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Developing a Mnemonics-Based Teaching Module for Non-Optional Teachers' Needs in Basic Musical Notation Recognition

Mohd Adib Danial Norman[1]*, Md Jais Ismail[2]
*Corresponding Author

[1] Faculty of Music, Universiti Teknologi MARA, Malaysia.
[2] Institut Seni Kreatif Nusantara (INSAN), Universiti Teknologi MARA, Malaysia.

adiev96@gmail.com; mdjais@uitm.edu.my
+60138282711

Abstract
Teaching basic music notation remains challenging for non-optional music teachers lacking formal training. This study investigates teachers' needs for developing a mnemonics-based teaching module to enhance music notation recognition. A total of 34 non-optional music teachers completed a 28-item questionnaire based on Rossett's (1987) Training Needs Assessment Model. The instrument achieved a Cronbach's Alpha of 0.893, indicating high reliability. Findings reveal teachers' strong need for structured mnemonic strategies to improve student learning. The questionnaire provides a foundation for the next research phase, focusing on experimental implementation of the mnemonics-based module to enhance music notation recognition.

Keywords: Needs analysis; Mnemonic method; Non-optional music teacher; Basic musical notation

1.0 Introduction
Musical notation literacy is an essential step of holistic music education, enabling students to interpret, read, and perform effectively. Musical notation is one of the first concepts taught in music education, while also being the foundation of the terminology used to describe music, helping build students into seasoned musicians (Demirel, 2022). However, mastering basic musical notation has been a never-ending challenge for many primary school students (Villarta & Capili, 2024). This issue has been more pronounced in that non-optional music teachers, who are teachers without a formal background in music education, are frequently assigned to teach music classes (Paney & Buonviri, 2014). According to Hallam et al. (2017), traditional approaches used in current teaching modules are often not beginner-friendly to non-optional music teachers, leading to unnecessary stress for teachers and to a certain loss of interest in music among students. Mnemonic encompasses a variety of techniques designed to assist students in recalling information (Higbee, 2001). According to Yates (2013), the origins of mnemonic principles date back to ancient Greece, where these strategies were conceptualized

over a thousand years ago. In today's educational settings, the usage of mnemonics has grown substantially, with teachers creating various types of memory aids to support students in retaining concepts, vocabulary, procedures, and learning strategies (Conderman, 2020). Research shows that when students learning basic music notation, they need to process abstract visual symbols, map them to auditory information, and store these associations in long-term memory, which is very cognitively demanding for primary school students (Rose et al., 2019).

Although mnemonic benefits are widely recognized, their systematic integration into basic musical notation teaching, especially among non-optional music teachers in Malaysia, remains underexplored. Therefore, this research aims to assess teachers' needs and perceptions regarding the development of a mnemonics-based teaching module for basic musical notation recognition. There is an urgency to develop a mnemonics-based teaching module to support these teachers and improve students' music literacy foundation.

2.0 Literature Review

2.1 Teaching Basic Musical Notation
Musical notation is an abstract graphical language that enables the communication of music through a set of rules, giving instruments and singers an alternative way to interpret the notation (Rosenboom, 2017). He added that music notation is a global language, in that composers, musicians, and music educators can communicate, to varying degrees, through visual symbols (Rosenboom, 2017). A considerable amount of literature has been published on music notation. These studies are among the first concepts taught in music education and form the foundation of the terminology used to describe music, helping students become seasoned musicians (Demirel, 2022).

2.2 Mnemonic-based Learning in Music Education
Mnemonics-based learning is one of the potential ways to improve the teaching of basic musical notation recognition. Researchers found that this method helps clarify the foundation and aids students' comprehension. Several studies have shown that mnemonics is a strategy used to develop memory retention and to retrieve new information with familiar and easy-to-memorize concepts. A mnemonic is a memorization technique to convert information to an easy-to-remember form compared to its original form (Worthen & Hunt, 2011). Mnemonics can take many forms. Conderman (2020) stated that a mnemonic can be a word, letter, symbol, sentence, rhyme, catch phrase, acronym, picture, song, pattern, strategy, action, story, color, association, or a combination of two or more types. These types of mnemonics can be adjusted according to various subject matter, year, level, and development of the learners (Conderman, 2020). In this research case, learning basic musical notation was emphasized.

