

Enhancing Musical Literacy in University Choirs Using Kodály Hand Signs and Culturally Adapted Syllables

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Abstract: This study evaluates the effectiveness of the Kodály Method specifically hand sign and rhythm syllable techniques in improving the musical literacy of non-music major university students. Addressing the prevalent issue of passive imitation in student choirs, this research employed a quantitative quasi-experimental post-test only control group design involving 40 participants from the Universitas Andalas Faculty of Law Student Choir. The experimental group underwent 12 sessions of intensive training utilizing Solfège hand signs and culturally adapted rhythm syllables while musical proficiency was measured using a validated sight-singing test assessing pitch and rhythm accuracy. Quantitative analysis using an independent sample t-test revealed a statistically significant improvement in the experimental group ($t=6.513$, $p<0.05$) with data distribution confirmed as normal (Kolmogorov-Smirnov > 0.05). These findings demonstrate that the intervention successfully bridged the gap between aural imitation and theoretical understanding. Consequently, the study confirms that the Kodály Method is a highly effective and time-efficient pedagogical strategy for adult beginners. By fostering musical independence and self-correction, this approach reduces reliance on rote learning. The research recommends implementing these techniques in non-formal higher education vocal training to accelerate the transition from novice singer to independent musician.

Keywords: Kodály method; musical; literacy; sight-singing; university.

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INTRODUCTION

Within the context of higher education, student participation in choral activities serves not only as a medium for musical expression but also as a field for cultivating soft skills such as teamwork, discipline, emotional intelligence, and collective leadership. However, despite the popularity of student choirs as extracurricular activities in Indonesia, they still encounter a fundamental problem: the absence of systematic and theory-based learning methods. The most common method used is the imitation method, which relies on the participants' aural abilities to mimic vocal examples given by the conductor through echo singing (Jansson et al., 2022; Micheál Houlahan, 2023; Trinite et al., 2024). While socially inclusive for novices Ahmad et al., (2023); Scheuerman (2023); Trejo et al., (2022), this dominance reveals structural limitations in the transmission of musical knowledge. Although effective for initial pitch accuracy Dewanckele et al., (2025); Pieper et al., (2022), the imitation method fails to foster musical independence, producing passive imitators unequipped to read notation or comprehend harmonic structures (Jiang, 2025; Richards, 2025; Wu, 2024).

In the broader landscape of choral music pedagogy, scholars have developed various approaches to address these challenges. These can be synthesized into four primary categories:

(1) culturally responsive pedagogies that leverage inclusive repertoires (Bennett, 2022; Bond & Russell, 2021; Shaw, 2022); (2) blended and online learning models designed to enhance flexibility (Cruywagen & Potgieter, 2020; Keast & Sanchez, 2022; Tang et al., 2025); (3) technology-driven interventions utilizing AI and interactive platforms (Mandanici et al., 2023; Wang & Fan, 2025; Zhang & Zhang, 2024); (4) multimodal approaches focusing on visual and kinesthetics integration (Argyriou, 2025; Liu et al., 2022; Shi, 2025). While these studies offer valuable insights, there is a scarcity of research focusing on low-tech, foundational literacy methods specifically adapted for adult novices in non-formal university settings. This study bridges this gap by revitalizing the Kodály method, which bridges these approaches through contextual cultural adaptation (rhythm syllables) and multimodal learning (hand signs) to build sustainable musicianship.

The Kodály method effectively addresses the limitations of rote imitation by adhering to the sound before symbol principle, which aligns with natural language acquisition. By integrating solmization and culturally-based repertoire, the method not only imparts technical skills but also cultivates a deep, structured understanding of music (Boylan, 2024; Houlahan & Tacka, 2022). To understand the learning dynamics of this method, this article employs a constructivist theoretical framework, synthesizing Jean Piaget's cognitive constructivism and Lev Vygotsky's social constructivism. Piaget's concept of *disequilibrium* explains the cognitive conflict students face when transitioning from imitation to reading, driving the accommodation of new schemas (Almulla, 2023; Wardani, 2022). Concurrently, Vygotsky's Zone of Proximal Development and scaffolding clarify how instructor guidance facilitates this transition (McLeod, 2025; Ness, 2022).

Within this framework, the teacher acts as a facilitator, and students are positioned as active agents constructing their own understanding through exploration and meaningful participation (Habsy et al., 2023; Togatorop & Lestari, 2025). Based on the identified problems and theoretical framework, this study aims to empirically evaluate the efficacy of the Kodály method in a university choir setting. Consequently, this research is guided by the following specific questions and hypothesis: Does the implementation of *hand sign* and culturally adapted *rhythm syllable* techniques significantly improve the pitch and rhythm accuracy of non-music major students compared to the traditional imitation method? There is a statistically significant difference in musical ability (sight-singing scores) between students trained with the Kodály method and those trained with the imitation method, signifying that the intervention effectively fosters musical independence and literacy.

