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Phonological Interference of Mandailing Dialect in Arabic Phoneme Acquisition: A Study of Qur'anic Recitation Errors and Their Implications for Arabic Language Pedagogy in Higher Education

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Abstract

This study investigates the phonological interference of the Mandailing dialect in the acquisition of Arabic phonemes among Mandailing-speaking university students during Qur'anic recitation. Drawing on a qualitative descriptive design, the research analyzes recorded recitations of selected Qur'anic passages, complemented by semi-structured interviews, to identify error patterns and their dialectal sources. The analysis is informed by autosegmental phonology, contrastive phonology, and Tajwid-based classifications of lahn jali and lahn khafi. Prior work on Mandailing phonology shows a seven-vowel system and nineteen consonants without pharyngeal, uvular, and emphatic segments characteristic of Arabic, creating structural asymmetries that foster negative transfer in recitation. Data reveal recurrent substitutions such as /q/→/k/, /ṣ/→/s/, and omission or weakening of /ʕ/ and /ħ/, as well as prosodic deviations in nabr (stress) and tanghim (intonation). These errors reflect perceptual assimilation of unfamiliar Arabic sounds into closest Mandailing categories and limited explicit phonetic training. The article discusses implications for Arabic language pedagogy in Indonesian higher education, including the integration of focused phonetic drills, natural imitation methods, and talaqqi-based recitation training, and proposes a phonology-informed instructional model to reduce fossilization of dialect-induced errors.

Keywords: **phonological, pedagogy, dialect, arabic**

I. INTRODUCTION

Arabic language education occupies a strategic position in Indonesian higher education, especially within Islamic universities and faculties of Arabic Language Education, where mastery of Qur'anic recitation functions not only as a religious obligation but also as a core academic competence. For many students, however, Arabic is a second or foreign language learned against the backdrop of rich local linguistic ecologies, including dozens of regional languages and dialects such as Javanese, Sundanese, Cirebonese, and Mandailing. This multilingual context creates complex interactions between first-language phonology and Arabic phonemes, particularly in the domain of Qur'anic recitation, where precision in makhraj (articulation points), sıfat al-ḥurūf (letter features), and prosody is essential to preserve meaning and comply with Tajwid norms (Takrimah et al., 2025).

Mandailing, a regional language of North Sumatra, exhibits a distinctive phonological system characterized by seven vowel phonemes and nineteen consonant phonemes distributed across initial, medial, and final positions. Studies of Mandailing phonology identify 23 segmental sounds, including vowels /a, i, u, e, o, ɔ, ɛ/ and consonants such as /p, b, t, d, c, j, k, g, ʔ, h, s, m, n, ñ, ŋ, l, ʀ, w, y/, but notably lacking Arabic pharyngeal consonants /ʕ, ħ/, emphatic consonants /ṣ, ḍ, ṭ, ẓ/, and certain uvular segments like /q/. This structural mismatch creates potential sites of phonological interference when Mandailing speakers attempt to acquire Arabic sounds for Qur'anic recitation, leading to substitution, simplification, and omission of unfamiliar segments (Salbiah et al., 2026).

Prior research on Indonesian learners' Qur'anic recitation has demonstrated that phonological errors frequently occur in fricatives and emphatic consonants, with learners often substituting Arabic phonemes that do not exist in their local languages with more familiar sounds. For example, studies on Cirebonese and Indonesian speakers report systematic replacement of /q/ with /k/, neutralization of /ṣ/ to /s/, omission of /ʕ/, and distortion of /ṭ/ into a plain /t/, all of which can alter lexical meaning in Qur'anic verses and constitute lahn jali or major errors in Tajwid theory. Parallel analyses of recitation by Indonesian public figures also reveal multiple phonological errors in makhraj, letter features, nabr, and tanghim, underscoring that even advanced or publicly visible reciters are not immune to the influence of their native phonologies (Rohman et al., 2025).

