JOURNAL LA EDUSCI

VOL. 07, ISSUE 05 (2000-2009), 2025
DOI: 10.37899/journallaedusci.v7i5.5777

Implementation of a Classical Guitar Learning Model Based on Elaboration Theory to Improve Musical Skills of Music Students

Adina Sastra Sembiring[1], Eben Haezarni Telaumbanua[2], Uyuni Widiastuti[1]

[1]*Music Education, Faculty of Languages and Arts, Medan State University, Medan, Indonesia*
[2]*Church Music Education, Faculty of Languages and Arts, Medan State University, Medan, Indonesia*

**Corresponding Author: Adina Sastra Sembiring*
Email: adina@unimed.ac.id

Article Info

Article history:
Received 10 July 2026
Received in revised form 28 July 2026
Accepted 23 August 2026

Keywords:
Classical Guitar
Elaboration Theory
Musical Skills

Abstract

This study examines the effectiveness of an Elaboration Theory-Based Classical Guitar Learning Model in enhancing the comprehensive musical skills of higher education students. Employing a quasi-experimental one-group pretest-posttest design, the research involved 40 undergraduate students from the Music Education Study Program at Universitas Negeri Medan. The intervention spanned eight instructional sessions, systematically progressing through orientation, epitome, elaboration, synthesis, guided practice, and reflection stages. Musical skills were evaluated using a performance rubric assessing technique, rhythm, tempo, dynamics, interpretation, expression, and overall quality. The results revealed a significant improvement in students' musical competencies, with the mean score increasing substantially from 68.45 in the pretest to 84.72 in the posttest. Notably, the highest gains were observed in higher-order musical dimensions, specifically musical expression, interpretation, and dynamics, alongside steady improvements in technical proficiency. These findings demonstrate that structuring learning materials hierarchically from simple to complex concepts effectively bridges the gap between mechanical execution and artistic expression. Consequently, this model serves as a valid, pedagogically sound instructional framework for optimizing both technical mastery and artistic expression in tertiary-level classical guitar education.

Introduction

Music education in higher education plays a strategic role in shaping students' comprehensive musical competencies, encompassing technical skills, creativity, and performance abilities (Castaño et al., 2025; Gaunt et al., 2021; Zhang et al., 2026). As a foundational subject, classical guitar requires students to not only execute repertoire accurately but also to interpret musical works through nuanced expression, dynamics, articulation, and phrasing. Consequently, optimizing these multifaceted skills demands a systematic and well-structured pedagogical approach (Panggabean, 2021; Salsabila, 2020; Sánchez-García & Reyes-de-Cózar, 2025; Badarnah, 2025; Kussainova et al., 2025; Esfandiari & Ebrahimi, 2025).

Despite its importance, the reality of classical guitar instruction in higher education often presents significant pedagogical challenges (Casas-Mas et al., 2022; Han, 2025; Iglesias & Tejada, 2024; Matei & Chiu, 2026). The learning process remains heavily dominated by traditional demonstration methods and repetitive drill practices that prioritize mechanical technique over artistic depth. While this approach may enhance basic motor skills, it frequently fails to foster in-depth musical understanding, leaving students capable of technical execution

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

but unable to deliver performances with appropriate musical interpretation and expressive sensitivity (Widiastuti et al., 2025; Mohd, 2026).

Furthermore, classical guitar instruction inherently possesses a hierarchical learning structure, necessitating a progression from mastering fundamental techniques to tackling complex repertoire. In current practice, instructional materials are often delivered in a fragmented and poorly integrated manner (Edessa, 2017; Brown, 2016; Leung et al., 2019; Akuma & Callaghan, 2016; Mowaf & Fathi, 2023). This disjointed delivery makes it difficult for students to connect foundational concepts with the advanced skills required in subsequent stages, ultimately resulting in suboptimal learning effectiveness and stunted musical development (Abadi & Hadi, 2021; Gangi, 2021).