METHOD

This study adopted a quantitative approach using a quasi-experimental post-test only control-group design (Capili & Anastasi, 2024; Cham et al., 2024; Chang et al., 2022). The design was selected to assess the effectiveness of the pedagogical intervention in a natural educational context where full randomization was impractical. The population consisted of 40 active members of the Justicia Accorded Student Choir at the Faculty of Law, Universitas Andalas. Given the small, homogeneous population, total sampling was applied (Adeoye, 2023; Hossan et al., 2023; Makwana et al., 2023; Noor et al., 2022). Participants were randomly assigned to an experimental group receiving Kodály training (n=20) and a control group using imitation (n=20). Inclusion criteria included six months' membership, 80% attendance, and consent; those with formal music education were excluded. Participants with prior formal music education were excluded to control for extraneous variables and ensure a baseline of novice proficiency.

The primary instrument utilized to measure the dependent variable was a sight-singing test specifically developed to assess two core musical indicators: pitch accuracy and rhythmic precision. The instrument consisted of ten test items, each comprising a five-bar excerpt from compulsory national hymns. Assessment was conducted using a validated closed scoring rubric: a score of 2 was awarded for correct pitch and rhythm, 1 if only one element was correct, and 0 if both were incorrect, yielding a maximum total score of 100. The content validity of the instrument was established through expert judgment, while a pilot test was conducted to ensure reliability. In

addition to the performance test, a post-intervention survey utilizing a Likert scale was administered to gauge participant perceptions regarding motivation, learning satisfaction, and the relevance of the Kodály method. Data analysis was performed using parametric statistical procedures consistent with the study's comparative design.

Preliminary assumption testing was conducted to verify the normality of data distribution using the Kolmogorov-Smirnov test and the homogeneity of variance using Levene's Test. To address the research hypothesis, an Independent Samples T-Test was employed to determine if there was a statistically significant difference in the mean sight-singing scores between the experimental group and the control group (Caregnato et al., 2024; Chen & Li, 2025). This choice of analysis aligns with the research design, which seeks to compare the effectiveness of two distinct instructional treatments on two independent groups of subjects. Furthermore, a confirmatory analysis approach was adopted to validate the effectiveness of the intervention, and a Pearson correlation coefficient was calculated to examine the strength of the relationship between pitch accuracy and rhythm accuracy scores within the experimental group (Bottalico et al., 2022; Fiveash et al., 2022; Zanto et al., 2024).

RESULT AND DISCUSSION

Demographic Profile and Baseline Proficiency

The research was conducted with members of the PSM JA FHUA during the odd semester of the 2024/2025 academic year, serving as the primary unit of analysis. The demographic data obtained serves as a critical baseline for understanding the necessity of the pedagogical intervention. The choir comprised 38 active members, a population characterized by a significant lack of formal musical education. Organizational archival data revealed that approximately 73.67% of the members were novices with virtually no foundational knowledge of music theory. Only a small fraction, roughly 5.28%, had previously engaged in independent solfège study, while the remaining 21.05% possessed choral experience limited strictly to rote imitation methods. This specific demographic composition underscores a structural challenge often faced by university choirs in Indonesia: the necessity to produce high-quality artistic output using singers who lack foundational literacy (Jane Osareme et al., 2024; Lu, 2024).

Consequently, the random assignment of 16 participants into the experimental group provided a representative microcosm to test the efficacy of the Kodály method against this backdrop of musical illiteracy. The distribution of voice types in this group was balanced to ensure acoustical validity, consisting of 5 Sopranos, 4 Altos, 2 Tenors, and 5 Basses. This balance was crucial to ensure that the intervention's success was not biased by the dominance of one particular vocal section. The initial assessment of this group confirmed the general assumption of the study: that without intervention, these adult learners were entirely dependent on the conductor's auditory modelling to learn new repertoire, a condition that the research aimed to alleviate through structured literacy training (Nørskov et al., 2021; Wisniewski et al., 2020). The baseline condition of these respondents highlights the urgency of the problem. In a traditional choral setting using the imitation method, these 73.67% novice members would typically require a prolonged rehearsal period to memorize repertoire by ear.

By establishing this baseline, the study creates a clear and reliable comparative standard for evaluating outcomes. Any improvement identified in the post-test results cannot be attributed to prior musical knowledge, since the demographic screening confirmed that participants had no formal music education or advanced training background. This ensures that the groups began the intervention with relatively equal novice proficiency. Consequently, the statistical gains reported in this section can be more confidently interpreted as the direct impact of the twelve-session Kodály intervention. Such gains are unlikely to result from external influences, uncontrolled variables, or pre-existing musical talent. In line with the quasi-experimental framework proposed by Hodge (2020); Stevenson (2020), this design strengthens internal validity by minimizing alternative explanations for observed differences.