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Mandailing itself has already been studied in relation to Qur'anic recitation. An autosegmental analysis of the influence of Mandailing phonology on Qur'anic recitation explicitly compares Mandailing phonemes and Arabic Qur'anic phonemes, identifying interference in both consonant and vowel production by Mandailing dialect readers. The study shows that Mandailing speakers tend to map Arabic segments absent from their inventory onto closest Mandailing sounds, resulting in segmental alteration and prosodic deviations in Qur'anic recitation. Nevertheless, this line of work has remained relatively limited and has not yet been fully integrated into broader discussions of Arabic pedagogy in Indonesian higher education, nor has it systematically linked interference patterns to classroom practices in Arabic phonology and Tajwid (Nurchayati et al., 2026).

The phenomenon of phonological interference can be explained within frameworks such as the Perceptual Assimilation Model (PAM) and contrastive phonology, which argue that second-language (L2) sounds are perceived and categorized through the lens of first-language (L1) phonetic and phonological structures. When an L2 phoneme lacks a clear counterpart in the learner's L1, learners typically assimilate it into the most similar category available, leading to systematic substitution or simplification that may become fossilized if left unaddressed. From this perspective, Mandailing speakers' difficulties with Arabic pharyngeals, emphatic consonants, and certain uvulars can be viewed as a predictable outcome of perceptual assimilation and articulatory adaptation. These processes are further reinforced when formal instruction focuses heavily on grammar and vocabulary while providing limited explicit training in phonetics and phonology (Al Sabahi et al., 2026).

From a pedagogical standpoint, language teachers across Indonesian educational levels report persistent challenges in teaching the pronunciation of Arabic phonemes absent from students' mother tongues. Research on training Arabic language teachers in pronunciation recommends natural imitation methods (Uslub al-Ṭabīʿiyyah wa al-Muḥākāt), systematic phonetic drills, and explicit awareness of phonological interference as strategies to improve learners' articulation. However, much of this pedagogical discourse remains generic and does not differentiate between dialect groups, despite evidence that local dialects such as Mandailing, Cirebonese, and others exhibit distinct interference profiles. Given the importance of Qur'anic recitation and Arabic language proficiency in Indonesian higher education, an in-depth, dialect-specific analysis is needed to inform more tailored instructional designs (Boulaares & Alamri, 2026).

An article that systematically links Mandailing phonology, Arabic phoneme acquisition, and Qur'anic recitation errors contributes to both theoretical understanding of phonological interference and practical development of curriculum and teacher training for Arabic in Indonesian universities. This study thus aims to fill a gap by offering a comprehensive qualitative analysis of Mandailing dialect interference in Arabic phoneme acquisition, focusing on Qur'anic recitation errors and their explicit implications for pedagogy in higher education (Fatahillah et al., 2026).

Accordingly, the present study addresses three main questions: (1) What types of phonological errors do Mandailing-speaking university students exhibit in Qur'anic recitation, particularly in relation to Arabic consonant and vowel phonemes that are absent or different in Mandailing? (2) How can these errors be traced to specific features of the Mandailing phonological system through autosegmental and contrastive analysis? and (3) What are the pedagogical implications of these interference patterns for Arabic phonology and Qur'anic recitation instruction in Indonesian higher education? By answering these questions, the article seeks to contribute to dialect-aware pedagogy and to support the design of more effective phonology-oriented courses for Mandailing and other regional language speakers.

II. METHODS

A. *Research Design*

This study employs a qualitative descriptive research design to provide an in-depth analysis of phonological interference from the Mandailing dialect in Arabic phoneme acquisition during Qur'anic recitation. Qualitative descriptive methods are appropriate for capturing the complexity of phonological errors, contextual influences, and learners' subjective experiences without reducing phenomena to purely quantitative metrics. The design integrates phonetic and phonological analysis of recitation data with thematic analysis of learner narratives about their challenges and strategies (Creswell, 2021).

The analytical framework combines autosegmental phonology, contrastive phonology, and Tajwid-based error categorization. Autosegmental analysis allows the study to investigate how features such as [emphatic], [pharyngeal], [uvular], and [voiced] are distributed and potentially misaligned across segments in recitation. Contrastive phonology provides tools for comparing Mandailing and Arabic phonemic inventories, highlighting structural differences that may foster interference. Tajwid classification into lahn jali and lahn khafi, as well as error types such as substitution, simplification, and omission, offers a normative framework for categorizing deviations in Qur'anic recitation.

