



Arabic phonological transfer in Indonesian learning at sekolah Indonesia Cairo elementary school: Ethnopedagogical perspectives

Shirly Rizki Kusumaningrum^{1*}, Gatut Susanto¹, Radeni Sukma Indra Dewi¹, Han Han Ulumudin Ismail², Dustin Carrell Cowell³

¹ State University of Malang, Indonesia

² Al-Azhar University, Egypt

³ University of Wisconsin-Madison, United States

*Corresponding author: shirly.rizki.pasca@um.ac.id

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Abstract

Teaching Indonesian in overseas elementary schools involves navigating multilingual realities rather than introducing a completely new language. At Sekolah Indonesia Cairo (SIC), students generally demonstrate functional proficiency in Indonesian as the language of instruction, while being consistently exposed to Arabic in their daily environment and English as an additional school subject. This study examines how cross-linguistic influence, particularly from Arabic, shapes students' pronunciation and writing in Indonesian, and how these patterns can be meaningfully addressed in classroom practice. Using a mixed-methods approach, data were collected from 32 upper-grade students through speaking tasks, writing activities, classroom observations, and teacher interviews. The findings indicate that phonological variation occurs in systematic patterns, including consonant substitution, vowel shifts, epenthesis, and deletion. These patterns are closely related to orthographic representation, suggesting that students' perception and production of sounds continue to shape their writing, even at relatively proficient levels. Rather than interpreting these patterns as signs of deficiency, this study positions them as part of a dynamic multilingual repertoire. From an ethnopedagogical perspective, the findings can be understood across linguistic, pedagogical, and cultural dimensions, highlighting the importance of integrating students' linguistic patterns, learning processes, and cultural backgrounds into classroom instruction. By designing learning activities that connect pronunciation, writing, and meaningful cultural practices, teachers can support more adaptive and context-sensitive language use. This study offers practical insights for Indonesian language teaching in multilingual elementary classrooms.

Introduction

The expansion of Indonesian education beyond national borders has introduced new dynamics into elementary language instruction. In settings such as Sekolah Indonesia Cairo (SIC), Indonesian functions not as a newly introduced foreign language, but as the primary medium of instruction within a multilingual environment. Students generally demonstrate functional proficiency in Indonesian while simultaneously engaging with Arabic in their daily lives and English as an additional school subject. Consequently, classroom language use reflects a dynamic interaction among multiple linguistic systems shaped by both cognitive and sociocultural factors.



A substantial body of research in second language acquisition highlights the role of cross-linguistic influence in shaping language use. This influence is particularly evident at the phonological level, where learners draw on familiar sound systems when perceiving and producing new linguistic forms (Escudero, 2015). Importantly, such influence persists beyond early stages of acquisition and continues to shape variation even among proficient multilingual speakers (Saito & Plonsky, 2019). In languages with relatively transparent orthography such as Indonesian, phonological tendencies are closely tied to spelling, as learners' perception of sounds directly informs their written representation (Bassetti & Atkinson, 2015; Koda, 2007).

However, despite these insights, existing research has largely focused on adult learners, early-stage acquisition, or formal foreign language contexts. Studies examining phonological transfer in Indonesian have also tended to emphasize error classification rather than its pedagogical implications. As a result, there is limited understanding of how cross-linguistic influence operates among functionally proficient learners in elementary education, particularly in multilingual and international school settings. More importantly, few studies have explored how such phonological patterns can be meaningfully integrated into classroom practices that are developmentally appropriate and culturally responsive.

In elementary education, language learning is inseparable from learners' cultural and social experiences. Ethnopedagogical perspectives emphasize the integration of local knowledge, oral traditions, and learners' lived experiences into the learning process, allowing instruction to be more meaningful and contextually grounded (Gay, 2018). Although much of the existing research on pronunciation and phonological development has been conducted in English as a second language contexts, the underlying processes, such as phonological perception, cross-linguistic influence, and intelligibility, are not language-specific (Munro & Derwing, 2006; Saito, 2021). These processes are equally relevant in multilingual educational settings, including Indonesian language learning at Sekolah Indonesia Cairo, where students navigate multiple linguistic systems simultaneously (Cenoz & Gorter, 2022; García & Wei, 2014; Han, 2004).