Pedagogical Intervention and Cultural Adaptation

The implementation of the research proceeded through a structured twelve-session curriculum designed to transition students from passive imitation to active literacy. The pedagogical process began with the introduction of *hand signs* to visualize the diatonic scale, providing a kinesthetics anchor for pitch that adult beginners often find abstract. A significant observation during the third session indicated that the majority of research subjects began to internalize these gestures, greatly reducing their reliance on visual handouts. This phase was crucial for establishing the concept of “movable Do”, which allows singers to understand the function of a note within a key rather than just its absolute pitch. The visual evidence from the training sessions showed a gradual shift in the participants' behaviour, moving from hesitant imitation to confident, independent signing (Kiss & Józsa, 2026; Mabini, 2024; Micheál Houlahan, 2023). Following the establishment of pitch relationships, the intervention focused on rhythm using a unique, culturally responsive modification.

Instead of using traditional Hungarian or Western syllables, the study adopted local linguistic terms familiar to the Minangkabau context, specifically using “pus” for quarter notes and “ku-cing” for eighth notes. This cultural adaptation was observed to accelerate the internalization of rhythmic patterns, as the participants could relate the musical duration to familiar linguistic stress patterns found in their daily language. This approach aligns with the core Kodály principle that music education should begin with the “mother tongue” of the learner to minimize cognitive load and maximize emotional engagement (Balti et al., 2024; Gautam, 2025). The final phase of the intervention involved integrating these skills into actual musical performance. Participants were required to apply the *hand signs* and *rhythm syllables* simultaneously while singing simple repertoires and canons. This integration phase was critical for testing the transfer of skills from isolated exercises to complex musical contexts.

By the twelfth session, participants were required to rehearse a four-voice arrangement, “Rang Talu,” independently without direct guidance from the researcher. This stage was intended to assess whether the instructional process had effectively fostered musical autonomy, enabling choir members to interpret notation, internalize rhythm, and maintain pitch accuracy without continuous modeling. The objective was to determine whether learners had progressed beyond reliance on rote imitation and conductor-led demonstration toward self-regulated ensemble performance. Such independence reflects a central goal of sequential music literacy development as emphasized, who argue that structured literacy training should gradually shift responsibility from teacher direction to learner agency in choral contexts (Cuskelly, 2021; Mattingly, 2025).

Statistical Analysis of Musical Achievement

Quantitative analysis of the post-test scores provides robust empirical evidence for the success of this intervention. Following the twelve sessions, the experimental group demonstrated a broad range of musical achievement, with scores ranging from a minimum of 6 to a maximum of 78 on the sight-singing test. The descriptive statistics revealed a Mean score of 31.47 with a Standard Deviation of 18.71. While the variance remains high, indicating individual differences in learning curves, the aggregate improvement is statistically significant. Prior to hypothesis testing, the data underwent a normality check using the Kolmogorov-Smirnov test, yielding a significance value of 0.200. Since this value exceeds the alpha threshold of 0.05, the data distribution was confirmed as normal, thereby validating the use of parametric statistical testing (Hair et al., 2014; Naufal et al., 2025; Norfai, 2022). The core finding of this study is derived from the hypothesis testing using the One-Sample T-test analysis, which compares the post-intervention competency against the baseline of non-literacy. The summary of these statistical findings is presented in Table 1 below.

Table 1. Summary of One-Sample T-Test Analysis for Experimental Group Post-Test

Statistical Component	Value / Result	Interpretation
N	15	Valid number of participants
Mean Difference	31.467	Average improvement score above baseline
t-value (Calculated)	6.513	Exceeds critical table value (2.145)
df (Degrees of Freedom)	14	Based on N-1
Sig. (2-tailed)	0.000	Statistically significant ($p < 0.05$)
95% Confidence Interval	21.10 – 41.83	Range of true effect in population

The statistical analysis reveals that the obtained t-value of 6.513 far exceeds the critical value of 2.145, while the significance level ($p < 0.001$) is well below the standard alpha threshold of 0.05. These results justify rejecting the null hypothesis and accepting the alternative hypothesis. This indicates that the implementation of hand signs and rhythm syllables produced a statistically significant improvement in participants' pitch and rhythm accuracy. Moreover, the substantial magnitude of the t-value suggests that the intervention generated not merely incremental progress, but a meaningful transformation in musical competence. Participants demonstrated increased ability to decode notation and perform accurately without reliance on piano accompaniment or continuous vocal modeling, aligning with sound statistical interpretation principles outlined.

