in pronouncing Indonesian language sounds. However, in the course of the study, four specific objectives emerged, namely: (1) comprehensively understanding the pronunciation issues faced by students; (2) designing and implementing appropriate media solutions for these issues; (3) involving continuous reflection and improvement; and (4) measuring the impact of effectiveness. Based on these descriptions, this research has three primary goals: (1) Enhancing students' vowel sound pronunciation skills using InPhA in the Indonesian Language Phonology course; (2) Enhancing students' consonant sound pronunciation skills using InPhA in the Indonesian Language Phonology course; and (3) Enhancing students' cluster and diphthong sound pronunciation skills using InPhA in the Indonesian Language Phonology course.

2. METHODS

This study employs a qualitative research design using Classroom Action Research (CAR) procedures. This approach aims to comprehend and improve the teaching practices in Indonesian language sound pronunciation skills within the Indonesian Language Phonology course. Mulyatiningsih (2015) outlined six characteristics of CAR, including (1) situational research themes, (2) actions based on evaluation results and self-reflection, (3) conducted in multiple cycles, (4) aimed at performance improvement, (5) carried out collaboratively or participatory, and (6) utilizing a limited sample.

The steps of CAR, as formulated by Mertler (2019), Wibawa (2003), Parnawi (2020), and Erihadiana (2013), are (1) planning, (2) taking action, (3) observing, and (4) reflecting. These steps are adapted into Nine Steps for this study, as follows:

1. It identifies the main issues in Indonesian sound pronunciation skills within the class.
2. We are planning concrete measures to enhance students' pronunciation skills.
3. They collect data about students' pronunciation skills before implementing Cycle 1 and Cycle 2.
4. We are applying the previously designed steps, incorporating the Use of InPhA as a media aid.
5. We are observing the implementation of actions in the classroom and gathering data on students' pronunciation skills progression throughout the teaching process.

6. Analyzing the collected data during the implementation of actions, then evaluating the potential for improvements in students' pronunciation skills during the learning process.
7. We are reflecting on the implementation of Cycle 1 by noting deficiencies in the action implementation related to the assessment of pronunciation skills.
8. We are implementing the second Action Cycle, refining the method of scoring pronunciation skills.
9. We are sharing the research outcomes with fellow educators and students to enrich experiences and contributions related to Indonesian language sound pronunciation skills.

The data source comprises 67 students from the Department of Indonesian Literature, A Public University in Malang, Batch 2022. Data includes scores for assessing Indonesian language sound pronunciation, covering vowels, consonants, diphthongs, and clusters, collected during Cycle 1 and 2. A pre-cycle is undertaken using direct pronunciation assessments before conducting actions in Cycles 1 and 2, with initial pronunciation scores obtained. These scores are collected through four methods: (1) independent recording by students, (2) peer assessment, (3) instructor assessment, and (4) self-assessment using the InPhA application. The first two steps, Steps 1 and 2, are applied in Cycle 1, while Steps 3 and 4 are used to measure scores in Cycle 2

3. FINDINGS AND DISCUSSION

The results and discussion are presented based on consistency with the research questions. The aspects covered include (1) Students' Vowel Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course, (2) Students' Consonant Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course, and (3) Students' Diphthong Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course. These three points are elaborated as follows:

3.1. Students' Vowel Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course

The Indonesian language comprises six vowels, which are divided into ten vowel phoneme allophones, namely [i], [I], [u], [U], [e], [ɛ], [Ə], [o], [ɔ], and [a] (Abdul: 2013; Arifin et al.: 2017; Jayanti et al.: 2022; Muslich: 2008). The Pre-Cycle results reveal the order of difficulty in pronouncing vowel allophones, ranging from the most challenging [ɔ], [Ə], [I], [ɛ], [U], [i], [u], [e], [o], to [a]. Specific data values can be seen in Table 1 below, which presents the scores from Pre-Cycle, Cycle 1, and Cycle 2 concerning the pronunciation skill of Indonesian vowel phoneme allophones. The percentage increase can also be observed in Graph 1, providing information on improving Indonesian vowel sound pronunciation.