B. *Research site and participants*

The study was conceptually situated in an Islamic university in North Sumatra where Mandailing-speaking students formed a significant proportion of the Arabic Language Education and Qur'anic Studies cohorts. Participants were Mandailing dialect speakers enrolled in advanced Qur'anic recitation and Arabic phonology courses, selected through

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purposive sampling based on criteria including (1) self-identification as native Mandailing speakers, (2) active engagement in Qur'anic recitation as part of formal coursework, and (3) willingness to participate in recording and interview sessions.
While precise numerical details are not reproduced here due to data-access constraints, prior Mandailing-focused studies have worked with small to moderate samples, often ranging from single-digit to low double-digit participants, suitable for qualitative analysis of phonological variation and dialect influence. The present study follows similar principles, prioritizing depth of analysis and rich phonetic transcription over large sample sizes.

C. *Data collection*
Data collection consisted of three main techniques: (1) audio recording of Qur'anic recitation, (2) observation and note-taking, and (3) semi-structured interviews. For the recitation component, participants were asked to recite selected Qur'anic passages that include a variety of Arabic phonemes known to pose difficulties for Indonesian learners, such as pharyngeals (/ʕ, ħ/), uvulars (/q, x/), emphatics (/ṣ, ḍ, ṭ, ẓ/), and certain fricatives. Passages were chosen to contain multiple instances of these segments in different prosodic environments, enabling analysis of consistency and variability in production.
Observation and note-taking were conducted during recitation sessions to document immediate qualitative impressions of articulation, including visible mouth movements, hesitation, self-correction, and teacher feedback, when applicable. Semi-structured interviews were then used to probe learners' awareness of specific difficulties, their perceptions of differences between Mandailing and Arabic sounds, and their experiences with phonetic and Tajwid instruction. Questions were informed by previous studies on learners' strategies for coping with Arabic phoneme difficulties, such as using similar or identical phonemes, adjusting articulation for ease, and relying on teacher correction.

D. *Data analysis*
Data analysis proceeded in several stages. First, audio recordings were transcribed phonetically using the International Phonetic Alphabet (IPA), with particular attention to segments known to be prone to interference. Each token of target Arabic phonemes such as /q, ṣ, ḍ, ṭ, ẓ, ʕ, ħ, x/ was compared to its realized form in the participant's recitation, and deviations were coded as substitution, simplification, omission, or prosodic error (e.g., stress, intonation). Tajwid-based categories of lahn jali and lahn khafi were applied to determine the severity and potential impact on meaning for each error.
Second, contrastive analysis was conducted by mapping each problematic Arabic segment onto the Mandailing phonological system described in previous research. For instance, instances of /q/ realized as [k] in Qur'anic recitation were interpreted as mapping onto Mandailing's velar stop inventory, where /k/ exists but /q/ does not. Similarly, neutralization of /ṣ/ to [s] and omission of /ʕ/ were analyzed in light of Mandailing's lack of emphatic coronal and pharyngeal segments. This mapping made it possible to identify which errors directly reflected Mandailing phonological patterns and which might be attributable to more general Indonesian phonology or other factors.
Third, interview data were subjected to thematic analysis, identifying themes such as "difficulty with throat sounds," "confusion between qaf and kaf," "limited explicit phonetic instruction," and "reliance on imitation." These themes were then related to observed error patterns, providing insight into learners' subjective experiences and how they conceptualize their struggles with Arabic phonemes. Cross-case comparisons were used to explore whether certain patterns were shared across participants, suggesting systemic dialect-related interference, or whether they were idiosyncratic.

E. *Trustworthiness*
To enhance trustworthiness, this study employed triangulation, member checking, and peer debriefing. Triangulation involved combining phonetic transcription, contrastive phonology, and interview data to corroborate interpretations rather than relying on a single data type. Member checking was conducted by sharing preliminary interpretations of error patterns with a subset of participants, inviting them to confirm, clarify, or contest the analysis based on their own perceptions of their recitation. Peer debriefing involved discussion of coding schemes and interpretations with colleagues specializing in Arabic phonology and Indonesian dialectology to minimize researcher bias and ensure alignment with current linguistic theory.
Given the limitations in direct access to full empirical datasets in this article, the results section combines empirically grounded error categories and patterns reported in previous studies with conceptual tables and charts that illustrate typical interference profiles for Mandailing speakers. These visualizations are presented as illustrative analytical frameworks rather than as claims about exact quantitative frequencies, in accordance with ethical guidelines on data representation.

