Implementing Western musical notation in teaching Sundanese *titilaras*: Qualitative action research

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ABSTRACT

Music education promotes students' cultural and intellectual development, particularly in preserving traditional music. Sundanese traditional music in Indonesia, mainly through the concept of *titilaras*, encapsulates cultural identity and history. Modern music education encounters a hurdle as Western musical notation predominates courses, resulting in students needing help comprehending and performing Sundanese music due to the disparities in notation systems. This research examined the imperative of safeguarding Sundanese *titilaras* by investigating the incorporation of Western musical notation in its pedagogy to improve students' proficiency in reading and composing traditional Sundanese music. The research utilized a qualitative action research technique at Indonesian University of Education, engaging 48 students from various cultural origins and different levels of music education. The research evaluated students' skills in *titilaras* before and after integrating Western notation through surveys, aural assessments, and music transcription activities. The findings revealed that most pupils encountered difficulties with Sundanese musical notation while demonstrating proficiency in Western notation. Utilizing Western musical notation as an instructional instrument, students exhibited enhanced comprehension and execution of Sundanese scales, particularly in practical contexts such as transcription and melody interpretation. The study indicated that integrating Western notation into the curriculum could enhance accessibility to traditional music for students acquainted with Western systems. Thus, Sundanese music maintained its cultural integrity while fulfilling modern educational requirements. This research underscored the necessity of modifying music education to preserve local musical traditions within an increasingly international framework.

Keywords: Western musical notation, Sundanese *titilaras*, music education, qualitative action research, reading and writing skill

INTRODUCTION

Music education has historically influenced students' cultural and intellectual growth. Many reports regarding music education have been well-documented (Novrizal et al., 2022; Azmiyati et al., 2022; Sella et al., 2024; Syarifatunnisaa et al., 2023; Kahar et al., 2024). Traditional music is significant in this domain as it embodies a particular culture's identity, values, and history. This is important to preserve cultural identity and values (Milliatina et al., 2022; Soelistino et al., 2024; Nacionales & Calixtro, 2024; Muliawati & Maryanti, 2022; Adeoye et al., 2023; Organia et al., 2023; Nugrahhu, 2023).

Studying *titilaras* in traditional Sundanese music is essential to Indonesia's diverse cultural heritage (Herdian & Maryanti, 2023). *Titilaras* refers to the fundamental framework of melody, rhythm, and musical scales in Sundanese traditional music, and proficiency in this concept is crucial for comprehending and executing diverse styles of Sundanese traditional music. In recent years, music educators have encountered the issue of effectively instructing traditional music

forms like *titilaras*, especially as Western musical notation systems have become dominant in the curriculum of Indonesian educational institutions. This situation creates a conflict between the conservation of local musical legacy and the pragmatic requirements of contemporary music education, wherein students frequently exhibit greater familiarity with Western musical systems (see Figure 1).

Main tone	$\overset{.}{1}$	5	5+	4	3	3-	2	1	$\underset{.}{5}$
Read	da	la	leu	ti	na	ni	mi	da	la

Figure 1. The prominent tone of Sundanese *titilaras*

Sundanese karawitan consists of five scales: saléndro, pélog, *degung*, *madenda* (also known as sorog), and *mataraman* (or mandalungan). These scales are employed in Sundanese instrumental performances across various art forms, including *degung*, kiliningan, jaipongan, wayang golék, kacapi wanda anyar, and others. According to Saepudin (2015), within the framework of 17 swara (notes), the saléndro scale features intervals with a minimum distance of 210 cents between notes. In contrast, the pélog scale has a minimum interval of 133 1/3 cents. The *madenda*, *degung*, and *mataraman* scales have the smallest interval of 70 cents. The saléndro scale is considered the foundational scale of all other Sundanese scales, and its flexibility allows for the development of *degung* and *madenda* scales. Understanding these fundamental differences in tuning is essential for maintaining the integrity of Sundanese music and exploring ways to teach it effectively through integrating Western musical notation (see Figure 2).

Figure 2. Intervals of notes in various scales (Saepudin, 2015)

The necessity of addressing this issue stems from the declining proficiency of students in reading and writing *titilaras* notation, as most students are more acquainted with Western musical notation. This circumstance jeopardises the viability of Sundanese traditional music instruction and reduces students' capacity to engage meaningfully with their cultural heritage. Traditional *titilaras* notation employs numerical symbols that differ significantly from the Western system, which utilizes staff notation and follows a distinct logic for depicting rhythm and pitch. Students familiar with Western notation frequently encounter difficulties in adapting to the variations in symbol application, rhythmic interpretation, and tonal representation found in *titilaras*. This disconnection poses a significant challenge in higher-level music programs, where students must demonstrate proficiency in both systems.

This study investigates the incorporation of Western musical notation in the instruction of *titilaras* to enhance students' reading and writing abilities in traditional Sundanese music. It employs a qualitative action research methodology to examine student engagement with *titilaras* when instructed using Western musical notation. This methodology emphasizes the learning process and the improvements in students' comprehension and abilities, offering insights that transcend quantifiable results.

Numerous studies have explored the obstacles and techniques associated with teaching traditional music via various notation systems and the advantages of incorporating Western musical notation into non-Western music education. Some researchers (Trehub, 2015) have examined the dual characteristics of musical practices, analyzing both their universal elements and the extensive variation present in many cultures. They argue for a broader comprehension of music, demonstrating its essential role in social cohesion and cultural expression, surpassing Western traditions' prevailing narratives. They assert that although specific musical elements, like rhythm and melody, may be universally present, the forms and meanings associated with these elements differ significantly, reflecting the distinct cultural settings in which they exist. This research enhances ethnomusicology by proposing new avenues for exploration, with implications for cognitive research, underscoring the necessity for multidisciplinary methodologies that acknowledge the cultural significance of musical practices. Their findings suggest a paradigm that recognizes the intricacies of musicality about identity, community, and personal experience by contrasting different musical forms, thus expanding the scope of musical scholarship.

