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Enhancing Students' Engagement in Instrumental Music Education through Innovative Teaching Strategies in the Special Program in the Arts: A Correlational Study in the Province of Albay

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Abstract

This study examined the relationship between innovative teaching strategies and student engagement in instrumental music education in the Special Program in the Arts (SPA) in the Province of Albay. Anchored on the Student-Centered Music Engagement Theory integrating Self-Determination Theory, Self-Regulation Theory, and Engagement Theory, and guided by the Input-Process-Output model, the study used a descriptive-correlational research design. Data were gathered through a validated researcher-made survey questionnaire administered through total enumeration to SPA instrumental music students and teacher-specialists in four SPA-Accredited Schools under the Schools Division Office of Albay during School Year 2025–2026. Weighted mean, Pearson r correlation, frequency, and ranking were used in the analysis. Findings showed that students manifested high levels of emotional regulation, cognitive regulation, and music engagement. Technology integration, gamification, and collaborative learning were found effective in enhancing engagement, with collaborative learning emerging as the strongest strategy. However, the relationship between innovative teaching strategies and student engagement was positive but not statistically significant. Major implementation challenges included limited access to technology, time constraints, and inadequate training in innovative strategies. The study concluded that while innovative strategies support instrumental music instruction, their effectiveness depends on sufficient resources, systematic implementation, and institutional support. A validated pocket manual was developed as a practical instructional guide, and the study recommended structured practice, stronger collaboration, improved access to digital tools and training, and sustained administrative support. The study aligns with SDG 4, SDG 3, and SDG 11 by supporting quality arts education, student well-being, and cultural preservation. Its sustainability impact lies in strengthening educational, institutional, social, and community support for instrumental music learning.

Keywords: Collaborative Learning, Gamification, Innovative Teaching Strategies, Instrumental Music Education, Music Engagement, Pocket Manual, Special Program in the Arts, Student Engagement, Technology Integration

1. Introduction

This study examines how innovative teaching strategies relate to student engagement in instrumental music education within the Special Program in the Arts (SPA) in the Province of Albay. It is anchored in the view that instrumental music education strengthens technical skill, discipline, emotional sensitivity, and artistic growth, yet its effectiveness depends on how well instruction sustains students' motivation, participation, and meaningful involvement. Situated within the Philippine basic education context and the implementation of the SPA, the study focuses on technology integration, gamification, and collaborative learning as instructional strategies that may support emotional regulation, cognitive regulation, and music engagement. It further responds to the practical challenges faced by music educators, particularly limited resources, time, and professional support, and uses these concerns as the basis for proposing a validated pocket manual for instrumental music teachers.

Music is a universal language that connects emotions, cultures, and experiences. In education, instrumental music is recognized as a foundation of musical excellence because it helps students develop technical skills, discipline, and emotional sensitivity. Although music instruction has improved alongside technological developments, teachers continue to face the challenge of sustaining students' interest, motivation, and participation amid changing educational conditions. This makes the use of innovative teaching strategies especially important in instrumental music instruction. In the Philippines, art is recognized by the Department of Education (DepEd) as an essential component of holistic learning that develops learners' emotional, social, intellectual, and cultural well-being. DepEd Order No. 46, s. 2012 established the Special Program in the Arts (SPA) in selected public secondary schools to nurture students' talents in instrumental and vocal music, dance, theater, media arts, visual arts, and creative writing. Within this program, Instrumental Music Education plays an important role in strengthening artistic growth and preserving cultural identity. In relation to DepEd

Order No. 21, s. 2019 and DepEd Order No. 003, s.2024, music educators are further challenged to move beyond conventional instruction and adopt strategies that deepen conceptual understanding and support 21st-century skills. In the Province of Albay, SPA-implementing schools serve as important venues for developing young artists. However, despite the use of peer-assisted learning, ensemble collaboration, digital tools, and traditional techniques, student participation and outcomes vary. Reports from teachers in the Schools Division Office of Albay indicate that many students experienced a decline in motivation and participation in instrumental music classes during the post-pandemic transition. At the same time, many teachers attempted to use innovative teaching strategies but lacked sufficient guidance, assistance, and resources. For this reason, the study investigates how technology integration, gamification, and collaborative learning relate to student engagement and uses the findings as a basis for a validated pocket manual to improve instrumental music instruction.