Building on these perspectives, existing research highlights that phonological variation is shaped by cross-linguistic influence and perceptual processes, while multilingual education research emphasizes the dynamic use of linguistic resources in classroom contexts. However, limited attention has been given to how these processes operate among learners who are already proficient in the target language but continue to navigate multiple linguistic systems in their daily environment. This gap is particularly evident in Indonesian language learning in overseas elementary schools, where students' language use reflects ongoing interaction between Indonesian, Arabic, and English.

Accordingly, this study aims to: (1) identify patterns of Arabic-influenced phonological variation in Indonesian among elementary students, (2) examine the relationship between phonological perception and orthographic representation, and (3) explore how these patterns can inform ethnopedagogically grounded teaching strategies in multilingual elementary classrooms. By situating phonological analysis within the realities of classroom practice at Sekolah Indonesia Cairo, this study contributes to a more nuanced understanding of Indonesian language learning, one that recognizes variation as an inherent feature of multilingual competence and as a meaningful basis for pedagogical development.

Method

This study employed a mixed-methods design to examine phonological variation as it occurs within authentic classroom practices. Rather than isolating language forms, the study situates phonological patterns within the broader context of teaching and learning at Sekolah Indonesia Cairo (SIC). An ethnopedagogical perspective guided the research design, allowing linguistic data to be interpreted alongside pedagogical processes and students' cultural-linguistic backgrounds.

The participants were 32 upper-grade elementary students (Grades 4–6) at SIC. All students used Indonesian as the primary language of instruction and demonstrated functional proficiency. At the same time, they were regularly exposed to Arabic in their daily environment and English as part of school learning. This multilingual context formed an integral part of the study, as it shaped both students' language use and classroom interaction (Cook, 2016).

Data were collected through multiple sources to capture the interaction between language use and classroom practice (Ellis & Barkhuizen, 2005). First, classroom observations were conducted over several instructional sessions to document how Indonesian was taught and used in authentic learning activities, including reading aloud, guided writing, and oral interaction. Particular attention was given to how teachers addressed pronunciation, spelling, and meaning-making. Second, speaking tasks (reading aloud and short oral responses) were administered to examine students' phonological production within controlled yet familiar classroom contexts. Third, writing tasks were designed to reflect typical classroom activities, such as sentence construction and short descriptive writing, allowing analysis of orthographic representation in relation to phonological patterns. Fourth, semi-structured interviews with teachers were conducted to explore instructional strategies, challenges in multilingual classrooms, and teachers' perspectives on students' language use. To incorporate the ethnopedagogical dimension, observation notes also documented how cultural and linguistic elements—such as the use of Arabic expressions, familiar oral practices, and contextualized examples—were integrated into classroom instruction.