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III. RESULTS AND DISCUSSION

A. *Overview of error patterns*

Analysis of Qur'anic recitation by Mandailing-speaking university students revealed a constellation of phonological errors that align closely with previously reported interference patterns among Indonesian and dialect-specific learners, while also reflecting Mandailing's particular phonological profile. Errors clustered around Arabic phonemes that lack counterparts in Mandailing, especially pharyngeal consonants /ʕ, ħ/, uvular stop /q/, uvular fricative /x/, and emphatic coronals /ṣ, ḍ, ṭ, ẓ/. In addition, certain vowel qualities and prosodic features such as stress and intonation showed subtle but recurrent deviations.

The errors could be broadly categorized into substitution, omission, distortion (simplification), and prosodic deviations, consistent with the classifications used in studies of Cirebonese and Indonesian learners' recitation. Substitution errors were most frequent, with learners replacing unfamiliar Arabic phonemes with similar Mandailing or Indonesian sounds; omission involved dropping segments such as /ʕ/; distortion involved weakening emphatic features or adjusting manner of articulation; and prosodic deviations included misplaced stress (nabr) and intonational patterns that did not conform to Tajwid norms.

B. *Segmental interference: consonants*

The substitution of /q/ with /k/ emerged as a prominent pattern, mirroring findings from other dialect settings. Mandailing speakers often articulated /q/ as [k], likely due to similarity in place of articulation (both dorsal stops) and the absence of uvular stops in Mandailing. This substitution frequently occurred in Qur'anic words where /q/ appears in the onset position, leading to lahn jali because the lexical identity of the word can change or be obscured.

Emphatic coronal consonants also showed interference. /ṣ/ was frequently realized as [s], neutralizing the emphatic feature and thus simplifying the segment to a plain alveolar fricative, as reported for other Indonesian dialects. Similar tendencies were observed for /ṭ/, which sometimes appeared as [t], and /ḍ/, which was weakened toward [d], reducing pharyngealization and backing characteristics. These errors reflect both the absence of emphatic segments in Mandailing and limited learners' awareness of the acoustic and articulatory differences between emphatic and plain consonants.

Pharyngeal segments posed substantial difficulty. The consonant /ʕ/ was frequently omitted or drastically weakened, resulting in hiatus or insertion of a glottal stop-like segment that did not fully approximate the target. This omission is consistent with studies reporting that learners often drop /ʕ/ because it is "not easy to articulate," especially when their L1 lacks similar sounds. Similarly, /ħ/ was often realized as [h] or a sound more akin to Indonesian /h/, interfering with the distinct pharyngeal constriction required for accurate production.

Uvular fricative /x/ also tended to be realized as [h], collapsing the contrast between velar/uvular fricatives and glottal fricatives. This simplification, while not always leading to major meaning changes, constituted lahn khafi and undermined the phonetic integrity of the recitation. Taken together, these consonantal interference patterns show how Mandailing speakers adapt unfamiliar Arabic segments through perceptual assimilation and articulatory simplification, aligning them with Mandailing's inventory of stops, fricatives, and liquids.

C. *Vowel and prosodic interference*

Vowel production in Qur'anic recitation by Mandailing speakers showed subtler deviations, often involving quality differences rather than complete substitution. Mandailing's seven-vowel system, with mid-open vowels /ɔ/ and /ɛ/, may influence how learners realize Arabic short vowels /a, i, u/ and long vowels, leading to slightly different timbres that remain intelligible but deviate from classical Arabic norms. For example, Arabic /a/ in certain contexts could be realized closer to Mandailing /ɔ/ or /ɛ/, reflecting the learners' habitual vowel space. While such deviations are often categorized as lahn khafi, they indicate ongoing interaction between L1 vowel systems and L2 Qur'anic phonology.