2.3 Examples of Mnemonics in Basic Music Notation
Mnemonic devices are versatile and can be categorized into several types, with the following being most relevant to the teaching of basic musical notation (Conderman, 2020):
i. Acronym and Acrostics - For Treble Clef Lines: The notes E, G, B, D, F are commonly remembered using the acrostic: "Every Good Boy Does Fine" or variants like "Every Good Burger Deserves Fries". Example for Treble Clef Spaces: The notes F, A, C, E are remembered using the common acronym/word: "FACE".
ii. The Kodály method (Kodály, 1974) inherently uses this type of mnemonic through the use of solfège (Do-Re-Mi) and hand signs, which serve as visual and kinesthetic mnemonics for pitch recognition and interval relationships. This systematic, physical-verbal association significantly simplifies the understanding of musical structure.
iii. The Keyword Method - To remember the musical term for the tempo Allegro (fast), a learner might associate it with the keyword "Alligator" (a fast-moving animal), creating a mental image of a fast-moving alligator to recall the meaning.

2.4 Challenges Among Non-optional Music Teachers
In the Malaysian primary school context, music education is often assigned to non-optional music teachers. Abdullah (2021) provides an overview of Malaysia's music education, noting that music teachers were not equipped with the skills and pedagogy to teach all the skills required by students, especially non-optional music teachers. These teachers also have difficulty accessing resources in Malay for the music education subject, such as modules, audio, and video, to support their teaching (Samsudin et al., 2023).

2.5 Research Gap
There is limited research on integrating mnemonic-based strategies into music education in the Malaysian primary school context. Therefore, this research conducts a needs analysis to identify teachers' perceptions, challenges, and requirements as a foundation for designing and developing a mnemonics-based teaching module.

3.0 Methodology

3.1 Research Design
This research utilized a quantitative research design guided by the Training Needs Assessment Model (Rossett, 1987), which provides a framework for identifying and analyzing instructional needs. This Model comprises five domains: Optimal Performance, Actual Performance, Feelings, Causes and Barriers, and Solutions. Every domain contributes to assessing the performance gap and the

needed resources to address it effectively. Researchers believed the design was appropriate for the present study, which aimed to systematically identify teachers' real-time needs and challenges in teaching basic musical notation.

3.2 Participants
This research involved 34 non-optional primary school music teachers. Respondents were selected using purposive sampling to ensure that only teachers currently involved in teaching music, particularly non-optional music teachers who actively teach at the primary level, participated in this study. Respondents came from various teaching options, including Malay Language, English, Mathematics, Science, Physical Education, Arts, History, Design and Technology, and Early Childhood Education. The breakdown of participants is presented in table 1 below.

Table 1. Distribution of Participants by Teaching Option

Teaching Option	Frequency (n)	Percentage (%)
Malay Language	7	20.6
English	7	20.6
Mathematics	6	17.6
Science	5	14.7
Physical Education	4	11.8
Design & Technology	2	5.9
Arts	1	2.9
History	1	2.9
Early Childhood Education	1	2.9
Total	34	100.0

As shown in table 1, largest group of participants were in Malay language (n = 7, 20.6%) and English (n = 7,20.6%), followed by Mathematics (n = 6,17.6%) and Science (n = 5,14.7%). These four subjects accounted for over 75% of the participants' pool. The participants' academic qualifications were analyzed to further contextualize their professional capacity. Based on the data collected, the majority of non-optional music teachers have a high level of formal education, primarily at the bachelor's degree level or higher. This suggests that while they are highly qualified educators in their respective fields, the challenge remains in the specialization required for music instruction. Table 2 shows the distribution of participants' academic qualifications.

Table 2. Distribution of Participants by Academic Qualifications

Highest Academic Qualification	Frequency (n)	Percentage (%)
Bachelor's Degree	22	64.7
Master's Degree	8	23.5
Diploma	4	11.8
Total	34	100.0

Table 2 reveals that 64.7% (n = 22) of the participants hold a bachelor's degree, while 23.5% (n = 8) hold a master's degree. Only 11.8% (n = 4) hold a diploma as their highest qualification. This high level of general academic achievement is significant. It underscores that the performance gap identified in the needs analysis is not due to a lack of general teaching competence or academic foundation, but rather a lack of specialized pedagogical content knowledge specifically for teaching basic musical notation.