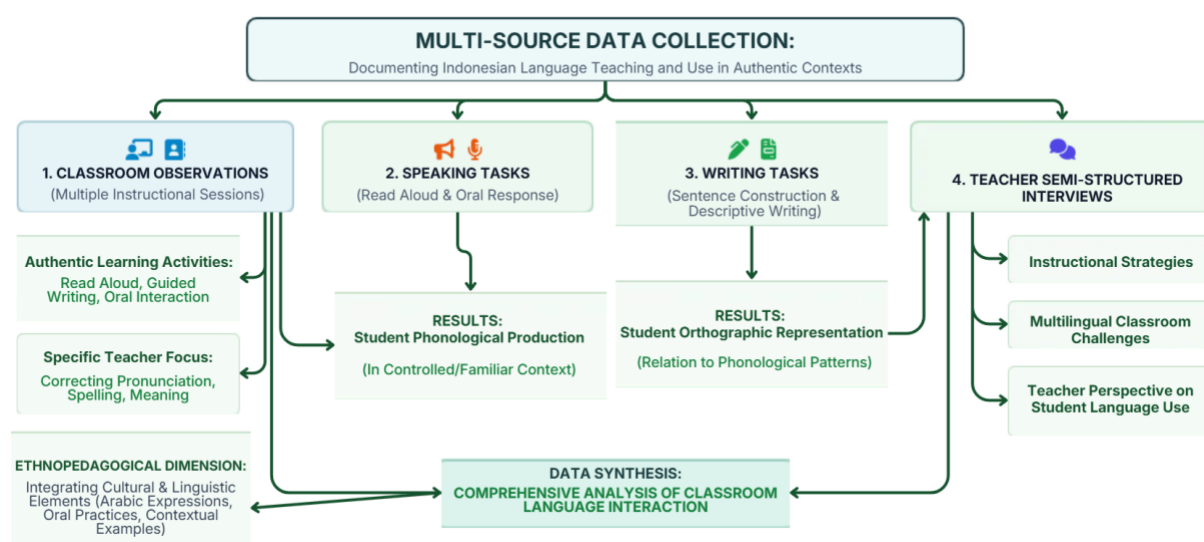


Figure 1. Multi-Source Data Collection

Data analysis was conducted through three interconnected stages that reflect the study's multi-perspective framework. First, a linguistic analysis was carried out by transcribing and coding students' spoken data to identify recurring phonological patterns, including consonant substitution, vowel shifts, epenthesis, and deletion. These identified patterns were then examined pedagogically by situating them within classroom activities, such as reading aloud, dictation, and guided writing, to understand how they emerged during instruction and how teachers responded to them in practice. Finally, a cultural interpretation was developed through thematic analysis of observation and interview data, focusing on how students' multilingual backgrounds and everyday language experiences shaped their language use in the classroom. By integrating these three analytical dimensions, the study moves beyond a purely descriptive account of phonological variation and instead situates linguistic patterns within the realities of classroom practice and cultural context.