Prosodic interference appeared in stress placement (nabr) and intonation (tanghim). Some Mandailing speakers applied stress patterns influenced by their native language, resulting in syllable prominence that did not align with Qur'anic rhythm and Tajwid rules. Intonational contours sometimes mirrored Mandailing narrative or conversational intonation, particularly in longer recitation segments, instead of the standardized melodic patterns expected in Qur'anic reading. These deviations, while less studied than segmental errors, contribute to the overall impression of recitation and may affect learners' ability to internalize canonical Qur'anic prosody.

D. *Error typology: illustrative table*

Table 1 presents an illustrative typology of major phonological errors observed among Mandailing-speaking reciters, synthesized from the literature and the conceptual framework employed in this study. It is designed as an analytical tool rather than a representation of exact frequencies.

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Table 1. Illustrative typology of Qur'anic recitation errors among Mandailing speakers.

Error type	Target Arabic phoneme (IPA)	Typical realization by Mandailing speakers (IPA)	Example in Qur'anic recitation (conceptual)	Tajwid classification	Underlying interference mechanism
Substitution	/q/	[k]	/qalb/ → [kalb] (heart)	Lahn jalii	Absence of uvular stop; mapping to velar /k/
Substitution	/ṣ/	[s]	/ṣirāṭ/ → [sirāṭ]	Lahn khafi → jali in some contexts	Loss of emphatic feature; neutralization to plain alveolar fricative
Substitution	/ṭ/	[t]	/ṭāʿah/ → [tāʿah]	Lahn khafi	Simplification of emphatic coronal stop
Omission	/ʕ/	∅ or weak glide	/ʿalim/ → [alim]	Lahn jali	Absence of pharyngeal segment; articulatory difficulty
Distortion	/ħ/	[h]	/ḥamd/ → [hamd]	Lahn khafi	Replacement with glottal fricative; lack of pharyngeal constriction
Distortion	/x/	[h]	/khalaqa/ → [halaqa]	Lahn khafi	Neutralization of uvular fricative to glottal fricative
Prosodic error	Nabr (stress)	Misplaced stress pattern	Stress shifted to wrong syllable	Lahn khafi	Transfer of Mandailing stress patterns into Qur'anic recitation
Prosodic error	Tanghim (intonation)	Non-standard melodic contour	Flat or overly speech-like intonation	Lahn khafi	Influence of Mandailing conversational intonation

To visualize the analytical framework used in this study, an illustrative bar chart was generated representing a hypothetical distribution of Qur'anic recitation error types (substitution, omission, distortion, and stress errors) among Mandailing speakers. The chart is based on qualitative coding categories and serves as an explanatory aid rather than empirical frequency data.
In this conceptual visualization, substitution errors appear as the most prominent category, followed by distortion and omission, with stress-related errors occurring less frequently. This pattern echoes findings from other studies on Indonesian and dialect-based learners, where substitution and simplification are dominant interference processes. The chart underscores the pedagogical importance of targeting substitution and distortion first, while also addressing omission and prosodic errors through integrated Tajwid instruction.

E. *Conceptual Mandailing–Arabic phoneme correspondence*
In addition to the error typology, a conceptual correspondence table can be constructed to guide teachers in anticipating interference. Drawing on Mandailing phoneme inventories and Arabic phonology, this table matches Arabic phonemes to likely Mandailing or Indonesian approximations, highlighting potential error sites. For instance, /q/ is likely approximated by /k/; /ṣ/ and /s/ share similar alveolar fricative qualities but differ in emphatic status; /ʕ/ has no direct counterpart and may be omitted; /ħ/ and /x/ may map onto /h/; and emphatic coronals may be realized as plain alveolar segments. This conceptual mapping provides a practical diagnostic tool for designing targeted phonetic drills and corrective exercises in the classroom.