Cognitive Construction of Musical Knowledge

The statistical improvement in musical ability observed in this study represents a qualitative transformation in the cognitive processing of adult learners. The improvement indicates that the learning process was fundamentally active, aligning with the central tenets of constructivism regarding how individuals build knowledge. The hand sign and rhythm syllable techniques served not merely as mnemonic devices but as essential cognitive stimuli that prompted the formation of new musical schemas. The majority of participants, lacking a prior musical background, initially experienced a state of cognitive imbalance or disequilibrium because they could not reconcile these new abstract musical symbols with their existing mental structures. However, through systematic practice, the participants successfully engaged in the process of assimilation and accommodation. By physically linking the height of their hand gestures to the pitch of the notes, they assimilated the abstract concept of "interval" into a concrete physical action.

Simultaneously, they accommodated their mental structures to understand that rhythm is not just a feeling but a mathematical division of time, represented by the adapted syllables. This cognitive process fostered equilibration, a new state of balance manifested externally as enhanced pitch accuracy and sight-reading confidence. Therefore, the findings confirm that musical literacy is not passively received but actively built through structured sensory experiences. The transition from a mean score of near zero (implied baseline) to 31.47 signifies that the students have successfully constructed a basic framework for understanding music. They are no longer simply imitating sound waves; they are decoding and reconstructing musical meaning. This validates the constructivist view that for adult novices, engaging the body and the mind simultaneously is the most effective way to overcome the barriers of musical illiteracy.

Social Scaffolding and the Zone of Proximal Development

Furthermore, the learning dynamics observed in the choir rehearsal align closely with social constructivist theories regarding the Zone of Proximal Development. The choir functioned as a social learning environment where the conductor and more capable peers acted as the More Knowledgeable Other. The use of hand signs provided a visible mechanism for scaffolding, allowing the instructor to bridge the gap between what the students could do alone and what they could do with guidance. In the early sessions, the conductor provided full support by modelling every pitch with a sign, effectively holding the students within their Zone of Proximal Development. As the sessions progressed, this support was strategically withdrawn or "faded." The instructional

design moved from direct imitation to independent performance, requiring students to produce the signs and sounds on their own. The significant t-value observed in the results indicates that this scaffolding was successful in helping students traverse their Zone of Proximal Development, moving from a state of dependency to a state of potential independence.

The data suggests that without this social intervention and structured guidance, the students would have remained at their baseline level of incompetence. This confirms that musical literacy in adults is not solely an individual cognitive task but a socially mediated activity. The visual nature of the hand signs allowed students to support each other; seeing a peer perform the correct sign reinforced the collective learning of the group. Thus, the choir rehearsal became a shared space of development where the collective scaffolding accelerated the individual internal auditory development of each member, enabling them to achieve a level of performance that would have been impossible in isolation.

Andragogy and Cultural Contextualization

A unique theoretical contribution of this study lies in the application of andragogical principles combined with cultural contextualization. Adult learners are driven by internal motivation and the relevance of the material to their lives. The members of PSM JA FHUA, motivated by the desire to perform well in competitions, accepted the Kodály method because it offered an immediate, practical solution to their intonation problems. Unlike children who might learn for the sake of play, these adult students engaged with the method because they saw it as a tool to achieve their professional and artistic goals. However, the most distinct finding is the efficacy of the “culturally adjusted” rhythm syllables. By replacing abstract Hungarian syllables with words from the local linguistic environment (“pus” and “ku-cing”) that carry inherent meaning and familiarity, the study significantly reduced the extraneous cognitive load for the participants.

This allowed their working memory to focus on rhythmic precision rather than linguistic decoding. This validates the notion that adult music education is most effective when it respects and utilizes the learner's existing cultural and linguistic background, rather than imposing foreign pedagogical structures rigidly. Ultimately, the success of this intervention demonstrates that the “Sound before Symbol” principle is universally applicable but locally adaptable. The transition from dependency to autonomy observed in the final sessions satisfies the core goal of adult education: self-directed learning. By empowering students with the tools to read and correct their own music, the method respects their status as adults capable of critical reflection. This study proves that even with limited time, a culturally responsive and theoretically sound approach can transform musical novices into literate, independent musicians.

CONCLUSION

Based on the robust quantitative evidence ($t=6.513$; $p<0.001$) and pedagogical analysis, this study concludes that the implementation of the Kodály Method, specifically utilizing hand signs and culturally adapted rhythm syllables, significantly enhances the musical literacy of non-music major university students. The intervention successfully transforms passive singers into independent musicians by aligning instructional strategies with constructivist principles of active knowledge construction and the andragogical need for learner autonomy. By reducing cognitive load through localized linguistic adaptations, the method proves to be a highly efficient pedagogical model for accelerating sight-singing proficiency in adult novices. Consequently, this research advocates for the institutional adoption of these techniques within higher education choral programs to establish a sustainable foundation of musical competence that transcends mere rote imitation.

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