Table 1. Students' Vowel Sound Pronunciation Proficiency

Vowel Phoneme	Vowel Phoneme Allophones	Pre-Cycle	Cycle 1	Cycle 2
/i/	[i]	45	58	67
	[I]	29	47	66
/u/	[u]	49	55	67
	[U]	34	40	65
/e/	[e]	49	55	67
	[ɛ]	30	49	67
/Ə/	[Ə]	29	55	67
/o/	[o]	55	59	67
	[ɔ]	26	50	66
/a/	[a]	58	60	67

Table 1, showing students' proficiency in vowel sound pronunciation, indicates that for the [i] allophone, out of 67 students in the Pre-Cycle, 45 passed, increasing to 58 in Cycle 1 and achieving 100% proficiency by the end of Cycle 2. Overall proficiency is also evident for the [u], [e], [ɛ], [Ə], [o], and [a] allophones. However, for the [I], [U], and [ɔ] allophones, overall proficiency has not been achieved. According to Rismaya and Riyanto (2021); Yue and Damayati (2021); Adityarini et al. (2020); Nugraha (2020); Budiawan and Rukayati (2018), the difficulty in pronouncing [I], [U], and [ɔ] is influenced by five factors: (1) anatomical differences, (2) first language habits, (3) auditory limitations, (4) dialect influence, and (5) practice and training.

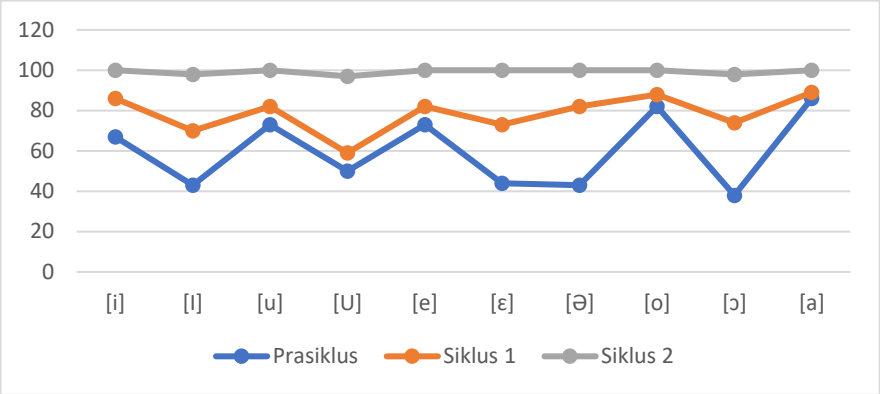

Figure 1. Enhancement of Indonesian Language Vowel Sound Pronunciation

Graph 1 displays the improvement from Pre-Cycle (blue), Cycle 1 (orange), to Cycle 2 (gray). The respective percentage increases for the ten vowel allophones that experienced improvement are [i] (32%), [I] (55%), [u] (27%), [U] (46%), [e] (27%), [ɛ] (55%), [Ə] (57%), [o] (18%), [ɔ] (60%), and [a] (14%). The highest improvement percentage is seen for [ɔ] at 60%, while the lowest is for [a] at 14%.

Several factors contribute to the data presented in this study. Rismaya and Riyanto (2021); Putri (2012); Pardede (2020); Nawari and Riau (2019); PEISHI (2018) state that the accuracy of vowel sound pronunciation is influenced by pitch, stress, tempo, and pause. In practice, the InPhA media displays articulation points that determine the presence of these four aspects, allowing for scoring improvement. Figures 2, 3, and 4 demonstrate the user-friendly instructions within the InPhA media.

Figure 2. Instructions for High-Low Vowel Articulation in InPhA

Figure 3. Instructions for Vowel Stress in InPhA

Figure 4. List of Indonesian Vowel Allophone Realizations in InPhA

3.1.1 Students' Consonant Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course

The Indonesian language consists of 23 consonant phonemes, including /p/, /b/, /m/, /f/, /w/, /t/, /n/, /l/, /r/, /ḍ/, /ʃ/, /s/, /z/, /c/, /j/, /ɲ/, /y/, /k/, /g/, /ŋ/, /x/, /h/, and /ʔ/. From a sample of 67 students in Cycle 2, a proficiency rate of 100% was achieved for correctly articulating the points of consonant phonemes. Table 2 below illustrates the improvement in pronunciation for the 23 consonant phonemes.