Other studies (Herdian & Maryanti, 2023) examined educational practices for instructing high school students in *titilaras damina*. Their findings indicate a disparity between theoretical comprehension and practical implementation, suggesting that students exhibited minimal progress in understanding theoretical concepts while their practical skills experienced considerable advancement. This suggests that experiential learning significantly benefits students in comprehending musical concepts. The study on constructing learning media for teaching *titilaras* to elementary students (Zulfikar & Hendrawan, 2024) emphasizes the significance of innovative educational methods. Preliminary experiments demonstrated that effectively designed media can significantly enhance students' understanding of musical scales, underscoring the necessity of creative teaching approaches for successful music education. The analysis of Javanese songs through pentatonic and diatonic perspectives (Wadiyo, et al., 2022) underscores the nuanced distinctions in musical notation and performance techniques, accentuating the cultural ramifications of these discrepancies. This highlights the significance of maintaining the foundation of Javanese music while adapting it for broader educational contexts. Examining cultural identity in Gending Rare (Bhattacarya & Damayanti, 2022) demonstrates that traditional music forms are essential elements of cultural heritage rather than just artistic creations. The interaction between music and cultural identity underscores the need to preserve traditional music to sustain cultural continuity and harmony within communities. These works elucidate the complex interplay between music, education, and cultural identity, advocating for more comprehensive approaches in research and pedagogical methods. Moreover, software development as a medium for listening to music online, such as Spotify, YouTube, and other platforms, can be used to disseminate modern or traditional musical accompaniments (Raharjo & Arifin, 2023).

Even with the expanding corpus of research on cross-cultural music education and the use of various notation systems, a notable deficiency persists in studies concentrating explicitly on Sundanese *titilaras* and the application of Western notation for instructing this traditional music form. Although previous studies have examined all facets of *Titilaras* and its educational implications, a significant gap remains in exploring the efficient integration of Western musical notation into *Titi Laras* instruction without undermining its cultural integrity; most research concentrates on the efficacy of teaching methodologies or the cultural importance of traditional music, but few investigate the pedagogical tactics that integrate both domains. This divide signifies a critical need for research that examines the compatibility of Western notation with *titilaras* while also establishing a framework for merging both methodologies to honour both traditions and improve student engagement. Nonetheless, these studies fail to adequately explore the qualitative dimensions of how pupils assimilate and interpret *titilaras* through the perspective of Western notation.

Furthermore, current research fails to sufficiently address students' distinct problems when transitioning from *titilaras* to Western notation, especially the confusion stemming from the differing numerical symbols and rhythmic patterns inherent to both systems. This gap necessitates a comprehensive qualitative examination of how students encounter and adjust to these problems

throughout the learning process. Greater focus is needed on the significance of action research in formulating creative pedagogical practices that adapt responsively to students' immediate needs.

The study presents a more inclusive and adaptable approach to teaching Sundanese music, accommodating students' experience with Western musical notation while progressively exposing them to the complexities of *titilaras*. This equitable strategy could enhance the accessibility of *titilaras* for students who may otherwise find its distinctive notation system challenging while preserving the cultural authenticity of the music. The project aims to enhance engagement and enthusiasm for Sundanese traditional music by allowing students to utilize a familiar notation system, aiding in its preservation within contemporary education.

This research aims to enhance proficiency in reading, writing, and comprehending music and foster collaborative abilities in traditional Sundanese music through Western musical notation alongside the study of Sundanese *titilaras*. The curriculum of the Music Study Program consists of 70% Western music courses and 30% Sundanese traditional music courses. This comparison demonstrates that students rely primarily on Western music notation instead of Sundanese music. Students predominantly utilize Western musical notation in daily activities, including lectures and practice, rather than Sundanese musical notation (*Titilaras*).

METHOD

This qualitative action research was performed at the Music Education Study Program at the Faculty of Art and Design Education, Indonesian University of Education, in Bandung, West Java. The study encompassed 48 individuals from varied regional backgrounds, representing a spectrum of cultural and educational experiences. Participants included four students (12%) from Garut, 13 students (38%) from Bandung, one student (3%) from Papua, six students (18%) from Sumedang, seven students (20%) from Subang, three students (9%) from Jakarta, and three students (9%) from Sumatra. Of the participants, 14 students (41.2%) had a vocational background in music, whereas 20 students (58.8%) lacked formal music instruction before this program. Significantly, only seven students (20.6%) had previous exposure to Sundanese music, demonstrating that a majority (79.4%) lacked such experience. The variance in participants' educational and social backgrounds was essential, as it shaped their initial comprehension and involvement with the course material on Sundanese *Titilaras*. Alongside the students, numerous music lecturers participated in this project, helping discuss research instruments and monitoring the execution of learning strategies. They provided essential insights and recommendations based on the evaluation of the research process.

This research employed a classroom action research approach, which was divided into three activity stages: initial, implementation, and final stage of application of learning actions (Budiman et al., 2022; Julia et al., 2022; Taryana et al., 2021). This classroom action research aims to solve learning problems faced by lecturers and students (Edwards & Burns, 2016; Mostofo & Zambo, 2015; Tang et al., 2016; Vogelzang & Admiraal, 2017). Before the learning intervention was introduced, observations were made about students' ability to read Sundanese *titilaras* through pre-action activities in the initial stage. To evaluate these initial abilities, the study utilized observation guidelines and both open and closed interview instruments, which had to be filled out by students via Google Forms. The action implementation stages were done through a cycle design designed in each lecture meeting. Meanwhile, in the final stage, a post-action was carried out to see the differences in results before and after the learning activities (Aga, 2017; Balakrishnan & Claiborne, 2017). At the final stage of the lecture activity, we distributed several questions in the form of closed and open questionnaires via Google Form evaluation media by applying Likert and Gutman scale intervals to measure the results. Learning outcomes are assessed until satisfactory results are achieved (Aga, 2017; Edwards & Burns, 2016). This action research employed a qualitative approach (Mostofo & Zambo, 2015; Perry, 2012; Suherman et al., 2019). The series of action research activities began with each learning activity's planning, implementation and reflection stages (Banegas et al., 2013; Richard & Bélanger, 2018; Tang et al., 2016).