Related literature presents student engagement in instrumental music education as a multidimensional construct involving emotional connection, cognitive regulation, and active participation in music. Emotional engagement is associated with students' ability to manage stress, regulate mood, express feelings, and build confidence through music. Kiss, Oo, Biro, and Jozsa (2025), Koehler, Scafer, Lieb, and Wessa (2024), Bangquiao (2024), McFerran et al. (2023), Silverman's (2022), Papageorgi et al. (2022), and Leipold et al. (2023) all support the view that music functions as a meaningful outlet for emotional regulation, resilience, coping, and self-expression. The literature also emphasizes cognitive regulation as a key dimension of music learning. Miksza et al. (2023), Araujo and Spahn (2022), Schiavio, A., and Nijs, L. (2022), Frischen et al. (2022), Habibi et al. (2022), Sachs et al. (2023), Bonneville-Roussy et al. (2025), Zhang et al. (2025), Concina et al. (2025), McPherson et al. (2022), and Krause and Davidson (2021) show that instrumental practice supports executive functions such as planning, goal setting, attention, memory, self-monitoring, metacognition, and persistence. These studies suggest that meaningful music engagement extends beyond performance and contributes to learners' broader capacity for focus, self-management, and sustained skill development. In relation to instructional innovation, literature identifies technology integration, gamification, and collaborative learning as promising but context-sensitive strategies. Cheng et al. (2024), Tague et al. (2024), Biasutti et al. (2022), and O'Leary (2024) indicate that digital tools can provide immediate feedback and support independent learning, although their impact depends on systematic curricular integration. Lin et al. (2025), Adeline Brewer and Yu-Hui Ching (2024), O'Neill and Sen (2023), Hassan et al. (2025), and Toda et al. (2024) show that gamification may increase motivation and self-regulation, but excessive use may also encourage reward-seeking behavior and cognitive overload. Fernandez M.P. (2024), Gaunt et al. (2021), and Robinson (2021) highlight the value of collaborative learning, peer scaffolding, empathy, critical listening, and psychological safety in music instruction. Collectively, these studies suggest that innovative strategies can enrich music learning, but their success depends on pedagogical appropriateness and instructional conditions.

Globally, student engagement is widely recognized as an important factor in positive learning outcomes, and innovative teaching strategies are viewed as means of improving interaction and participation in music education. Nationally, the Philippine educational context reinforces this direction through DepEd Order No. 46, s. 2012, DepEd Order No. 21, s. 2019, and DepEd Order No. 003, s.2024, all of which support holistic learning, curriculum reform, and the strengthening of 21st-century competencies through meaningful arts education. Locally, the Province of Albay provides a relevant setting because its SPA-accredited schools actively implement instrumental music education and are recognized for performances in brass band and rondalla. The study covers SPA-Accredited Schools in the three congressional districts under the Schools Division Office of Albay, specifically Sto. Domingo National High School, Daraga National High School, Marcial O. Rañola Memorial School, and Polangui General Comprehensive High School. These schools differ in years of SPA implementation and performance exposure, yet all serve as sites where innovative teaching strategies, student motivation, and instructional challenges can be examined in context. The study also acknowledges that other schools such as Tiwi Agro-Industrial High School and Camalig National High School are still undergoing accreditation, and that the inquiry is limited to instrumental music rather than the other SPA specializations.

The study is theoretically grounded in the Self-Determination Theory of Edward Deci and Richard Ryan (2000), the Self-Regulation Theory of Albert Bandura (1991), and the Engagement Theory of Greg Kearsley and Ben Schneiderman (1999). Self-Determination Theory explains that students are more motivated when autonomy, competence, and relatedness are supported. In instrumental music education, this means that allowing students to connect personally with musical pieces, receive structured feedback, and participate in collaborative activities can strengthen emotional engagement and intrinsic motivation. The Self-Regulation Theory of Albert Bandura (1991) explains how students manage emotions, behavior, time, focus, and practice routines to achieve learning goals. In music education, this theory clarifies how emotional and cognitive regulation help students cope with performance anxiety, monitor errors, adjust strategies, and sustain engagement over time. The Engagement Theory of Greg Kearsley and Ben Schneiderman (1999) complements this by emphasizing that learning becomes more meaningful when students participate actively across behavioral, cognitive, and emotional dimensions. These theories are integrated into the Student-Centered Music Engagement Theory, which places students at the center of the learning process and explains musical engagement through autonomy, competence, relatedness, self-regulation, and active participation. Conceptually, the study is guided by the Input-Process-Output (IPO) Model. The inputs include student engagement dimensions, innovative teaching strategies, implementation challenges, and relevant DepEd

memoranda; the process includes instrument development, data gathering, descriptive and correlational analysis, and framework development; and the output is a validated pocket manual for instrumental music instruction in the SPA.