To address these pedagogical shortcomings, modern instructional design emphasizes the systematic and progressive organization of learning materials. Elaboration Theory offers a highly relevant framework for this context (Gkintoni et al., 2025; Tezer et al., 2025). The theory advocates for presenting learning materials from the simplest concepts to more complex ones in a gradual, continuous, and integrated manner (Sembiring. et al., 2023; Stein et al., 2022; Tian et al., 2020). This structured progression aligns perfectly with the demands of classical guitar learning, which requires the continuous and layered mastery of both technical and artistic skills.

Although previous studies have demonstrated that structured learning models can enhance instrument-playing skills and motivation, the specific application of Elaboration Theory in tertiary-level classical guitar instruction remains notably limited (Rodriguez & Marone, 2021; Sembiring et al., 2023). Existing research in music education has predominantly focused on isolated practice methods, demonstration strategies, or digital learning media, often neglecting the integration of comprehensive instructional design theories (Aoonlamai & Kwangmuang, 2025; Mandanici et al., 2023). Consequently, there is a distinct lack of research developing a classical guitar learning model systematically grounded in Elaboration Theory to holistically improve students' musical skills.

Based on a thorough literature review, three primary research gaps underpin this study. First, prior classical guitar research has been disproportionately oriented toward technical proficiency, while higher-order musical skills such as interpretation, expression, dynamics, and overall musicality have received insufficient attention. Second, the application of Elaboration Theory has been extensively explored in general education, science, and technology, but its implementation in specialized music learning remains scarce. Third, there is a critical need for a systematically designed classical guitar learning model that bridges the gap between technical mastery and expressive musicality in higher education contexts.

To address these gaps, this study introduces the novelty of a Classical Guitar Learning Model Based on Elaboration Theory, specifically designed to elevate the comprehensive musical skills of university students. Unlike conventional approaches, this model integrates progressive material development with the strengthening of musical interpretation and expression within a single, cohesive learning process. Therefore, this study aims to analyze the effectiveness of this Elaboration Theory-based model in improving students' musical skills, assessing success not only through technical execution but also through dynamics, expression, and overall performance quality.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

Methods

Research Design

This study employed a quantitative approach utilizing a pre-experimental design, specifically the one-group pretest-posttest design (Sugiyono, 2023). This design was selected to measure the effectiveness of the Elaboration Theory-Based Classical Guitar Learning Model in enhancing students' musical skills before and after the instructional intervention. The research procedure consisted of an initial assessment (pretest) to measure baseline musical skills, followed by the implementation of the learning model over a specified period, and concluded with a final assessment (posttest). The difference in scores between the pretest and posttest was analyzed to determine the pedagogical impact and effectiveness of the applied learning model.

Participants

The population of this study comprised all students enrolled in the Classical Guitar course within the Music Education Study Program, Faculty of Languages and Arts, Universitas Negeri Medan, for the 2025/2026 academic year. A sample of 40 undergraduate students was selected using a purposive sampling technique. The inclusion criteria required participants to be active students registered for the course, willing to participate fully in the research, and present for at least 80% of the total instructional meetings. The sample consisted of male and female students aged 18 to 23 years, representing a relatively diverse range of foundational classical guitar abilities.

Research Procedures and Instructional Syntax

The research was conducted over eight weeks, with one 100-minute instructional session per week. The procedure encompassed four primary stages: preparation, pretest, implementation of the learning model, and posttest. During the implementation phase, the learning process was structured around six operational syntaxes derived from Elaboration Theory. These stages included *orientation* (explaining learning objectives), *epitome* (providing an overview of the material), *elaboration* (presenting material progressively from simple to complex), *synthesis* (connecting concepts and techniques), *guided practice* (providing demonstrations and feedback), and *reflection* (evaluating learning outcomes). This systematic syntax ensured that students actively engaged in integrating technical skills with musicality at each stage of the learning process.

Research Instruments

The primary instrument used for data collection was a classical guitar performance assessment rubric, developed based on established standards for musical instrument learning. The rubric evaluated six core indicators of musical skills: playing techniques (accuracy of hand position, fingering, and plucking), rhythm and tempo (beat accuracy and tempo stability), dynamics (ability to execute volume variations), interpretation (understanding the character and meaning of the music), musical expression (musical appreciation and communication), and overall performance quality. This comprehensive rubric ensured a holistic evaluation of both technical proficiency and higher-order artistic expression.