Research data were obtained through direct observation of each action using a set of observation instrument guidelines. Meanwhile, a questionnaire administered via Google Forms assessed changes in behaviour and improvements in students' ability to read Sundanese *titilaras* notation. To determine knowledge and mastery of the material being taught, especially about Sundanese *titilaras*, using a Western musical notation approach, this was done using a questionnaire instrument that contained several research questions with the answer options "Yes" and "No". Meanwhile, they were asked eight questions to measure their learning success in mastering lecture material. Another skill test was carried out with an action test to measure students' writing notation skills by listening to the audio of the Kacapi game and then writing it on their respective answer sheets. Apart from the above, research data were also obtained through unstructured interviews, which were intended to determine students' understanding of lecture material. This interview was conducted during activities during the lecture process.

In qualitative action research, data analysis is a fluid and iterative process encompassing continuous reflection, interpretation, and refinement of findings throughout the research. Data about integrating Western musical notation in the instruction of *titilaras* to enhance students' reading and writing competencies in higher education will be studied using qualitative methodologies along with the action research cycle. This cycle generally encompasses planning, executing, observing, and reflecting, underpinned by the gathering and analyzing of qualitative data at each phase (see Table 1).

Table 1. Phases of implementing learning action

Implementation	Research activity
Initial stage	1. Using open-ended observations and questionnaires to evaluate students' preliminary skills and attitudes on *titilaras* and Western musical notation. This facilitated the collection of baseline qualitative data regarding students' familiarity with both systems. 2. Observing the learning requirements 3. Identifying appropriate interventions based on students' learning difficulties.
Implementation of action	1. Employing participatory and adaptable pedagogical methods, including utilizing Western musical notation to instruct *titilaras* 2. Monitoring the implementation of educational strategies 3. Facilitating regular reflecting sessions for students and teachers to exchange their perspectives on learning interventions.
Final stage	Conducting a comprehensive assessment using observations and questionnaires to evaluate students' abilities and understanding development.

FINDINGS AND DISCUSSION

Findings

Before conducting a trial study of the Sundanese *Titilaras* Course utilizing Western musical notation, the initial phase involved assessing the student's understanding and proficiency in traditional Sundanese music's tunings (scales). Possessing the skill and understanding of tuning was a crucial prerequisite for students pursuing the Sundanese *Titilaras* course. Students would face numerous challenges attending these lectures without understanding, expertise, and abilities.

The research commenced with an audit test administered to 48 students to assess their knowledge and familiarity with various tunings or *surupan* in Sundanese music. The exam technique involved administering auditory questions using the Kacapi instrument. The questions presented were a sequence of musical tones from several tunings, specifically laras *degung*, *madenda*, and *laras salendro*. Subsequently, students were required to respond by inscribing the name of the scale on each question they receive.

The test findings indicated that none of the students who participated in the research could answer all of the offered questions. Based on this evidence, it can be cloncluded that these students lacked of the knowledge and understanding of laras, such as *degung*, *madenda*, or salendro.

According to the exam results, studying the Sundanese *Titilaras* course began with the fundamental aspects of tunings. These tunings were commonly employed in the traditional music repertoire of the Sundanese region, specifically *degung*, *madenda*, and *salendro*. This material assumes that a strong tuning foundation is essential for studying Sundanese *Titilaras*.

The survey results, conducted using a closed-answer questionnaire and presented in Table 2, indicated that the entire participant population (n = 48, 100%) demonstrated varying levels of understanding, knowledge, and skills in reading Sundanese *titilaras* notation. Specifically, eight students (n = 8, 16,67%) were found to possess knowledge of Sundanese *titilaras* notation. The remaining 40 students (n = 40, 83,33%) had no prior knowledge of this notation. Two students were knowledgeable about tunings and scales in Sundanese music, which accounts for 4,16% of the student population. On the other hand, 46 students, making up 93.8% of the population, were not familiar with tunings and notation scales in Sundanese music. In addition, none of the students (n = 48, 100%) could read Sundanese *titilaras* notation, whereas none of the students (n = 0, 0%) could understand Western musical notation. The statistics indicate that most students lacked of the knowledge and skills to read Sundanese *titilaras*. Nevertheless, the majority of students possess the ability to read Western musical notation proficiently from the beginning.

Table 2. Participant's initial comprehension and proficiency in reading and writing Sundanese traditional music notation

Comprehension and proficiency in Sundanese *karawitan* music notation	Yes	No
Are you familiar with the *titilaras* in Sundanese traditional music?	48	0
Are you familiar with the concepts of tunings and scales in Sundanese traditional music?	8	40
Are you familiar with the skill of interpreting *titilaras* in Sundanese traditional music?	0	48
Do you understand the significance of the terminology used in the *titilaras* of Sundanese traditional music?	2	46
Are you familiar with the significance of symbols in the *titilaras* of Sundanese traditional music?	2	46
Are you familiar with the skill of reading *titilaras* in Sundanese traditional music?	0	48
Have you achieved a high level of proficiency in understanding and performing the note intervals in the *titilaras* of Sundanese traditional music?	0	48
Are you familiar with the standard notation typically employed in Western music?	48	0
Are you familiar with Western musical notation, a method regularly employed in Western music for reading musical scores?	48	0

Implementation phase

Phase 1: Implementation of learning strategies

During the exercises introducing the *degung* scale, the students were provided with a sheet of musical notation that utilized Western musical notation. The sheet also explained the placements of each note on a stave, as depicted in the following notation (see Figure 3).

Figure 3. The *Degung* scales

Students were tasked to sing the notation of *laras degung* to get firsthand experience. They were expected to carefully observe and perceive the progression of notes, including the variations in pitch from low to high. Subsequently, students sequentially performed these scales, adhering to the specific notes. It was found that the selection of notes determined incrementally according to the *degung* scale was essential.