Table 2. Students' Consonant Sound Pronunciation Proficiency

Consonant Phoneme	Pre-Cycle	Cycle 1	Cycle 2
/p/	55	62	67
/b/	64	65	67
/m/	67	67	67
/f/	67	67	67
/w/	62	67	67
/t/	37	58	67
/n/	64	66	67
/l/	63	67	67
/r/	65	66	67
/ḍ/	30	43	67
/ʃ/	64	65	67
/s/	67	67	67
/z/	59	66	67
/c/	67	67	67
/j/	48	59	67
/ɲ/	59	66	67
/y/	67	67	67
/k/	67	67	67

/g/	33	45	67
/ŋ/	62	65	67
/x/	67	67	67
/h/	67	67	67
/ʔ/	42	53	67

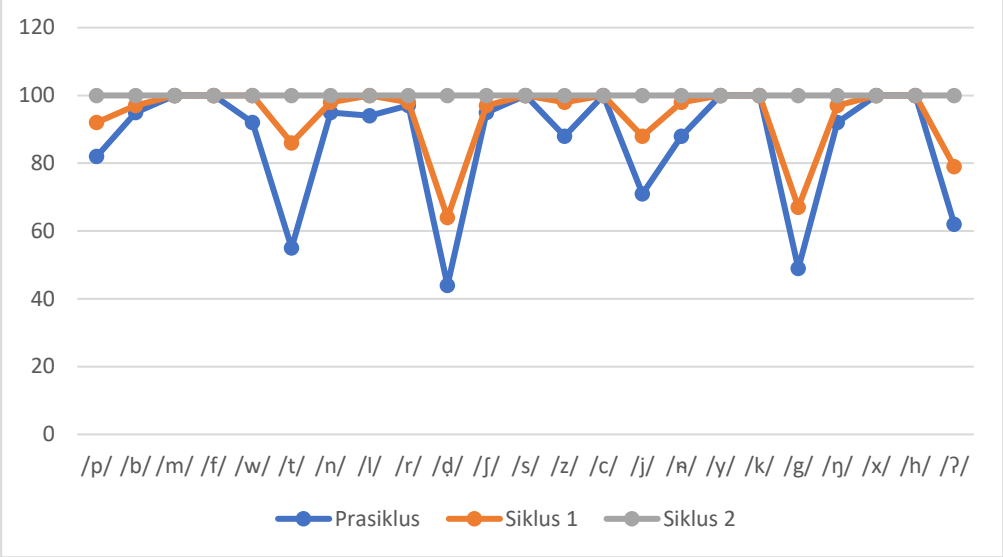

Figure 5. Progression in Pronunciation of Indonesian Consonant Phonemes

Graph 5, depicting the enhancement of Indonesian consonant sound pronunciation, illustrates that all twenty-three consonants displayed successive improvements of 18%, 4.5%, 0%, 0%, 7.5%, 45%, 4%, 6%, 3%, 55%, 4%, 0%, 12%, 0%, 28%, 12%, 0%, 0%, 51%, 7%, 0%, 0%, and 37%, respectively. The overall average improvement rate is 12.8%. Eight consonant phonemes registered a 0% increase, not due to a lack of improvement, but rather because they were proficient from the Pre-Cycle, namely the consonants /m/, /f/, /s/, /c/, /y/, /k/, /x/, and /h/. Katamsi and Hae (2011); Ting (2011); Ni and Sumarti (2018); Hidayati et al. (2022); and Masfufah (2018) separately documented five reasons these eight consonants did not pose difficulty: (1) simple articulation arrangement, (2) consistent airflow, (3) similarity to common languages, (4) absence of extreme mouth position changes, and (5) presence in early phonological acquisition during childhood.

3.2. Students' Diphthong Sound Pronunciation Skills Using InPhA in the Indonesian Phonology Course

In the Indonesian language, there are three diphthongs with four allophones: [aI], [ai], [aU], and [oi]. Table 3 presents the increase in pronunciation proficiency for these four diphthong allophones in Indonesian. Among 67 students, the diphthong that was easiest to pronounce was/oi/, recording a 3% improvement. On the other hand, [aI] proved to be the most challenging, experiencing a final increase of 10%. Most issues in diphthong pronunciation stem from monophthongization, which Kulsum (2021) defines as the conversion of diphthongs into monophthongs, such as "*cabai*" becoming "cabe," "*sampai*" becoming "*sampe*," and "*saudara*" becoming "*sodara*."