Data Analysis Techniques

Data were analyzed using IBM SPSS Statistics software. Descriptive statistics, including the mean, standard deviation, minimum, and maximum values, were computed to summarize the pretest and posttest results. Given the sample size of fewer than 50 respondents, the Shapiro-Wilk test was employed to assess the normality of the data distribution. To test the research hypothesis regarding the effectiveness of the learning model, a Paired Sample t-test was

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

conducted. The decision-making criterion was set at a significance level of $\alpha = 0.05$; if the two-tailed significance value was less than 0.05, the null hypothesis was rejected, indicating a significant improvement in students' musical skills following the intervention. Additionally, an N-Gain analysis was performed to determine the magnitude of the learning model's effectiveness.

Results and Discussion

Participant Characteristics

Consistent with the methodology, the sample consisted of 40 undergraduate students from the Music Education Study Program at Universitas Negeri Medan for the 2025/2026 academic year. Participants were aged between 18 and 23 years, comprising both male and female students selected through purposive sampling based on active course enrollment and minimum 80% attendance. This demographic profile represents a relatively diverse range of foundational classical guitar abilities typical of undergraduate music education contexts.

Descriptive Analysis of Pretest and Posttest Performance

The descriptive analysis revealed improvements in students' musical skills following the implementation of the Elaboration Theory-Based Classical Guitar Learning Model. The pretest results demonstrated a mean score of 68.45 (SD = 6.21), with scores ranging from 56 to 79, indicating considerable variation in baseline abilities among participants. Following eight instructional sessions, the posttest mean score increased to 84.72 (SD = 5.34), with a range of 74 to 96. The reduction in standard deviation suggests that the intervention may have contributed to reduced performance disparities at posttest. However, these aggregate improvements reflect overall trends within the sample and do not necessarily imply uniform gains for every individual participant.

Table 1. Descriptive Statistics of Pretest and Posttest Results

Variable	N	Mean	SD	Minimum	Maximum
Pretest	40	68.45	6.21	56	79
Posttest	40	84.72	5.34	74	96

Normality Test on Difference Scores

Prior to parametric testing, the assumption of normality was verified using the Shapiro-Wilk test applied specifically to the difference scores (posttest minus pretest), as this constitutes the primary assumption for the paired-samples t-test. Given the sample size (N = 40), the Shapiro-Wilk test is appropriate. The analysis indicated that the distribution of difference scores did not deviate significantly from normality, thereby satisfying the prerequisite for conducting the paired-samples t-test.

Tabel 2. Normality Test Results (Shapiro-Wilk on Difference Scores)

Variable	Statistic	df	Sig.
Posttest – Pretest	0.978	40	0.621

The normality test results presented in Table 2 provide statistical justification for employing parametric testing procedures in this study. The significance values well above the 0.05 threshold indicate that the data distributions do not deviate significantly from normality, which is essential for the validity of the t-test comparisons. This normal distribution pattern suggests that the measurement instrument functioned appropriately across the full range of student abilities, without producing skewed results that might indicate ceiling or floor effects. The

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

consistency of normal distribution across both pretest and posttest measurements further demonstrates that the learning intervention did not create unusual distribution patterns, such as extreme clustering at high or low scores, which might have suggested measurement limitations or inappropriate difficulty levels.

Hypothesis Testing

A paired-samples t-test was conducted to evaluate whether there was a statistically significant change in musical skills after the intervention. The analysis revealed a significant increase in scores, $t(39) = 14.826$, $p < .001$, 95% CI [14.05, 18.49]. The mean difference was 16.27 points. These results indicate that the observed improvement in musical skills is statistically significant. However, given the one-group pretest-posttest design without a control group, this finding demonstrates a significant association between the intervention and skill improvement but cannot definitively establish a causal relationship independent of other potential confounding factors such as maturation or practice effects outside the intervention.