During the introductory activity involving the *laras* sound, the researchers encountered several issues. Specifically, when the students sang notes with different interval steps, the pitch of the notes became unstable, and the sequence of the notes even changed. The reason for their lack of knowledge was their unfamiliarity with the specific pitch range of each note on the drone

scale. Undoubtedly, the only solution to this problem was regularly engaging in reading exercises and immersing oneself in music with a melodious melody. The improvement of one's ability relies on the individual student in question. Nevertheless, the researchers strived to persevere under the existing circumstances.

Phase 2: Interval analysis

Considering the issues that have arisen during the implementation of the *degung* scale, it was imperative to analyze the *degung* scale. According to the Western music theory paradigm, the analytical process commenced by posing inquiries and providing responses regarding various intervals. The researchers performed a sequential rendition of two notes based on the *degung* scale. Upon completion, the researchers proceeded to inquire about the interval performed, to which the students responded by identifying the type of interval within the *degung* scale, as indicated in the notation in Figure 4.

Figure 4. The intervals of the *degung* scale (*laras*)

Once the students were familiar with the interval of each note on the *degung* scale, the researchers replicated the actions performed in stage one. Consequently, 75% of students participating in the research topics demonstrated high performance.

Phase 3: Vocal reading practice

The researchers conducted the interval analysis activities meticulously. They used many approaches to ensure that the students participated in the Basic Theory of Traditional Music course, which also served as research material, and acquired proficiency, knowledge, and familiarity with the *degung* tune.

Figure 5. Illustrative melody

Upon completing the interval analysis, the students comprehended the notion of intervals in the *degung* scale and could vocally reproduce them. After students demonstrated their comprehension of the song's intervals, the subsequent task was to engage in sight-reading exercises of uncomplicated melodies that progressively increased in rhythmic complexity. While students grasped chord intervals, this did not guarantee quick proficiency in reading the simple melodies provided. Achieving fluency in reading these melodies requires ample practice. Here was a sample of a song employed for instructing students in reading *laras degung* (see Figure 5).

The material was performed at around 60 beats per minute. Melodies numbered 1 to 3 exhibited a dynamic and fluid movement. Nevertheless, the distinction solely resided in the level of intricacy in rhythm. Material no. 1 consisted solely of half notes (h), while material no. 2 incorporated half notes and quarter notes (h+q). Material number 3 incorporated half, quarter, and eighth notes (h + q + e).

Students demonstrated proficiency in singing content no.1 and no.2 but encountered challenges while singing material no.3, particularly when encountering the eighth note (e). To illustrate this point, the researchers provided an example and elucidated the rhythmic concept using a subdivision of four, as demonstrated in the following example (see Figure 6).
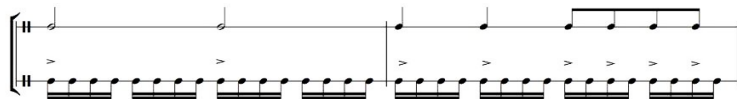
Figure 6. An illustration of a rhythmic sub-division consisting of four parts

Next, the third material was sung repetitively until the students could do it proficiently. Based on the preceding explanation, students understood rhythm more comprehensively. Therefore, in singing material no 4, there were no rhythmic issues. Nevertheless, the challenge rose specifically in the 3rd bar when executing the jumps in the melodic line (see Figure 7).

Figure 7. An illustrative instance of a melody line characterized by frequent leaps between notes

Materials numbered 5 to 8 exhibited a greater level of rhythmic intricacy compared to previous materials. Consequently, the challenge arose when encountering rests, dotted notes, and triplets, as illustrated in Figure 8.

Figure 8. The melodies feature rests, notes adorned with dots preceding them, and triols

Previously, the researchers addressed the issues mentioned earlier, and students made persistent efforts to rehearse until they achieved proficiency in singing. Upon thoroughly examining the example above, the researchers determined that the issues encountered by the students were not related to their proficiency in reading rhythmic notes in Western musical notation. Instead, the difficulty was in their lack of comprehension of rhythmic reading. Given that the topic in question was covered in the Basic Music Theory 1 course, the researchers expected the second-semester students to possess the necessary skills to complete this task.

Phase 4: Assignment to write a short song using a Degung melody in Western musical notation

Following a series of meetings, the researchers sought to assess the student's comprehension of the diverse content provided during the teaching and learning process mentioned earlier. The information pertains not only to students' comprehension and expertise in tuning and intervals but also to their proficiency in writing content using Western musical notation. To assess the student's comprehension of *titilaras*, the researchers instructed them to transcribe a portion of the song "Kalangkang" (a well-known composition by Nano S) using

Western musical notation. This assignment must be completed within a week and returned at the following meeting (see Figure 9).

Figure 9. Partial notation of the song "Kalangkang" composed by Nano. S

Upon collecting the assignments, the researchers meticulously examined each one. The findings revealed that the students' responses pertaining to writing melodies and rhythms were deemed 90% accurate. However, all their attempts at creating legato lines were incorrect. the researchers comprehended it due to students' limited understanding of this content. Nevertheless, information regarding added tones, specifically tones 3- (Ni) and 5+ (Leu), could seemingly be uncovered independently despite the lack of discussion among academics. It can be inferred that students possessed an innate sense of the intervals inside a melody.

Phase 5: Introduction to Madenda scales
Once the students familiarized themselves with the inserted notes in the *degung* scale, the researchers instructed them on how to read the *degung* scale with the inserted notes 3- (Ni), as in Figure 10.

Figure 10. 3-(Ni) tone as an insert tone

The melody mentioned earlier was sung repetitively, after which the researchers inquired about the student's perception of the emotional impact of the melody. Student A stated that the melody did not exhibit the characteristics of a *degung* tune due to the excessive presence of inserted notes. Student B responded. This melody could not be classified as a *degung* tune due to the frequent inclusion of non-conforming notes that do not belong to the primary tonal structure of the *degung* tune. Student C stated that this melody had a modulation in the tonal center.

As stated in the notation above, the researchers clarify that the insert notes in the melody can be understood as the primary notes in the *madenda* tune. These insert notes typically occur on the downbeat, creating a sense of emphasis. The preceding session focused on barrels in general, as students had previously learned about barrel theory through *surupan*. Their understanding of translating tuning theory with numerical numbers into musical notes was unclear. The question is, what is the distinction in composing melodies using the tune *Madenda* 4 (ti) = *Tugu* compared to *Madenda* 4 (ti) = *Penelu* or *Degung* 1 (da) = *Tugu* compared to *Degung* 3 (na) = *Tugu*?