Table 3. Students' Diphthong Sound Pronunciation Proficiency

Diphthong Phoneme	Diphthong Allophones	Pre-Cycle	Cycle 1	Cycle 2
/ai/	[aI]	60	64	67
	[ai]	57	66	67
/au/	[aU]	55	67	67
/oi/	[oi]	65	66	67

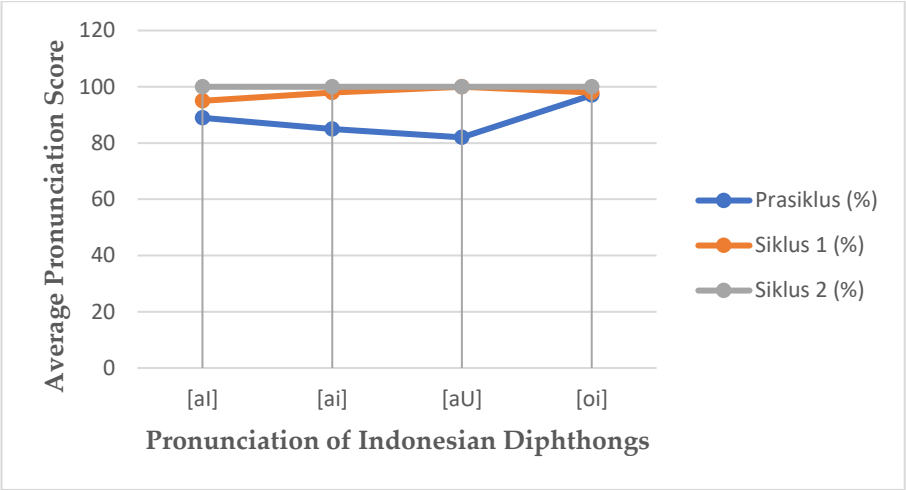

Figure 6. Progression in Pronunciation of Indonesian Diphthong Phonemes

Through the above Graph 3, the percentage increments from Pre-Cycle, Cycle 1, to Cycle 2 for Indonesian diphthong pronunciations [aI], [ai], [aU], and [oi] are noted as 10%, 15%, 18%, and 3% respectively. In enunciating diphthongs, students often slip by truncating the accompanying sound. This observation aligns with Maulida's (2019) findings, which discovered that Thai students struggle to articulate the final diphthong sound, as exemplified by the word [*sungai*], pronounced without the final "y" sound.

4. CONCLUSION

Based on the previous discussion, the use of InPhA pronunciation media significantly improves pronunciation skills, enhancing vowel pronunciation by 11.5%, consonant pronunciation by 12.8%, and diphthong pronunciation by 11.5%. However, this study has several limitations. A single data collection session requires at least two hours (120 minutes), whereas the Indonesian Phonology lecture duration is only 100 minutes. This discrepancy arises because InPhA media users must practice 61 phonemes, 87 allophones, and 435 pronunciations of consonant, vowel, cluster, and diphthong words. For future research, it is recommended to consider the timing of data collection to improve its efficiency. Additionally, conducting this research on different subjects could provide a broader range of conclusions regarding the effectiveness of the InPhA media. Further studies might also explore alternative methods to streamline the practice process without compromising the quality of pronunciation skills enhancement.

REFERENCES

Abdul, C. (2013). Fonologi Bahasa Indonesia. Rineka Cipta, Jakarta.

Adityarini, I. A. P., Pastika, I. W., & Sedeng, I. N. (2020). Phonological Interference in European BIPA Learners in Bali.

Aksara, 32(1), 167-186. Andrizal, A., & Arif, A. (2017). Development of Interactive Learning Media in the E-Learning System of Padang State University. INVOTEK: Journal of Vocational and Technological Innovation, 17(2), 1-10.

Anggraini, A. D., NURYANTINGISIH, F., & NURHARYANI, O. P. (2021). Javanese Language Interference into Indonesian on the Korean Reomit YouTube Channel (Sociolinguistic Study). Jurnal Iswara, 1(1), 38-51.

Arifin, E. Z., Sumarti, R. R., & Muzaki, A. (2017). The phonology of the Indonesian Language. Cimahi: Pustaka Mandiri.

Brown, A. (2012). International Phonetic Alphabet. The Encyclopedia of Applied Linguistics.

Budiawan, R. Y. S., & Rukayati, R. (2018). Language Errors in Indonesian Language Teaching for Foreign Speakers (BIPA) at PGRI University of Semarang in 2018. KREDO: Journal of Language and Literature, 2(1), 88-97.

Campbell, L. (2008). Ethnologue: Languages of the World.