Table 3. Paired Sample t-Test Results

Variable	Mean Diff.	SD Diff.	t	df	Sig. (2-tailed)	95% CI Lower	95% CI Upper
Pretest-Posttest	16.27	6.93	14.826	39	< .001	14.05	18.49

Effectiveness Level Analysis Using N-Gain

To assess the practical magnitude of improvement relative to each student's potential growth, the normalized gain (N-Gain) was calculated using the formula:

$$N - Gain = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}}$$

In this study, the maximum possible score on the performance rubric was 100. The interpretation criteria for N-Gain values were categorized as follows: High (> 0.70), Moderate (0.30 – 0.70), and Low (< 0.30). The analysis produced a mean N-Gain value of 0.52, placing the effectiveness of the learning model in the moderate category. This suggests that, on average, students achieved approximately 52% of their potential improvement from baseline to the maximum score within the eight-week period.

Table 4. N-Gain Analysis Results

Mean Pretest	Mean Posttest	Max Score	N-Gain	Category
68.45	84.72	100	0.52	Moderate

Differential Improvement Across Musical Skill Indicators

Improvements varied across the six assessed dimensions of musical performance. Higher-order competencies demonstrated larger mean improvements: Musical Expression ($M = 18.5$, $SD = 5.82$), Musical Interpretation ($M = 18.2$, $SD = 5.74$), and Dynamics ($M = 17.9$, $SD = 5.68$). Technical indicators also improved, including Playing Techniques ($M = 16.2$, $SD = 5.41$) and Rhythm and Tempo ($M = 16.0$, $SD = 5.36$). Performance Quality showed a comparatively smaller mean gain ($M = 10.8$, $SD = 4.87$), possibly reflecting its integrative nature requiring synthesis of multiple sub-skills. The inclusion of standard deviations indicates variability in individual responses to the intervention across different skill domains.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

Table 5. Improvement of Musical Skills Based on Indicators

Indicator	Pretest (M ± SD)	Posttest (M ± SD)	Improvement (M)
Playing Techniques	70.2 ± 5.98	86.4 ± 5.12	16.2
Rhythm and Tempo	69.1 ± 5.89	85.1 ± 5.04	16.0
Dynamics	65.8 ± 5.61	83.7 ± 4.82	17.9
Musical Interpretation	66.3 ± 5.65	84.5 ± 4.89	18.2
Musical Expression	64.7 ± 5.52	83.2 ± 4.78	18.5
Performance Quality	74.6 ± 6.35	85.4 ± 5.44	10.8

The findings demonstrate a statistically significant improvement in students' comprehensive musical skills following the implementation of the Elaboration Theory-Based Classical Guitar Learning Model. The substantial mean gain aligns with previous research suggesting that structured instructional designs based on Elaboration Theory can enhance learning outcomes in music education (Abdullah et al., 2021; Hamdi et al., 2025; Macrides & Angeli, 2020; Thompson-Bell, 2023; Yokuş, 2021; Zhu et al., 2025). By organizing materials hierarchically, the model appears to support students in connecting foundational techniques with higher-order musical concepts, potentially reducing cognitive load during skill acquisition.

Notably, the greatest improvements were observed in expressive and interpretive dimensions rather than solely in technical execution. This pattern contrasts with traditional drill-based approaches that often prioritize mechanical proficiency (Lindsay & Spittle, 2024; Saiful et al., 2026; P. Sembiring et al., 2026; Widiastuti et al., 2025). The elaboration stages, particularly synthesis and reflection, may have provided a structured framework for students to integrate technical skills with artistic meaning. However, it is important to acknowledge that while the data show significant pre-to-post changes, the one-group design limits definitive causal attribution. Factors such as repeated exposure to assessment criteria, instructor feedback during guided practice, and natural skill maturation over eight weeks may also contribute to the observed gains.

Compared to isolated methodological frameworks (Panggabean, 2021) or digital tools lacking pedagogical scaffolding (Hidayati & Nurharini, 2026), the current model offers an integrated approach addressing both technical and expressive competencies simultaneously. The moderate N-Gain value further suggests that while meaningful progress occurred within eight sessions, extended implementation periods may be necessary for students to approach mastery levels. Future studies employing controlled experimental designs are needed to isolate the specific contribution of the elaboration framework from other instructional variables.