The literature establishes the value of emotional regulation, cognitive regulation, technology integration, gamification, and collaborative learning in music education, yet the study identifies an unresolved practical and contextual gap. Despite the recognized promise of innovative strategies, music teachers still face serious barriers related to resources, time, training, infrastructure, and administrative support. Navarro et al. (2024), Harrison and Lee (2024), Corpus and Delos Reyes (2023), Madulara, Paglinawan, and Orongan (2025), Williams and Chen (2025), Ponsaran (2024), Tan, Melor, and Nur Ehsan (2022), Devaney and Fautley (2024), Aras and Goksel (2024), and Denti et al. (2024) collectively indicate that innovation in music education is constrained not simply by teacher willingness but by structural and institutional limitations. Within Albay, the study is justified by observed declines in student motivation and participation during the post-pandemic transition and by the uneven use of instructional strategies across SPA-implementing schools. The study therefore addresses the need to examine the relationship between innovative teaching strategies and student engagement in this specific educational setting and to produce a practical output in the form of a validated pocket manual that can guide instrumental music teachers.

The study most clearly aligns with SDG 4 – Quality Education because it seeks to improve instructional quality, student engagement, and meaningful learning in instrumental music education through evidence-based teaching strategies and a validated instructional guide. It also aligns with SDG 3 – Good Health and Well-Being because the literature and background of the study explicitly discuss music as a support for emotional regulation, stress management, confidence-building, and resilience among students. In addition, the study relates to SDG 11 – Sustainable Cities and Communities because it recognizes instrumental music education in the SPA as a means of preserving cultural identity and sustaining local traditions such as rondalla and brass band participation in Albay.

This study contributes to educational sustainability by supporting improved pedagogy, teacher guidance, curriculum enrichment, and sustained learner participation in arts education. It contributes to institutional sustainability by providing evidence that may inform administrators, policymakers, DepEd, and CHED in strengthening the implementation of the SPA through training, program development, and resource allocation. It also contributes to cultural and community sustainability by helping preserve Albay's musical heritage and by supporting the continued formation of culturally aware and emotionally resilient learners. Finally, the study contributes to social and well-being sustainability because it frames instrumental music education not only as a technical discipline but also as a space for emotional expression, confidence-building, and holistic student development.

The study focuses on SPA instrumental music teachers/specialists and students enrolled in four SPA-Accredited Schools in the Schools Division Office of Albay during School Year 2025–2026. It examines emotional regulation, cognitive regulation, and music engagement, as well as the effectiveness of technology integration, gamification, and collaborative learning. It excludes other SPA specializations and does not extend to general music education outside the SPA. As such, its conclusions are context-specific, although they may serve as useful references for related future studies in music education.

2. Material and methods

2.1 Research Design

The study employed a descriptive correlational research design. The descriptive component focused on the current level of student engagement in instrumental music education under the Special Program in the Arts in SDO Albay, specifically in terms of emotional regulation, cognitive regulation, and music engagement. Emotional regulation referred to how music helps learners manage emotions and cope with challenges, cognitive regulation referred to how music practice influences focus, motivation, and self-regulation, and music engagement referred to the actual participation and interest of students in instrumental playing, including frequency, duration, and voluntary involvement in music practice. The correlational component examined the relationship between innovative teaching strategies and student engagement without attempting to establish causality. The strategies analyzed were technology integration, gamification, and collaborative learning. This design enabled the researcher to describe the current condition of student engagement, determine the effectiveness of the identified strategies, examine the strength and direction of their relationship, identify implementation challenges, and use the findings as the basis for the validated pocket manual for teacher-specialists in Albay.

2.2 Locale of the Study

The study was conducted in the four SPA-Accredited Schools under the Schools Division Office of Albay. These were Sto. Domingo National High School in the 1st Congressional District, Daraga National High School in the 2nd Congressional District, and Marcial O. Rañola Memorial School and Polangui General Comprehensive High School in the 3rd

Congressional District. These schools are recognized for providing specialized training in the arts, including instrumental music, and have implemented the SPA for several years. Among them, Polangui General Comprehensive High School was identified as the oldest SPA-implementing school with 25 years of implementation, followed by Marcial O. Rañola Memorial School with 22 years, Sto. Domingo National High School with 11 years, and Daraga National High School with 8 years. The study was limited to the instrumental music specialization in these accredited schools.