3.3 Instrumentation
Data were collected using a 28-item questionnaire. The items were developed based on Rossett's (1987) Training Needs Assessment Model. The instrument was designed to measure teachers' perceptions, challenges, and needs regarding the use of mnemonic-based strategies to teach basic musical notation. The questionnaire consisted of five domains:
i. Optimal Performances (Items 1-5) - Teacher's expectation of performances and desired outcome
ii. Actual Performance (Items 6-10) – Current classroom teaching and practices performances
iii. Feelings (Items 11-15) – Teacher's confidence, attitudes, and motivation
iv. Causes and Barriers (Items 16-20) – Challenges, obstacles, and limitation affect their current teaching
v. Solutions (Items 21-28) - Suggested strategies, trainings, and resources needed by teachers
The questionnaire uses a five-point Likert Scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The questionnaire also undergoes expert validation by three specialists in music education, language, and curriculum design to ensure content accuracy and clarity of language.

3.4 Data Collection Procedure
The questionnaire was distributed online via Google Forms for convenient access by researchers and respondents. Respondents were informed of the study's objectives and assured that their responses would remain confidential. Data collection takes 3 weeks to complete. Incomplete responses were excluded from the full analysis to ensure the accuracy of the findings.

3.5 Data Analysis

Data were analyzed using descriptive statistics with SPSS version 30. Before the descriptive analysis, a reliability test was conducted to assess the instrument's internal consistency. Overall, Cronbach's Alpha was 0.893, indicating high reliability and suggesting that all 28 items are consistent in measuring teachers' needs and perceptions, which aligns with Cohen et al.'s (2017) recommendation. Meanwhile, descriptive analyses involving mean and standard deviation were computed for each domain: Optimal Performances, Actual Performances, Feelings, Causes and Barriers, and Solutions. Mean scores interpretation followed the range recommended by Landel (1997):

Table 3. Interpretation of mean scores

Range of mean score	Frequency
1.00-2.33	Low
2.34-3.67	Average
3.68-5.00	High

(Source: Management by menu (Landel, 1997))

The use of this systematic interpretation scale allowed the researchers to clearly highlight specific needs and priorities, thereby establishing a solid quantitative foundation for the subsequent phase of research: the design and development of the mnemonics-based teaching module. The standard deviation (SD) was used to measure the dispersion of the responses, indicating the level of agreement or variation among the participants' answers within each domain. The analysis was carried out to highlight specific needs and priority that will give a solid foundation to the development of mnemonics-based teaching module.

4.0 Findings

4.1 Reliability of Instrument
Cronbach's Alpha was used to assess the questionnaire's internal consistency. The results indicate that all 34 cases were valid. The overall Cronbach's Alpha coefficient was 0.893, signifying high internal consistency across all items (Cohen et al., 2017). A coefficient value above the minimum threshold of 0.70 was recommended by Nunnally & Bernstein (1994).

4.2 Descriptive Analysis of Teacher's Needs
Descriptive statistics were computed to determine teachers' perceptions through the five domains of Rossett's (1987) model. Table 2 shows the overall mean and standard deviation for each domain.

Table 4. Descriptive Analysis of Non-optional Teachers' Needs

Domain	Items	Mean	SD	Interpretation
Optimal Performance	Q1-Q5	4.10	1.15	High
Actual Performances	Q6-Q10	3.76	1.16	High
Feelings	Q11-Q15	3.79	1.17	High
Causes & Barriers	Q16-Q20	2.99	1.24	Average
Solutions	Q21-Q28	4.34	0.89	High

4.3 Interpretation of Findings
Results shows that four domains which was optimal performances, actual performances, feelings, and solutions were at high level indicates strong interest and readiness to improve their teaching in basic musical notation. The highest mean recorded was in the solutions domain (M = 4.34, SD = 0.89), indicating that these teachers need structured resources, teaching materials, and professional training in teaching musical notation. Meanwhile, the causes and barrier domain recorded the lowest mean among all domains (M = 2.99, SD = 1.24). This reflects the moderate challenges such as limited formal music training, lack of confidence, and insufficient teaching aids. This finding aligns with previous research by Samsudin et al. (2023), which highlights a similar barrier among non-optional music teachers assigned to teach in primary schools in Malaysia. A high mean across the majority of the domain also indicates that non-optional music teachers were open to using a mnemonic-based module to support their teaching and students' comprehension of basic musical notation. Moreover mnemonics-method were widely used in music learning theory for instance, Kodály method (Kodály, 1974b) where students learn to read music orally using solfège notation (do, re, mi, fa, so, la, ti, do) before learning formal musical notation.