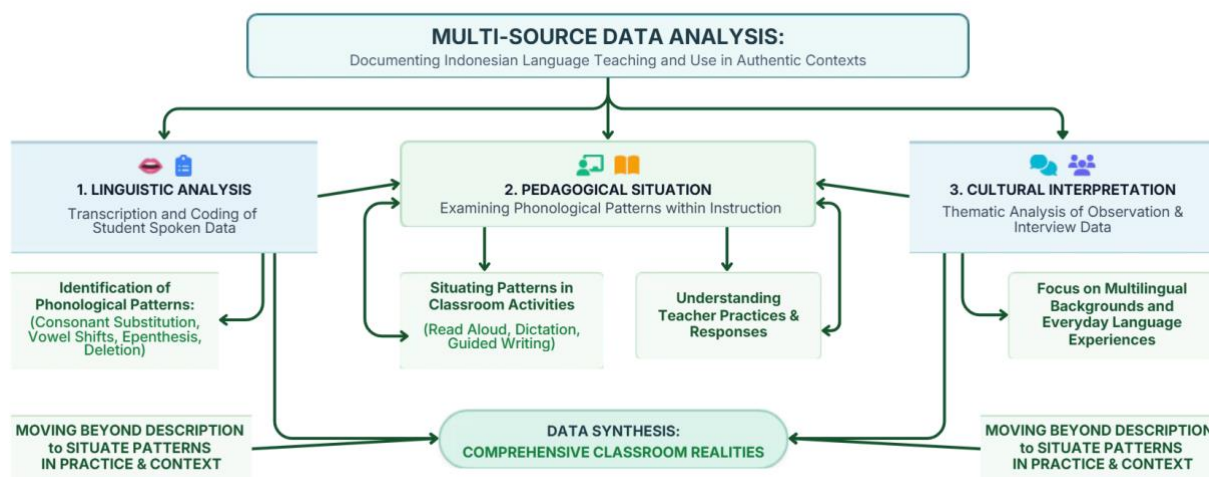


Figure 2. Multi-Source Data Analysis

Results

The findings indicate that Indonesian language use among students at Sekolah Indonesia Cairo (SIC) is generally fluent and functionally effective, with phonological variation emerging in subtle, context-dependent ways. Rather than reflecting limitations in proficiency, these variations appear as part of students' adaptive multilingual language use, particularly under conditions such as increased processing demands or when engaging with less familiar lexical items.

From a linguistic perspective, several recurring patterns of phonological variation were identified, including consonant adjustment, epenthesis, vowel centralization, and minor consonant reduction. These patterns were not pervasive, but occurred selectively in specific contexts. For instance, consonant adjustment was occasionally observed in complex lexical items, such as praktik produced as braktik during rapid reading, suggesting momentary processing shifts rather than stable phonological substitution. Epenthesis was more consistently identified, as in struktur realized as setruktur, indicating adaptation to syllable structures more aligned with students' prior linguistic experience. Vowel variation was also evident, particularly in unstressed syllables, as in kelas produced with a more centralized vowel quality (kəlas), reflecting subtle influence from multilingual phonological repertoires. In addition, minor reduction of final consonants was occasionally observed in fluent speech, such as empat articulated with a weakened or unreleased final stop. These patterns demonstrate that phonological variation is systematic yet subtle, and does not interfere with overall intelligibility.

From a pedagogical perspective, these variations were closely related to specific classroom activities. During reading aloud sessions, variations such as epenthesis and consonant adjustment were more likely to appear, particularly when students encountered unfamiliar or morphologically complex words. In contrast, writing activities—especially dictation and guided sentence construction—revealed traces of phonological influence in orthographic representation, although these were generally limited and did not significantly affect meaning. Classroom observations showed that teachers tended to prioritize comprehension and participation, addressing phonological aspects selectively when they influenced clarity. Instructional practices such as choral reading, repetition, and guided writing provided structured opportunities for students to refine their language use without disrupting communicative flow.

From a cultural perspective, students' language practices reflected the influence of their multilingual environment. Arabic, as the dominant language in their daily lives, appeared to shape certain phonological tendencies, particularly in syllable structuring and vowel realization. At the same time, classroom interaction incorporated familiar oral practices, such as collective repetition and rhythm-based reading, which aligned with students' prior learning experiences. Teachers also demonstrated flexibility in drawing connections between languages, occasionally referencing Arabic or English to support understanding.

These practices suggest that students' linguistic and cultural backgrounds are not separate from classroom learning, but actively inform how language is processed and used.

Across these three dimensions, a consistent relationship emerged between pronunciation and writing, although this relationship was more nuanced than direct correspondence. While some orthographic variations reflected underlying phonological tendencies, many students demonstrated the ability to maintain standard written forms despite minor variation in speech. This indicates that phonological processing continues to interact with literacy practices, even among proficient learners, but does so in a way that supports rather than constrains effective communication.

To summarize the relationship between phonological variation and classroom practice, Table 1 presents the dominant patterns alongside their instructional contexts and ethnopedagogical interpretations, and Table 2 represents the implications on linguistic insight, pedagogical implication, and target stakeholder.