Figure 11. *Laras Madenda* **4 (ti) =** *Tugu* **dan 4 (ti) =** *Panelu*

Above, the researchers clarified that in Western musical notation, using *surupan* was unnecessary. It is crucial to comprehend the nature of the tuning in *karawitan* because, fundamentally, there is no fixed standard for pitch. Therefore, users of the initial signal relied on determining the pitch of the nearest note. For instance, a barrel with a gauge of 50 is denoted by three sharps (In A), a gauge with one sharp (In G), and a gauge of 60 with one sharp. Artists and art researchers frequently employed this method to transcribe Sundanese musical notation into Western musical notation. Finally, as shown below, the researchers explained the two scales to illustrate *surupan* in *madenda* tunings (see Figure 11).

Following the interval analysis conducted on the *degung* scale, students were assigned to complete writing and reading activities related to the *madenda surupan* 4 = Tugu. Additionally, they were instructed to search for arrangements and read about the *degung surupan* 3 = *Tugu*. It aims to enable students to identify the sole difference in note composition between the *madenda* and *degung* tuning. the researchers gained a deeper understanding by analyzing and categorizing this difference based on that note.

Moreover, it may be inferred that the distinction between the *degung* and *madenda* tunings hinges on the "ti" note. In contrast, the perceptible central note was the focal point of the pitch, with both *degung* and *madenda* tunings centered around the "la" note. Despite the apparent similarity in the positioning of the note and the chord, the two tunings mentioned above exhibited distinct auditory qualities. The four tones or modes possess distinct features. Empirical evidence demonstrated that the students accurately discerned the specific tuning when the researchers performed on a harp instrument with the four tunings above. Only 75% of the students could answer appropriately due to their ability to discern variations in the environment or character of each barrel (see Figure 12).
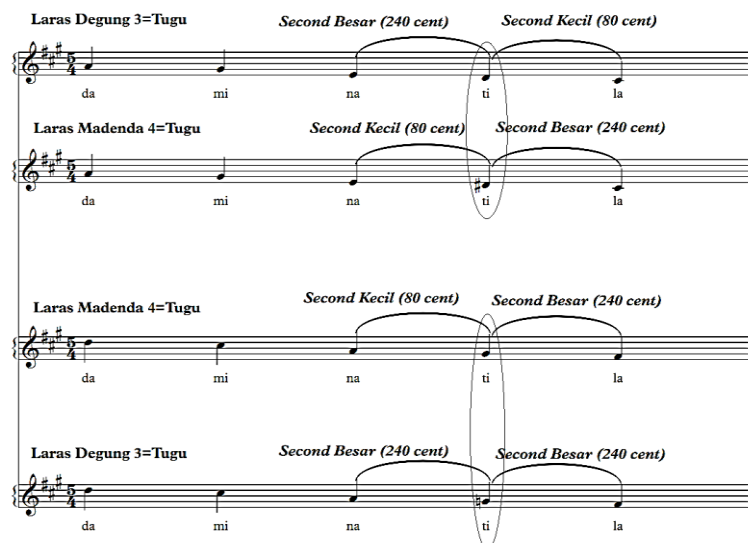

Figure 12. The disparities in the 4th note interval (ti) between the *Degung* and *Madenda* tunings

Phase 6: Practice reading melodies with changing tunings

During the last meeting, it was seen that 90% of the students were able to compose a melody for the song "Kalangkang" by Nano.S. The researchers utilised the exact notation system to decipher tunes written in Western musical notation. The students were provided a melodic score that altered the tuning throughout the subsequent meeting to assess their proficiency in reading melodies written in Western musical notation. Therefore, students possessed the ability to sing. Here is the sheet music (see Figure 13).

Students recited and vocalized the score above repeatedly, and the researchers conducted individual assessments to quantify this aptitude. The exam results yielded data indicating that 50% of children had proficient reading skills.

Figure 13. Melodic scores for the notation reading test

Phase 7: Applying the Laras Salendro

When it comes to reading *salendro* musical notes, students did not require a fundamental comprehension of musical notes from the beginning since the process of reading them remained the same. The interpretation of *salendro* musical notes was solely determined by the position and pitch of the notes. In addition, the *Karawitan* Theory course covered comprehending the salendro scales. Nevertheless, the researchers needed to elucidate the notion of musical notes in *salendro* tunings to enhance students' comprehension. Here is a comprehensive guide on *salendro* scales and notation to practice (see Figures 14 and 15).

Figure 14. The *Salendro* scales

Figure 15. *Salendro* tuning practice melody

Post-action

The material delivery in this research activity was considered comprehensive, as it incorporated teaching materials encompassing a wide range, from laras *degung* to *laras salendro*. Moreover, to address all the issues this study covered, the researchers deemed it imperative to investigate the outcomes of the research endeavours. A test system was employed to gather data on students' capacity to comprehend the material offered in the teaching and learning process of the *Titilaras* course. This method was applied to all students who were participating in the research. The tests consisted of practical tasks, such as precisely transcribing gamelan *waditra* rhythms and interpreting musical notations for songs.