Dini, P. A. (2021). Indonesian Phonological Interference in Javanese Onset Cluster Consonant Pronunciation. BAHTERA: Journal of Language and Literature Education, 20(2), 183–195.

Erihadiana, M. (2013). Classroom Action Research in Islamic Higher Education. Jurnal Pendidikan Islam, 28(1), 59-74.

HARINI, I. C. (2008). Javanese Phonological Interference in Indonesian among Javanese Adolescent Speakers in Purworejo, Central Java (Doctoral dissertation, Universitas Negeri Jakarta).

Hendriyani, Y., Delianti, V. I., & Mursyida, L. (2018). Analysis of the Needs for Development of Video Tutorial-Based Learning Media. Journal of Information Technology and Education, 11(2), 85-88.

Hidayati, A. S., Rusmawati, R., & Junining, E. (2022). The Effect of Bilingual Education on Students' Development of Diction, Grammar, and Pronunciation of Regional Language Utterances. Silampari Bisa: Journal of Indonesian, Regional, and Foreign Language Education Research, 5(2), 338-351.

International Phonetic Association. (1999). Handbook of the International Phonetic Association: A guide to using the International Phonetic Alphabet. Cambridge University Press.

Jayanti, C. T; Febri Taufiqurrahman; Lidya Amalia Rahmania. Indonesian Phonetic Alphabet. (2022). Intellectual Property Rights for Computer Programs, Registration No. 000326384 by the Ministry of Law and Human Rights.

Jayanti, C. T. (2022). Indonesian Phoneme. Farha Pustaka. Bandung.

Karlina, Y., Rahman, A., & Chowdhury, R. (2020). *Designing Phonetic Alphabet For Bahasa Indonesia (Pabi) For The Teaching Of Intelligible English Pronunciation In Indonesia*. *Indonesian Journal Of Applied Linguistics*, *9*(3), 724-732.

Katamsi, A., & Hae, N. Z. (2011). Indonesian Seriosa Pronunciation Guide. Kepustakaan Populer Gramedia.

Kulsum, U. (2021). Sound Issues in Indonesian Society. Caraka: Journal of Indonesian and Regional Language and Literature Education, 10(1), 21–32.

Kurnia, Z., Samingin, F. X., & Asmara, R. (2018). Javanese Language Interference in Using Indonesian by Elementary School Students in Tlogomulyo Subdistrict, Temanggung Regency. Repetisi: Research on Indonesian and Regional Language and Literature Education, 1(2), 77-88.

Ladefoged, P. (1990). The Revised International Phonetic Alphabet. Language, 66(3), 550-552.

Lafamane, F. (2020). Phonology (History of Phonology, Phonetics, Phonemics).

Larassati, M. A. (2020). Effectiveness of Online Learning Media Edmodo in Islamic Religious Education during the Covid-19 Pandemic. Tambora Journal, 4(2A), 77-82.

Masfufah, N. (2018). Contrastive Analysis of Indonesian Vowel and Consonant Phonemes with Benuaq Language. LOA: Journal of Language and Literature Phonology, 13(2), 108–119.

Matras, Y. (2020). *Language contact*. Cambridge University Press.

Maulida, S. Z., Nurjanah, A. P., & Yustika, Y. (2019). Mispronunciation of Indonesian Vocabulary by Thai Students at IAIN Tulungagung. National Conference on Language and Literature V, 5(1), 246-250.

Mertler, C. A. (Ed.). (2019). *The Wiley handbook of action research in education*. John Wiley & Sons.

Mulyatiningsih, E. (2015). Classroom Action Research Method. Teaching Professional Education Module: Faculty of Engineering, Universitas Negeri Yogyakarta.

Muslich, M. (2008). The Phonology of the Indonesian Language: Descriptive Overview of Indonesian Phonemic Sound System. Bumi Aksara.

Nawari, A., & Riau, B. B. (2019). Analysis of Indonesian Sound Pronunciation Errors by Arabic-speaking Students at Sousse University, Tunisia. Paper presented at the 11th International Conference on Teaching Indonesian to Speakers of Other Languages (KIPBIPA).

Ni Peishi, P., & Sumarti, S. (2018). Accuracy of Indonesian Consonant Cluster and Sequence Pronunciation by Mandarin Speakers. J-Simbol, 6(1), 13-24.