Table 1. Subtle Phonological Variation in Relation to Classroom Practice and Ethnopedagogical Perspectives

Pattern	Example	Classroom Context	Pedagogical Interpretation	Cultural Link
Consonant adjustment	<i>praktik</i> → <i>braktik</i>	Reading aloud	Processing under cognitive load	Influence of Arabic phonological mapping
Epenthesis	<i>struktur</i> → <i>setruktur</i>	Oral reading	Syllable structure adaptation	Alignment with familiar phonotactics
Vowel centralization	<i>kelas</i> → <i>kəlas</i>	Dictation, speech	Perceptual variation	Multilingual vowel system influence
Final consonant reduction	<i>empat</i> → <i>empa(t)</i>	Fluent speech	Natural speech simplification	Oral language patterns

Table 2. Summary of Implications

Key Finding	Linguistic Insight	Pedagogical Implication	Target Stakeholder
Consonant & vowel variation	Cross-linguistic influence from Arabic & English	Use contrastive pronunciation tasks	Teachers
Phonology–orthography link	Sound perception affects writing	Integrate dictation & phoneme–grapheme mapping	Teachers
Multilingual language use	Flexible language repertoire	Allow strategic use of multiple languages in class	Teachers & Curriculum Developers
Systematic variation	Not random errors	Shift from correction to awareness-based instruction	Teachers
Cultural-linguistic background	Learning shaped by context	Apply ethnopedagogical teaching strategies	Teachers & Teacher Educators

Overall, the results demonstrate that phonological variation among students at SIC is best understood as a feature of multilingual competence embedded within classroom practice. By situating these patterns within linguistic, pedagogical, and cultural dimensions, the findings highlight the importance of viewing variation not as error, but as a meaningful and context-sensitive aspect of language use in elementary education.

Discussion

The findings of this study suggest that phonological variation in Indonesian language use among students at SIC is best understood not as a deficit, but as a manifestation of multilingual competence in action. The observed patterns, such as epenthesis, vowel centralization, and subtle consonant adjustment, are systematic, context-sensitive, and largely non-disruptive to communication. This supports the view that multilingual speakers draw on an integrated and dynamic linguistic repertoire that adapts to task demands,

processing conditions, and interactional contexts (Shin et al., 2020). In this sense, variation is not a sign of instability, but rather an indication of flexibility within a multilingual system.

From a linguistic perspective, the findings extend existing understandings of cross-linguistic influence by showing that phonological variation persists even among functionally proficient learners and emerges selectively rather than uniformly. This aligns with models of speech learning that emphasize the role of perception and category formation in shaping production (Escudero, 2015; Saito, 2021). Importantly, the data reveal that such variation tends to surface under specific conditions—particularly during cognitively demanding tasks such as reading unfamiliar words or processing longer utterances. This suggests that phonological variation is closely tied to real-time processing rather than underlying competence. Furthermore, the observed relationship between pronunciation and orthographic representation confirms that phonological awareness continues to interact with literacy development beyond early learning stages (Koda, 2007). However, unlike findings from beginner-level contexts, the variations identified in this study do not significantly disrupt orthographic accuracy, indicating a more stable integration between phonological and orthographic systems.

From a pedagogical perspective, the findings invite a reconsideration of how pronunciation is positioned within Indonesian language instruction at the elementary level. The close interaction between phonological processing and writing suggests that instructional separation of these domains may not reflect how learners actually engage with language. Instead, the data support integrated approaches that connect listening, speaking, and writing within meaningful tasks. This is consistent with research highlighting the effectiveness of pronunciation instruction when it is embedded in communicative and context-rich activities rather than taught in isolation (Levis, 2020; Saito & Plonsky, 2019). In the case of SIC, classroom practices such as choral reading, repetition, and guided writing already provide a foundation for such integration. What is notable, however, is that these practices are not explicitly framed as phonological instruction, even though they function as such in practice. This suggests that one potential area for pedagogical development lies not in introducing new techniques, but in making existing practices more intentional and reflective, particularly in addressing subtle phonological variation (Cenoz & Gorter, 2022).