Writing Waditra gamelan percussion

The initial task involved transcribing the waditra percussion, namely the "Gendu" song from the Salendro gamelan, with which the participants were already well-acquainted. The song "Gendu" was selected as the test material due to its perceived simplicity in its pattern. Students should be able to record multiple musical instruments, including Bonang, Rincik, Kenong, and Goong. The questions presented in this initial assessment focused on evaluating students' proficiency in transcribing Salendro's tunings into block notation. The desired response to this initial assessment was for pupils to accurately transcribe the song "Gendu" rhythm as depicted in (see Figure 16). Based on the initial question, data indicated that only 40% of students could complete the given questions. Conversely, the remaining 60% performed poorly on the questions.
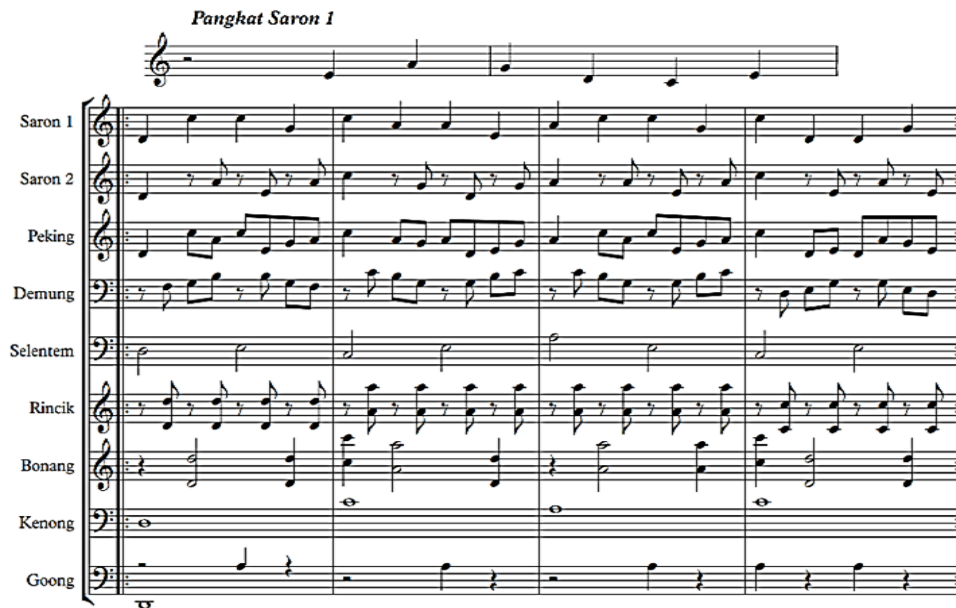
"Gendu"

Figure 16. The process of creating written content using musical notes

Auditory assessment

A robust auditory perception of melody was crucial when taking the Basic Music Theory course. Therefore, after this study, the researchers further administered an auditory assessment to ascertain the students' auditory acuity. For this situation, the students were instructed to record the musical notes or melodies we performed using Western musical notation. The provided inquiries in this auditory examination are in Figure 17.

Figure 17. Materials used for conducting an auditory assessment

The data were derived from the tests conducted on the current student population, indicating that 85% of students demonstrated proficiency. Conversely, the remaining 15% performed poorly on the test questions.

Notation reading assessment

The final assessment format involved interpreting the musical notation the researchers provided. This test assessed students' comprehension of traditional songs written in Western musical notation. The resources utilized for this reading assessment are in Figure 18.

Figure 18. The test material used for reading notation

Through the administered examinations to all student participants, evidence indicated that, overall (80%), students could comprehend the provided notation, albeit still facing challenges in reading it. Conversely, the remaining 20% exhibited a worse proficiency in reading notation. It was feasible since students typically had a limited comprehension of block notation.

Discussion

In this study, the researchers compared the outcomes from the pre-action of students' proficiency in reading and writing Sundanese and Western musical notation. The objective was to identify deficiencies in notation skills while studying *titilaras* in Sundanese musical compositions. The test findings indicated that most students possessed proficiency solely in reading and writing Western musical notation (Riyanti & Zuchdi, 2019; Waldron & Veblen, 2008). The pre-action results were obtained by administering an auditory assessment to 48 students to evaluate their understanding and familiarity with various tunings or *surupan* in Sundanese music. The exam technique involved administering auditory questions using the Kacapi instrument. The questions were presented as a sequence of musical notes from three different tunings: *laras degung*, *madenda*, and *laras salendro*. Subsequently, students responded by inscribing the name of the *laras* for each question they heard. The test findings indicated that no research volunteers could answer all the offered questions. Based on this evidence, we inferred that these students were unfamiliar with and comprehended *laras*, such as *degung*, *madenda*, or *salendro*.

The pre- and post-action results indicated disparities in student learning outcomes regarding their ability to transcribe the melody they perceived and interpret musical notation. The hearing test results indicated that 85% of the children demonstrated proficiency, while the remaining 15% did not. Meanwhile, the test results for melodic notation showed that only 80% of students were proficient in reading Sundanese *titilaras* notation. In comparison, the remaining 20% struggled with reading Sundanese *titilaras* notation written in musical notes. Indeed, to comprehend the notation provided, students dedicated ample time to rigorous practice. Students

must first achieve proficiency in scales and the rhythmic system of music to effectively develop their musical skills (Ericsson, 2006).

When studying *titilaras*, they focused on acquiring knowledge about tunings (scales), notation, intervals, and the ability to read the learned notation. Proficiency in reading needs a comprehensive understanding of the specific notation being studied, whereas acquiring abilities demands ample practice. The statement implies that the critical factor for success in *titilaras* learning is the student's proficiency and competence in comprehending and transcribing precise notations about specific tunings instructed by the professors (Meloni, 2021). Therefore, it may be concluded that when students possess the proficiency and aptitude to comprehend and transcribe musical notation in a specific language, their achievement in studying *titilaras* has reached the anticipated degree of success. However, suppose students studying *titilaras* cannot comprehend the notation taught by their lecturer, and the learning process does not match the criteria for achieving satisfactory learning outcomes.

Among the several tunings covered in the *Titilaras* course, the presentation of Salendro tunings was considered the most challenging compared to pelog *degung*, *madenda*, and *mataraman* tunings. The challenge arose from the *salendro* tuning exhibiting nearly identical and evenly spaced intervals between its notes (Gunawan et al., 2022; Saepudin, 2015). Another challenge student had was when the absence of musical instruments serving as a standard for producing the *salendro* tunings they were studying (Spiller, 2009; Thompson et al., 2008). Students encountered challenges in accurately replicating the *salendro* barrel sound the teacher taught them during class. Such circumstances impeded the learning process, causing it to progress slowly and even stagnate, as the lecturer was compelled to reiterate the fundamental content at every meeting. As one of the lecturers of the *Titilaras* course, the researchers were compelled by the issue to do research. The research involved implementing several learning strategies employing Western musical notation.