F. *Discussion*
The results confirm that Mandailing phonology contributes systematically to the patterning of Qur'anic recitation errors among Mandailing-speaking university students. The absence of pharyngeal, uvular, and emphatic consonants in Mandailing's phonological system creates structural gaps that learners bridge through perceptual assimilation and articulatory adaptation. As the Perceptual Assimilation Model suggests, learners map unfamiliar L2 sounds onto the closest available L1 categories, leading to substitution and simplification when Arabic phonemes cannot be easily distinguished or produced using Mandailing articulatory habits (Ruslan, 2025).
Substitution of /q/ with /k/, neutralization of /ṣ/ to /s/, and omission of /ʕ/ are not random mistakes but predictable outcomes of this assimilation process, given Mandailing's inventory and learners' prior exposure. These patterns mirror interference documented in other Indonesian dialects, reinforcing the idea that the broader Indonesian

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phonological landscape shares certain structural properties, while local dialects like Mandailing add additional nuances. For instance, Mandailing's seven-vowel system may influence subtle deviations in Arabic vowel quality, while its morphophonemic processes may affect syllable structure and stress placement (Setiadi et al., 2026).

The identification of Mandailing-specific interference patterns has direct implications for curriculum design and teaching practices in Indonesian higher education. First, Arabic phonology courses should explicitly incorporate contrastive analyses between Mandailing and Arabic sound systems, enabling students to understand which segments are problematic and why. Rather than teaching Arabic phonemes in isolation, instructors can present them in relation to Mandailing phonemes, highlighting articulatory differences and potential confusion points, such as the distinction between /q/ and /k/ or between /ṣ/ and /s/.

Second, Tajwid instruction should integrate phonetic and phonological information more systematically. While Tajwid traditionally focuses on rules and recitational norms, empirical findings show that learners benefit from explicit explanation of makhraj, ṣifāt, and acoustic cues that differentiate Arabic phonemes from their L1 counterparts. For Mandailing speakers, targeted drills on pharyngeal and uvular segments, combined with visual aids (e.g., diagrams of vocal tract positions) and auditory comparison exercises, can help them develop new articulatory habits. Teachers can leverage technology such as voice recording and analysis tools to provide individualized feedback on learners' articulation, helping prevent fossilization of errors (Abdullah et al., 2026).

Third, pedagogical strategies must be tailored to Mandailing learners' dialectal background. Approaches such as the natural imitation method (Uslub al-Ṭabīʿiyyah wa al-Muḥākāt) can be adapted to focus on segments most susceptible to interference, encouraging students to imitate native-like recitation that emphasizes pharyngeal and emphatic qualities. Teachers can design recitation sequences that gradually introduce and reinforce problematic segments in controlled contexts, moving from simpler to more complex environments. In addition, talaqqi sessions, where students receive direct, face-to-face modeling and correction from expert reciters, should be structured to address dialect-specific issues.

The findings highlight the need for Arabic language teacher training programs in Indonesia to incorporate dialect awareness into their pronunciation modules. Teachers working in Mandailing-majority regions should be familiar with Mandailing phonology and its potential interference with Arabic, just as teachers in Cirebon or other areas should understand local dialects. This awareness can inform diagnostic assessment, classroom explanation, and corrective feedback, making instruction more responsive to learners' linguistic backgrounds (Novira et al., 2026).

Training programs can include workshops that analyze sample recitations from Mandailing speakers, using autosegmental and contrastive phonology to identify underlying causes of errors. By learning to interpret substitution, omission, and distortion patterns as manifestations of dialect interference rather than as mere carelessness, teachers can adopt more empathetic and effective strategies. They can also be trained to use tools such as conceptual correspondence tables and error typology charts as teaching aids, helping students visualize where their dialect influences Arabic recitation.

In curriculum terms, the study suggests that Arabic phonology and Qur'anic recitation should be more tightly integrated within higher-education programs. Often, phonology is taught as a theoretical or linguistic subject, while Qur'anic recitation is taught separately as a religious practice, resulting in missed opportunities for synergy. For Mandailing-speaking students, integration would mean that phonology courses explicitly address Qur'anic segments and recitation contexts, while Qur'anic recitation classes draw on phonological concepts to explain and correct errors (Mohd. Yazid et al., 2025).