At a more nuanced level, the findings also point to the importance of instructional timing and sensitivity. Since phonological variation tends to appear under conditions of cognitive load, immediate correction may not always be pedagogically beneficial. Instead, delayed feedback, modeling, and repeated exposure may better support learners' gradual refinement of pronunciation. This perspective aligns with contemporary views of pronunciation teaching that prioritize intelligibility and communicative effectiveness over native-like accuracy (Derwing & Munro, 2015; Levis, 2020). In this context, variation becomes something to be shaped and guided, rather than eliminated.

From a cultural perspective, the study highlights how students' multilingual experiences are embedded in their everyday language practices and classroom participation. Arabic, as the dominant language in the surrounding environment, influences not only phonological patterns but also broader communicative behaviors, such as rhythm, repetition, and oral engagement. These features are not incidental; they actively shape how students approach learning tasks and interact with instructional content. This observation resonates with the principles of culturally responsive teaching, which emphasize the importance of aligning instruction with learners' cultural and linguistic backgrounds (Gay, 2018). Within the SIC classroom, this alignment is visible in the use of collective reading, oral repetition, and flexible language referencing, all of which create a familiar and supportive learning environment.

From an ethnopedagogical perspective, these findings can be interpreted as evidence that effective language teaching in multilingual settings requires a holistic integration of linguistic knowledge, pedagogical practice, and cultural understanding. Rather than treating language as a neutral system, ethnopedagogy positions it as a socially and culturally situated practice. In the context of Indonesian language learning at SIC, this means recognizing that students do not simply "learn Indonesian," but rather use Indonesian within a multilingual and multicultural ecology. As such, phonological variation becomes a point of connection between languages, experiences, and identities, rather than a problem to be corrected.

More broadly, this study contributes to ongoing discussions in multilingual education by demonstrating how subtle phonological variation can serve as a window into learners' cognitive and cultural processes. While much of the existing literature has focused on early-stage learners or error reduction, this study shifts the focus toward proficient learners and adaptive variation, offering a more nuanced

understanding of language use in real-world educational contexts. By situating linguistic patterns within classroom practice and cultural context, the study bridges the gap between theoretical insights and pedagogical application.

Importantly, these findings extend beyond theoretical implications and directly inform classroom practice. If phonological perception continues to shape orthographic representation even among proficient learners, then instructional design should incorporate activities that explicitly connect pronunciation and writing. Guided dictation, phoneme–grapheme mapping, and contrastive pronunciation tasks can help learners refine their language use while maintaining meaningful engagement. At the same time, these activities should be embedded in culturally familiar practices to ensure relevance and accessibility.

Conclusion

This study demonstrates that phonological variation in Indonesian among students at Sekolah Indonesia Cairo is a natural and systematic outcome of multilingual language use rather than an indicator of limited proficiency. By situating these patterns within authentic classroom practices, the findings reveal how linguistic variation is shaped by the interaction of cognitive processing, instructional activities, and students' cultural-linguistic backgrounds. In this context, variation functions not as a barrier, but as an adaptive feature of multilingual competence that supports effective communication. Adopting an ethnopedagogical perspective, the study repositions phonological variation as a meaningful pedagogical resource, offering a more responsive and context-sensitive orientation to Indonesian language teaching in multilingual elementary classrooms. Based on these findings, several practical recommendations can be proposed. First, Indonesian language teachers are encouraged to design integrated learning activities that connect pronunciation and writing, such as guided dictation, phoneme–grapheme mapping, and contrastive sound awareness tasks, while allowing students to draw on their multilingual resources. Second, curriculum developers should consider incorporating multilingual-sensitive approaches into instructional materials, ensuring that variation is addressed not as error correction alone but as part of students' linguistic repertoire. Third, teacher education programs may benefit from preparing educators to recognize and utilize cross-linguistic influence as a pedagogical resource within culturally responsive teaching frameworks. Finally, future researchers are encouraged to extend this line of inquiry by examining longitudinal development, expanding participant diversity, and exploring intervention-based studies that integrate ethnopedagogical and multilingual approaches in Indonesian language classrooms.

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