Conclusion

This study concludes that the implementation of the Elaboration Theory-Based Classical Guitar Learning Model is associated with significant improvements in the measured musical skills of higher education students. Statistical evidence shows a substantial increase in mean performance scores from pretest (68.45) to posttest (84.72), with particularly notable gains in musical expression, interpretation, and dynamics alongside steady technical development. These findings suggest that a systematically structured, hierarchical instructional approach can effectively support the integration of technical execution with artistic expression within an eight-week instructional period.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

Suggestion

Based on these findings, music educators may consider adopting this structured learning model as a pedagogically informed alternative to conventional instructional methods. The operational syntax of orientation, epitome, elaboration, synthesis, guided practice, and reflection provides a systematic framework that supports progressive skill development. For future research, it is recommended to employ controlled experimental designs with larger and more diverse samples to strengthen causal inference and generalizability. Additionally, longitudinal studies measuring skill retention over extended periods and investigations integrating digital media within the elaboration framework would further enrich the evidence base for this instructional approach in higher music education.

Acknowledgments

The author would like to express his gratitude to all parties involved in this research, including students and research staff who provided assistance in writing this scientific paper. He would also like to thank the Research Institute for Research and Community Service (LPPM) of Medan State University for funding the research, which enabled this article to be published.

References

Abadi, M. A., & Hadi, H. (2021). Pembelajaran Gitar Berbasis Daring Di SMA Negeri 5 Tanjung Jabung Timur Online-Based Guitar Learning at SMA Negeri 5 East Tanjung Jabung. *Jurnal Sendratasik*, *10*(3), 117–128.

Abdullah, F. P. Y., Cheong, K. W., Alizadeh, F., & Poon, C. H. (2021). The Role of Instructional Scaffolding to Facilitate Problem Solving Skills in Music Improvisation. *MIER Journal of Educational Studies Trends and Practices*, *11*(1), 103–117. https://doi.org/10.52634/MIER/2021/V11/I1/1763

Akuma, F. V., & Callaghan, R. (2016). Framework for reducing teaching challenges relating to improvisation of science education equipment and materials in schools. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(10), 2697-2717. https://doi.org/10.12973/eurasia.2016.1305a

Aoonlamai, N., & Kwangmuang, P. (2025). Integrating digital tools and constructivist learning: a ubiquitous learning framework for enhancing creativity in music education. *BMC Psychology 2025 13:1*, *13*(1), 1064-. https://doi.org/10.1186/S40359-025-03300-Z

Badarnah, L. (2025). Holistic education for a resilient future: An integrated biomimetic approach for architectural pedagogy. *Biomimetics*, *10*(6), 369. https://doi.org/10.3390/biomimetics10060369

Brown, M. G. (2016). Blended instructional practice: A review of the empirical literature on instructors' adoption and use of online tools in face-to-face teaching. *The Internet and Higher Education*, *31*, 1-10. https://doi.org/10.1016/j.iheduc.2016.05.001

Casas-Mas, A., Pozo, J. I., & Montero, I. (2022). Oral Tradition as Context for Learning Music From 4E Cognition Compared With Literacy Cultures. Case Studies of Flamenco Guitar Apprenticeship. *Frontiers in Psychology*, *13*, 733615. https://doi.org/10.3389/FPSYG.2022.733615/TEXT

Castaño, C., Caballero, R., Noguera, J. C., Chen Austin, M., Bernal, B., Jaén-Ortega, A. A., & Ortega-Del-Rosario, M. D. L. A. (2025). Developing Sustainability Competencies Through Active Learning Strategies Across School and University Settings. *Sustainability 2025, Vol. 17, Page 8886*, *17*(19), 8886.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

https://doi.org/10.3390/SU17198886

Edessa, S. (2017). Impacts of insufficient instructional materials on teaching biology: Higher education systems in focus. *Kıbrıslı Eğitim Bilimleri Dergisi*, *12*(1), 2-8.

Esfandiari, M. R., & Ebrahimi, Z. (2025). Pedagogical frameworks and competences. In *The Routledge Handbook of the Translation Industry* (pp. 479-495). Routledge.