CONCLUSION

Students lacked proficiency and competence in writing and reading Sundanese *titilaras* due to the resemblance of Sundanese *titilaras* notation (daminatilada) to numerical notation in Western music. However, employing notes and dots to represent high and low pitches contradicts the numerical notation system commonly used in Western music. In addition, the terminology of each note varies, while the symbols (numbers) employed are mainly consistent. When writing and reading Sundanese *titilaras*, there was often confusion between notation and Western music. As students in the Music Study Program, the researchers extensively utilized block notation in various activities, including lectures and practice sessions. This is primarily because most students in the program specialized in Western musical instruments and pursue professional studies in this field. Thus, their familiarity with Western musical notation surpasses their little exposure to daminatila notation, which they have only studied for a few credits.

Consequently, the researchers opted for an alternative approach to acquiring knowledge of Sundanese *titilaras* using Western musical notation. The modification of teaching methods was based on students' existing habits and abilities, as music notation served as a medium containing specific symbols that enabled the understanding of the substance of the music being studied. The fundamental objective was to comprehend and excelled in the essence of the music to the greatest extent feasible. Another factor was that Western musical notation was more widely recognized than daminatila. By utilizing Western musical notation, Sundanese traditional musical compositions could be comprehended and interpreted by everyone across the globe.

Research has demonstrated that Western musical notation as a learning method enabled most students to effectively comprehend and apply various topics presented in learning activities, particularly in writing and reading the notation provided by the lecturer. By utilizing Western musical notation, they were relieved from the need to adjust to daminatila notation, which they perceived as unfamiliar. Students enhanced their understanding of the tunings utilized in Sundanese traditional music, including *degung*, *madenda*, and *salendro*, and refined their reading proficiency.

REFERENCES

Adeoye, M. A., Jimoh, H. A., & Abdulkareem, H. B. (2023). Leadership and organizational cultural roles in promoting sustainable performance appraisal and job satisfaction among academic staff. ASEAN Journal of Economic and Economic Education, 2(2), 115-124. https://ejournal.bumipublikasinusantara.id/index.php/ajeee/article/view/244/226#

Aga, F. J. (2017). Motivating and/or de-motivating environments to do action research: The case of teachers of English as a foreign language in Ethiopian universities. *Educational Action Research, 25*(2), 203–222. https://doi.org/10.1080/09650792.2016.1168310

Azmiyati, I., Nandiyanto, A. B. D., Kurniawan, T., & Bilad, M. R. (2022). Rhythmical learning program on musical notation for junior high school online using the maestro application. *Indonesian Journal of Multidiciplinary Research, 2*(1), 83-90. https://doi.org/10.17509/ijomr.v2i1.38632

Balakrishnan, V. & Claiborne, L. (2017). Participatory action research in culturally complex societies: Opportunities and challenges. *Educational Action Research, 25*(2), 185–202. https://doi.org/10.1080/09650792.2016.1206480

Banegas, D., Pavese, A., Velázquez, A., & Vélez, S. M. (2013). Teacher professional development through collaborative action research: Impact on foreign English-language teaching and learning. *Educational Action Research, 21*(2), 185–201. https://doi.org/10.1080/09650792.2013.789717

Becker, J. (1972). Western Influence in Gamelan Musik. *Asian Musik, 3*(1), 3–9. https://doi.org/10.2307/834100

Bhattacarya, W., & Damayanti, N. W. E. (2022). Representasi identitas kultural masyarakat Bali pada gending Rare. *Veda Jyotih: Jurnal Agama dan Sains, 1*(2). https://doi.org/10.61330/vedajyotih.V1i2.18

Budiman, A., Nugraheni, T., Sabaria, R., Julia, J., & Purnomo, P. (2022). Raising independent-learning awareness: Action research in dance practice course in Indonesia. *Pegem Journal of Education and Instruction, 12*(2), 133–142

Edwards, E. & Burns, A. (2016). Action research to support teachers' classroom materials development. *Innovation in Language Learning and Teaching, 10*(2), 106–120. https://doi.org/10.1080/17501229.2015.1090995

Ericsson, K. A. (2006). The influence of experience and deliberate practice on the development of superior expert performance. In K. A. Ericsson, N. Charness, P. Feltovich, & R. R. Hoffman (Eds.), *Cambridge handbook of expertise and expert performance*, 685–706. Cambridge University Press

Gunawan, I., Milyartini, R., & Masunah, J. (2022). The use of laras in contemporary gamelan musik. *Harmonia: Journal of Arts Research and Education, 22*(1), 161–173

Herdian, K. I. D. P. & Maryanti, R. (2023). Titi Laras Damina educational learning for senior high school students as a form of cultural preservation. *Indonesian Journal of Educational Research and Technology, 3*(3), 179-186

Julia, J., Gunara, S., Supriyadi, T., Agustian, E., Ali, E. Y., & Budiman, A. (2022). Improving elementary school teachers' competence in composing thematic songs: An action research. *Pegem Egitim ve Ogretim Dergisi, 12*(1), 131–141. https://doi.org/10.47750/pegegog.12.01.12

Julia, J., Isrokatun, I., Pramajati, H., Sukaesih, N. S., & Aisyah, I. (2019). Improving the song notation reading comprehension and skill of prospective elementary school teachers: An action research study in Indonesia. *Universal Journal of Educational Research, 7*(10), 2057 – 2067. 10.13189/ujer.2019.071003

Julia, J., Supriyadi, T., & Iswara, P. D. (2019). Improving prospective primary school teachers' skill in playing Gamelan *Degung*: An action research in Indonesia. *Harmonia: Journal of Arts Research and Education, 18*(2), 117–130. https://doi.org/10.15294/harmonia.v18i2.15698

Kahar, N., Abalos, C. A., Manero, H. N., Mosquera, D. S. R., Gonzales, L. B., Asoy, V., Estrellan, J., & Marcell, A. M. (2024). Perceptions of music and its effect on the productivity of

students. *ASEAN Journal of Educational Research and Technology, 3*(1), 81-92

Li, Z., Zhou, M., & Teo, T. (2018). Mobile technology in dance education: A case study of three Canadian high school dance programs. *Research in Dance Education, 19*(2), 183–196