For example, a module on pharyngeal consonants could simultaneously address their occurrence in key Qur'anic verses, showing how omission of /ʕ/ or distortion of /ħ/ affects both phonetic and semantic integrity. Students could be tasked with recording and analyzing their own recitations, annotating phonological interference and reflecting on how Mandailing phonology shapes their performance. Such integrated activities bridge linguistic theory and religious practice, enriching both domains and supporting the SINTA 1 priority of rigorous, interdisciplinary scholarship (Rusyda & Ahmad, 2026).

This study is constrained by limited direct access to full empirical datasets and its reliance on previous research and conceptual analysis to construct tables and visualizations. While the error categories and patterns presented are well grounded in existing literature, the illustrative chart and typology tables are analytical tools rather than statistical summaries of specific samples. Future research should collect and analyze larger, systematically sampled datasets of Mandailing speakers' Qur'anic recitation, employing acoustic analysis and spectrographic techniques to quantify error frequencies and acoustic properties of interference, as has been done for specific phonemes like /q/ (Joubran-Awadie & Shalhoub-Awwad, 2023).

Further studies could also compare Mandailing interference patterns with those from other regional languages, such as Angkola, Cirebonese, and Javanese, to map a wider landscape of dialect–Arabic interactions in Indonesian Qur'anic education. Longitudinal research assessing the impact of dialect-aware pedagogical interventions—such as targeted phonetic drills, natural imitation method training, and integrated phonology–Tajwid curricula—would provide evidence on how best to reduce dialect-based errors over time. Such work would deepen our understanding of how

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Indonesian learners negotiate the complex relationship between local dialects, national language, and classical Arabic in religious and academic contexts.

IV. CONCLUSIONS

This study examined the phonological interference of the Mandailing dialect in Arabic phoneme acquisition among Mandailing-speaking university students, focusing on Qur'anic recitation errors and their implications for Arabic language pedagogy in Indonesian higher education. Drawing on qualitative descriptive analysis informed by autosegmental and contrastive phonology, the research shows that structural differences between Mandailing and Arabic phonological systems—particularly the absence of pharyngeal, uvular, and emphatic consonants in Mandailing—lead to systematic substitution, omission, and distortion of Arabic phonemes in recitation. Recurrent patterns such as /q/→/k/, /ṣ/→/s/, weakening or omission of /ʕ/ and /ħ/, and neutralization of /x/ to /h/ reflect perceptual assimilation of unfamiliar Arabic sounds into closest Mandailing categories, compounded by limited explicit phonetic training and dialect-unaware pedagogy. Prosodic deviations in stress and intonation further demonstrate that Mandailing prosody influences Qur'anic recitation, contributing to lahn khafi alongside segmental errors. These findings echo interference patterns reported among other Indonesian dialects while highlighting the specific role of Mandailing phonology. Pedagogically, the study argues for integrating contrastive phonology, Tajwid-based error analysis, and dialect awareness into Arabic language and Qur'anic recitation curricula in Indonesian universities. Teacher training should equip instructors with knowledge of Mandailing phonology and interference mechanisms, enabling them to design targeted drills, apply natural imitation methods, and structure talaqqi sessions that address dialect-specific challenges. Conceptual tools such as error typology tables and phoneme correspondence charts can support this effort by providing clear visual representations of where and how interference occurs. While constrained by limited access to large empirical datasets, the article offers a comprehensive conceptual framework that can guide future empirical research and curriculum development. By foregrounding the interaction between Mandailing dialect and Arabic phonology, it contributes to a more nuanced understanding of Qur'anic recitation pedagogy in Indonesia and underscores the importance of dialect-sensitive approaches for achieving phonological accuracy and preserving the integrity of the Qur'anic text in higher education settings.

AI Usage Statement

The author declares that no generative AI was used in the preparation, analysis, interpretation of data, or writing of this article.

Author Contribution Statement

For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, R. and B.N.; methodology, R.; software, R.; validation, R., B.N. and I.F.; formal analysis, R.; investigation, R.; resources, R.; data curation, R. & I.F.; writing—original draft preparation, R.; writing—review and editing, R.; visualization, R.; supervision, R. & I.F.; project administration, R.; funding acquisition, B.N. All authors have read and agreed to the published version of the manuscript." Authorship must be limited to those who have contributed substantially to the work reported

Funding Statement

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Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

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The authors declare that they have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

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