Gangi, J. (2021). Effectual Entrepreneurship in the Arts: The Story of Austin Classical Guitar. *Artivate*, *10*(2). https://doi.org/10.1353/artv.2021.0009

Gaunt, H., Duffy, C., Coric, A., González Delgado, I. R., Messas, L., Pryimenko, O., & Sveidahl, H. (2021). Musicians as "Makers in Society": A Conceptual Foundation for Contemporary Professional Higher Music Education. *Frontiers in Psychology*, *12*, 713648. https://doi.org/10.3389/FPSYG.2021.713648/TEXT

Gkintoni, E., Antonopoulou, H., Sortwell, A., & Halkiopoulos, C. (2025). Challenging Cognitive Load Theory: The Role of Educational Neuroscience and Artificial Intelligence in Redefining Learning Efficacy. *Brain Sciences 2025, Vol. 15, Page 203*, *15*(2), 203. https://doi.org/10.3390/BRAINSCI15020203

Hamdi, Z., Sururuddin, M., & Yunida, L. (2025). Implementing Project-Based Learning to Enhance Students' Creativity in Indonesian Language Learning at Elementary School. *Journal of Innovation and Research in Primary Education*, *4*(4), 3660–3670. https://doi.org/10.56916/JIRPE.V4I4.2494

Han, B. (2025). An Interview Study on Professor Chen Zhi's Pedagogical Approach to Classical Guitar Education in China. *Journal of Interdisciplinary Insights*, *3*(3), 40–51. https://doi.org/10.5281/ZENODO.17233456

Hidayati, Y. T., & Nurharini, A. (2026). The development of interactive learning media to improve music learning outcomes. *Jurnal Prima Edukasia*, *14*(1), 137–152. https://doi.org/10.21831/JPE.V14I1.94696

Iglesias, P., & Tejada, J. (2024). Practice as Research through Inquiry-Based Learning: A Pedagogical Intervention with Music Students in Higher Education. *Education Sciences 2024, Vol. 14, Page 738*, *14*(7), 738. https://doi.org/10.3390/EDUCSCI14070738

Kussainova, Z., Sartbekova, N., & Abakirov, A. (2025). Essential characteristics of the process of modelling educational programmes of pedagogical directions in technical and vocational education. *Journal of Vasyl Stefanyk Precarpathian National University*, *12*(3), 150-168. https://doi.org/10.3390/biomimetics10060369

Leung, H., Shek, D. T., Leung, E., & Shek, E. Y. (2019). Development of contextually-relevant sexuality education: Lessons from a comprehensive review of adolescent sexuality education across cultures. *International journal of environmental research and public health*, *16*(4), 621. https://doi.org/10.1016/j.iheduc.2016.05.001

Lindsay, R., & Spittle, M. (2024). The adaptable coach – a critical review of the practical implications for traditional and constraints-led approaches in sport coaching. *International Journal of Sports Science and Coaching*, *19*(3), 1240–1254. https://doi.org/10.1177/17479541241240853;WEBSITE:WEBSITE:SAGE;ISSUE:ISSUE:DOI

Macrides, E., & Angeli, C. (2020). Music Cognition and Affect in the Design of Technology-Enhanced Music Lessons. *Frontiers in Education*, *5*, 518209.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

https://doi.org/10.3389/FEDUC.2020.518209/TEXT

Mandanici, M., Spagnol, S., Ludovico, L. A., Baratè, A., & Avanzini, F. (2023). *Digital Music Learning Resources*. *SpringerBriefs in Education*. https://doi.org/10.1007/978-981-99-4206-0

Matei, R., & Chiu, R. (2026). Challenging score-centered norms in Western classical higher music education: an exploratory qualitative study of instructor-led initiatives in the UK and Europe. *Frontiers in Psychology*, *17*, 1768511. https://doi.org/10.3389/FPSYG.2026.1768511

Mohd Azib, N. (2026). *Reconceptualising the learning of expressiveness in music performance: Malaysian undergraduate voices beyond Western traditions* (Doctoral dissertation, Royal College of Music).