Lo, H.-Y., Wang, J.-C., Wang, H.-M., & Lin, S.-D. (2011). Cost-sensitive multi-label learning for audio tag annotation and retrieval. *IEEE Transactions on Multimedia, 13*(3), 518–529

Meloni, I. (2021). Foreign sindhen in practice: New teaching strategies and the impact of practice-led research on Javanese female singing. *Malaysian Journal of Music, 10*(1), 25-52. https://doi.org/10.37134/mjm.vol10.1.3.2021

Mostofo, J. & Zambo, R. (2015). Improving instruction in the mathematics methods classroom through action research. *Educational Action Research, 23*(4), 497–513. https://doi.org/10.1080/09650792.2015.1019903

Muliawati, E. S. & Maryanti, R. (2022). Lyrics of kawih tanah Sunda by Koko Koswara as a media for learning cultural literacy for students in junior high school. *ASEAN Journal of Educational Research and Technology, 1*(2), 133-138

Nacionales, C. M. J. & Calixtro Jr., V. L. (2024). Culture-based self-learning module and students' performance in physical education. *Indonesian Journal of Teaching in Science, 4*(2), 259-268

Novrizal, R. S., Nandiyanto, A. B. D., Kurniawan, T., & Bilad, M. R. (2022). The influence of junior high school students' musical preferences on the learning of basic music theory. *Indonesian Journal of Multidiciplinary Research, 2*(1), 21-26

Nugrahhu, P. A. (2023). Evaluation of music learning during the COVID-19 pandemic in senior high schools. *REID (Research and Evaluation in Education), 9*(2), 156–170. https://doi.org/10.21831/reid.v9i2.64223

Organia, E. G., de la Peña, C. B., Migallos, S. F., Baleña, S. B. L., Tee, E. A., Dagoc Jr., J.C., Contaoi, M. R. Y., Alave, R. D. R. R., & Zaragoza, M. A. (2023). The study of Muslim culture: basis for culturally congruent nursing education. *ASEAN Journal of Religion, Education, and Society, 2*(1), 33-58

Perry, R. (2012). Facilitated action research: enhancing the teaching of classroom drama. *ALAR: Action Learning and Action Research Journal, 18*(1), 5–34

Richard, V., & Bélanger, M. (2018). Accepting research: Teachers' representations of participation in educational research projects. *International Journal of Educational Methodology, 4*(2), 61–73

Riyanti, A., & Zuchdi, D. (2019). Gamelan as a learning media speaking skills to Indonesian language students for foreign speakers (BIPA). *Journal of Physics: Conference Series, 1339*(1), 12114

Sabaria, R., & Budiman, A. (2022). Pembelajaran blanded berbasis aplikasi edmodo: Studi penerapan pembelajaran virtual dalam perkuliahan tari pendidikan. *Mudra Jurnal Seni Budaya, 37*(1), 98–107

Saepudin, A. (2015). Laras, surupan, dan patet dalam praktik menabuh gamelan Salendro. *Resital: Jurnal Seni Pertunjukan, 16*(1), 52–64

Sella, F., Sukmayadi, Y., & Fetrianggi, R. (2024). Designing a notation card game media to improve the ability to read rhythmic music of 7th grade junior high school. *Indonesian Journal of Multidiciplinary Research, 4*(1), 205-212

Spiller, H. (2009). Lou Harrison's musik for Western instrumens and gamelan: Even more Western than it sounds. *Asian Musik, 40*(1), 31–52

Suherman, A., Supriyadi, T., & Cukarso, S. H. I. (2019). Strengthening national character education through physical education: An action research in Indonesia. *International Journal of Learning, Teaching and Educational Research, 18*(11), 125–153

Syarifatunnisaa, Z., Zahra, A. T., Pratiwi, I. R., Nurazizah, L. I., Budiman, R. A., & Kurniawati, L. (2023). Introducing music and movement-based self-therapy for children with cerebral palsy during the COVID-19 pandemic. *Indonesian Journal of Community and Special Needs Education, 2*(2), 55-62

Tang, J. T., Sung, Y. T., & Chang, K. E. (2016). Action research on the development of Chinese communication in a virtual community. *Computer Assisted Language Learning, 29*(5),

942–967. https://doi.org/10.1080/09588221.2015.1113184

Taryana, T., Budiman, A., Karyati, D. & Julia, J. (2021). Enhancing students' understanding and skills on dance music: An action research. *Cypriot Journal of Educational Action Research, 16*(5), 2621–2639. https://doi.org/10.18844/cjes.v16i5.6334

Thompson, W. F., Russo, F. A., & Quinto, L. (2008). Audio-visual integration of emotional cues in song. *Cognition and Emotion, 22*(8), 1457–1470

Trehub, S. E., Becker, J., & Morley, I. (2015). Cross-cultural perspectives on music and musicality. *Philosophical Transactions of the Royal Society B: Biological Sciences, 370*(1664), 20140096

Vogelzang, J., & Admiraal, W. F. (2017). Classroom action research on formative assessment in a context-based chemistry course. *Educational Action Research, 25*(1), 155–166. https://doi.org/10.1080/09650792.2016.1177564

Wadiyo, W., Haryono, S., & Wiyoso, J. (2022). Traditional Javanese ethnic songs: The supporting aspects of its existence in the local community. *Journal of Urban Culture Research, 24*, 162-175. https://doi.org/10.14456/jucr.2022.9

Waldron, J. L., & Veblen, K. K. (2008). The medium is the message: Cyberspace, community, and musik learning in the Irish traditional musik virtual community. *Journal of Music, Technology and Education, 1*(2–3), 99–111

Zulfikar, Z., & Hendrawan, B. (2024). Pengembangan media pembelajaran Titi Laras untuk materi pengenalan tangga nada kelas V SD. *KOLEKTIF: Jurnal Pendidikan, Pengajaran, dan Pembelajaran, 1*(1), 30-39