Nugraha, Z. A. (2020). Pronunciation Errors of Indonesian Phonemes by Chinese Learners. Batra, 6(1), 23-34.

Pardede, N. I. (2020). Pronunciation Disorders of Indonesian Sounds in Down Syndrome Students at Kidz Smile School, Medan: A Neurolinguistic Study (Doctoral dissertation, Universitas Sumatera Utara).

Parnawi, A. (2020). Classroom Action Research. Deepublish.

PEISHI, N. (2018). Indonesian Sound Pronunciation by Mandarin-speaking Students at Guangxi University for Nationalities (Doctoral dissertation, Universitas Lampung).

Primasari, D. (2015). Metode Pencarian dan Temu-Kembali Nama Berdasarkan Kesamaan Fonetik. Krea-Tif, 3(1).

Priyambodo, E., Wiyarsi, A., & Permanasari, L. (2012). The Effect of Web-Based Interactive Learning Media on Student Learning Motivation. Journal of Educational Research, Innovation, and Learning, 42(2).

Putri, D. R. S. (2012). Pronunciation of Fricative and Affricate Sounds by 2010 Sundanese Literature Students at Universitas Padjadjaran. Students e-Journal, 1(1), 3.

Rahardja, U., Warsito, A. B., & Suvianti, D. N. (2012). Implementation of the iDINI Application as a Storage Media for eLearning Course Materials at Higher Education Institutions. Creative Communication and Innovative Technology Journal, 6(1), 57-75.

Retnomurti, A. B., & Octavita, R. A. I. (2017). Pengembangan Protatik (Program Tabel Fonetik) Berbasis Website Sebagai Media Pembelajaran Pronunciation Practice. Bahasa Dan Seni: Jurnal Bahasa, Sastra, Seni, dan Pengajarannya, 45(2), 132-142.

Rismaya, R., & Riyanto, S. (2021). Mispronunciation of Phonemes in Indonesian Vocabulary by Foreign Vloggers Speaking Indonesian. Kajian Linguistik dan Sastra, 6(1), 1-16.

Setyowati, L., Bertalya, B., & Ningsih, T. W. R. (2014). Aplikasi Transkripsi Fonetik Bahasa Indonesia Berdasarkan IPA (*The International Phonetic Association*) untuk Bipa. *Prosiding Kommit*.

Smith, C. L. (2000). Handbook of the International Phonetic Association: A Guide to the Use of the

International Phonetic Alphabet (1999). Cambridge: Cambridge University Press. Pp. ix+ 204. Phonology, 17(2), 291–295.

Sofyan, A. (2010). The phonology of the Madurese Language. Humaniora, 22(2), 207-218.

Suryansyah, U. (2017). Phonological and Grammatical Interference of the Bima Language into Indonesian in the Bima-Dompu Student Community at Universitas Mataram (Doctoral dissertation, Universitas Mataram).

Susanti, A. D. (2013). Javanese Language Interference into Indonesian in Student Storytelling Activities (Doctoral dissertation, Universitas Negeri Malang). Syahputra, E., Jannah, M., Fadillah, S. I., &

Manurung, S. S. D. (2022). The Use of Indonesian among Modern Era Students through Social Media. Jurnal Multidisiplin Dehasen (MUDE), 1(3), 275-278.

Ningrum, I. P., Yamin, M., & Samsul, S. Pengembangan Algoritma Soundex Pada *Spell Checker* Bahasa Indonesia.

Taembo, M. (2018). Social Dialect Phonology Study of the Indonesian Language. Kandai, 12(1), 1–16.

Ting, Y. (2011). Indonesian and Mandarin Consonant Sounds A Contrastive Analysis. LITE: Journal of Language, Literature, and Culture, 7(2), 126–136.

Tondo, H. (2009). Extinction of Regional Languages: Causes and Ethnolinguistic Implications. Jurnal Masyarakat dan Budaya, 11(2), 277-296.

Triadi, R. B., & Emha, R. J. (2021). The phonology of the Indonesian Language.

Wibawa, B. (2003). Classroom Action Research. Jakarta: Directorate of Early Childhood Education and Primary Education, pp. 2572–2721.

Yue, X., & Damayati, V. S. (2021). Analysis of Consonant Pronunciation Difficulties in Indonesian (A Case Study of Indonesian Language Department Students at Jilin International Studies University in China). In Riksa Bahasa International Seminar (pp. 71-78).