Mowaf, A., & Fathi, M. (2023). The Effectiveness of Using Collaborative Integration Strategy for Fragmented Information. *Assiut Journal of Sport Science and Arts*, *2023*(2), 198-220. https://doi.org/10.12973/eurasia.2016.1305a

Panggabean, M. S. (2021). Analisis Komparatif Pembelajaran Gitar Klasikmetode Trinity Dan Metode Yamaha. *Jurnal Seni Musik*, *10*(2), 27–42.

Rodriguez, R. C., & Marone, V. (2021). *Guitar Learning, Pedagogy, And Technology: A Historical Outline*. https://doi.org/10.5281/ZENODO.5784696

Saiful, S., Ramli, R., Bismar, A. R., Hudain, Muh. A., & Hanafi, S. (2026). The Effectiveness of Sepak Takraw Smash Skills Through Drill Training Methods in High School Student Athletes. *ETDC: Indonesian Journal of Research and Educational Review* , *5*(2), 922–931. https://doi.org/10.51574/IJRER.V5I2.4387

Salsabila, Z. (2020). *Pembelajaran Gitar Klasik Di Halmahera Music School Semarang*.

Sánchez-García, R., & Reyes-de-Cózar, S. (2025). Enhancing project-based learning: A framework for optimizing structural design and implementation—A systematic review with a sustainable focus. *Sustainability*, *17*(11), 4978. https://doi.org/10.3390/su17114978

Sembiring, A. S., Hamid K, A., & Siagian, S. (2023). The Impact Of The Classical Guitar Learning Model Giptuban Based On Elaboration Theory For Increase Cognitive Student. *Russian Law Journal*, *XI*.

Sembiring, P., Sukmayadi, Y., & Gunara, S. (2026). Reconsidering the Drill Method in Music Education: Pedagogical Perspectives and Learning Outcomes. *Cantata Deo: Jurnal Musik Dan Seni*, *4*(1), 25–36. https://doi.org/10.69748/JMCD.V4I1.531

Stein, D. J., Shoptaw, S. J., Vigo, D. V., Lund, C., Cuijpers, P., Bantjes, J., Sartorius, N., & Maj, M. (2022). Psychiatric diagnosis and treatment in the 21st century: paradigm shifts versus incremental integration. *World Psychiatry*, *21*(3), 393–414. https://doi.org/10.1002/WPS.20998

Tezer, M., Pelin Yıldız, E., Lee, Y., & Lee, S.-S. (2025). Exploring the Conceptual Model and Instructional Design Principles of Intelligent Problem-Solving Learning. *Sustainability 2025, Vol. 17, Page 7682*, *17*(17), 7682. https://doi.org/10.3390/SU17177682

Thompson-Bell, J. (2023). Student-centred strategies for higher music education: using peer-to-peer critique and practice as research methodologies to train conservatoire musicians. *British Journal of Music Education*, *40*(1), 20–33.

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)

https://doi.org/10.1017/S0265051722000080

Tian, Z., Zhang, K., Zhang, T., Dai, X., & Lin, J. (2020). Application of Ausubel cognitive assimilation theory in teaching/learning medical biochemistry and molecular biology. *Biochemistry and Molecular Biology Education*, *48*(3), 202–219. https://doi.org/10.1002/BMB.21327

Widiastuti, U., Sembiring, A. S., Suharyanto, S., & Mustaqim, B. (2025). Development of Digital Learning Tools for Music. *The International Journal of Technologies in Learning*, *33*(1), 51–65. https://doi.org/10.18848/2327-0144/cgp/v33i01/51-65

Yokuş, T. (2021). The effect of metacognitive strategies-based teaching practice in guitar education on performance achievement. *Psychology of Music*, *49*(6), 1605–1619. https://doi.org/10.1177/0305735620968259

Zhang, L. X., Yan, Z., & Wang, X. (2026). Mapping formative assessment in higher music education: A scoping review of its implementation and impact on musical intelligence. *Research Studies in Music Education*. https://doi.org/10.1177/1321103X251400571

Zhu, Q., Jamaludin, K. A., & Li, J. (2025). Development of flipped classroom module fcm for music theory instruction: An innovative approach to music education. *PLOS ONE*, *20*(11), e0337590. https://doi.org/10.1371/JOURNAL.PONE.0337590

ISSN 2721-0979 (Print), ISSN 2721-1258 (Online)