5.0 Discussion
The results of this needs analysis show a clear pattern of demand and readiness among non-optional music teachers. High mean score in majority of the domains of Rossett, (1987) Training Needs Assessment Model indicates that teachers acknowledge and giving full support on developing effective instructional tools such as mnemonics-based teaching module to help basic musical notation teaching. The solutions domain recorded the highest mean, justifying teachers' strong preference for mnemonic-structured lesson materials and training. The average mean in the Causes and Barriers domain (M = 2.99) highlights the practical challenges teachers faced, particularly in specific formal music education training, limited teaching resources, and less confidence in teaching basic musical notation. These findings are consistent with a previous study by Paney and Buonviri (2014), which found that non-optional music teachers require pedagogical support and systematic guidance in their teaching. Researchers also observed that a positive attitude towards the Feelings

and Actual Performances domain. Non-optional music teachers show interest and are motivated to adopt a mnemonics-based approach. This interest will lead to an engaging learning in classroom and improve memory retention in the circle of students, as suggested in (Slemrod et al., 2023) research experimental study with pre-test and post-test on vocabulary knowledge shows that mnemonics outperformed flashcards in vocabulary retention and application. Research by Meng & Ariffin, (2024); Qarri, (2022); Xue & Xian, (2023) suggested that engaging music teaching can lay the foundation for shaping students in a more complete way creativity, critical thinking skills, the ability to cooperate etc. Consequently, the findings underscore the importance of embedding mnemonics within a structured instructional framework to strengthen both teaching confidence and student achievement.

6.0 Conclusion and Recommendation

6.1 Conclusion
This research has identified the needs of non-optional music teachers for a mnemonics-based teaching module. The instrument used demonstrated high internal consistency ($\alpha = 0.893$), ensuring reliable data interpretation. Findings from this research also revealed that teachers' positive feedback on the infusion of mnemonic-based strategies into teaching modules. However, they face average barriers related to training and resources. That indicates there is still a gap to be fulfilled by researchers; nevertheless, overall findings confirm that developing a mnemonics-based teaching module is necessary to improve the quality of teaching, especially in Malaysian primary schools.

6.2 Recommendation
Future research should involve a larger and more diverse sample of non-optional music teachers from different regions to enhance the generalisability of the findings. Mixed-method approaches incorporating classroom observations and interviews are recommended to complement questionnaire data and provide deeper insights into teaching practices. In addition, experimental implementation of the mnemonics-based teaching module in real classroom settings is suggested to generate empirical evidence on its effectiveness in improving teaching strategies and student learning outcomes. Based on the findings, researchers suggest four recommendations for future research in table 5 below.

Table 5. Recommendations for Future Research

No.	Recommendation Area	Description	Expected Outcome
1	Module Development	Design and develop a mnemonics-based teaching module tailored to the needs of non-option music teachers.	A structured and accessible module that boosts teachers' confidence and instructional quality.
2	Expert Validation	Conduct expert evaluation using the Fuzzy Delphi Method to validate module content, structure, and relevance.	Ensures content accuracy, pedagogical soundness, and alignment with curriculum standards.
3	Teacher Training	Organize workshops or professional development sessions to train non-optional music teachers on mnemonic teaching strategies and music literacy pedagogy.	Improved teacher competency and readiness to implement the module effectively.
4	Pilot Implementation	Implement a pre-experimental study to assess the effectiveness of the developed module in classroom settings.	Evidence of module impact on student achievement and engagement in music notation learning.

Recommendation of future research contribute towards strengthening non-optional music teacher's competencies, creating engaging learning environment, and promoting innovative approach in Malaysian music education.

6.3 Limitation
Findings are based on a needs analysis involving a relatively small sample of non-optional music teachers, which may limit the generalisability of the results to all Malaysian primary school contexts. Furthermore, the study focused on identifying teachers' needs rather than classroom implementation; the effectiveness of the mnemonics-based teaching module on actual teaching practices and student learning outcomes was not examined. These limitations suggest the need for future research involving experimental classroom implementation to further validate the impact of the proposed teaching module.

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Paper Contribution to Related Field of Study
This paper contributes to the field of music education and instructional design by addressing a critical gap in mnemonic-based pedagogy for music literacy. The findings provide empirical evidence of the needs and challenges faced by non-option music teachers, serving as

the foundation for developing a validated teaching module aligned with Rossett's (1987) Training Needs Assessment Model. The study's methodological framework and results offer valuable implications for curriculum developers, teacher educators, and policymakers aiming to enhance music notation instruction through innovative, memory-based approaches. Furthermore, the integration of mnemonic techniques into formal teaching design advances pedagogical strategies within the broader context of arts and creative education in Malaysia.

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