2.3 Respondents of the Study

The respondents consisted of all SPA instrumental music teacher-specialists assigned to the four identified schools and all SPA instrumental music students currently enrolled in the program. The study covered students and teachers from Sto. Domingo National High School, Daraga National High School, Marcial O. Rañola Memorial School, and Polangui General Comprehensive High School. These participants were selected because they were directly involved in the implementation and experience of instrumental music education in the SPA.

2.4 Sample and Sampling Procedure

The study used the total enumeration technique. All students and teacher-specialists in the Special Program in the Arts–Instrumental Music Education of the four SPA-Accredited schools in SDO Albay were included as respondents. This approach was used because of the small number of students and teachers in the instrumental music specialization. As stated in the manuscript, the scope included all SPA Instrumental Music Teachers/Specialists and students actively enrolled in the program for School Year 2025–2026 in the SPA-Accredited Schools in the three congressional districts under the Schools Division Office of Albay.

2.5 Research Instrument

The primary data-gathering tool was a survey questionnaire designed for SPA instrumental music students and teacher-specialists in the province of Albay. The student questionnaire was intended to analyze student engagement in instrumental music education and to examine the relationship between student engagement and teachers' innovative teaching strategies. It consisted of three parts. The first part identified the current level of student engagement across emotional regulation, cognitive regulation, and music engagement. The second part measured the effectiveness of innovative teaching strategies in enhancing student engagement through technology integration, gamification, and collaborative learning. The instrument used a 4-point Likert scale, where 4 meant Strongly Agree, 3 meant Agree, 2 meant Disagree, and 1 meant Strongly Disagree. A separate questionnaire was also administered to teacher-specialists to identify the challenges encountered in implementing innovative strategies, and this part used a ranking method. The questionnaire was researcher-made and was subjected to validation prior to the actual data gathering.

2.6 Data Gathering Procedure

Before conducting the study, the researcher secured approval from the Division Office of Albay and obtained a referral letter from the Schools Division Superintendent, Dr. Nene R. Merioles, CESO V. Letters of intent were then sent to the school principals of the participating schools. Coordination followed with the SPA coordinators, who referred the researcher to the teacher-specialists handling instrumental music. Prior to actual data collection, the researcher explained the nature of the study, its objectives, the importance of participation, and the confidentiality of the information to be gathered, emphasizing that the data would be used only for academic purposes. After obtaining initial information on the number of students enrolled in the specialization, the questionnaires were distributed for validation by the three panel members on November 18, 2025. The actual data gathering was conducted systematically using total enumeration. Questionnaires were distributed either personally or through an online platform, depending on the availability and circumstances of the respondents. SPA instrumental music students answered the questionnaire on engagement and the effectiveness of innovative strategies, while teacher-specialists completed the questionnaire on implementation challenges. After retrieval, the responses were organized and subjected to statistical analysis to support the conclusions, recommendations, and development of the validated pocket manual.

2.7 Data Analysis Techniques

The gathered data were analyzed systematically to determine the level of student engagement and its relationship with innovative teaching strategies in instrumental music instruction. For the first objective, which focused on the current level of student engagement in terms of emotional regulation, cognitive regulation, and music engagement, and for the second objective, which addressed the effectiveness of innovative teaching strategies in terms of technology integration, gamification, and collaborative learning, the weighted mean using a 4-point Likert scale was employed. For the third objective, which examined the relationship between innovative teaching strategies and student engagement in instrumental music education, the Pearson r correlation coefficient was used together with a test of significance at a 1% margin of error. For the fourth objective, which identified the challenges in implementing innovative teaching strategies, the study used frequency and ranking methods to determine which challenges were most significant. These techniques allowed the study to describe the present condition, examine associations among variables, and identify the most pressing implementation constraints in instrumental music education.

3. Results and Discussion

3.1 Student Engagement in Instrumental Music Education

3.1.1 Emotional Regulation

The results showed that SPA students in Albay manifested a high level of emotional regulation through music. Across the three congressional districts, the highest-rated indicator was "feeling calmer and more relaxed after practicing music" with an Average Weighted Mean (AWM) of 3.37, followed by "playing an instrument helps cope with stress or difficult emotions" with 3.35, and "feeling emotionally connected to the music performed" with 3.34. The other indicators also remained high, with "practicing music improves mood after a challenging day" at 3.33, "performing music helps express emotions that cannot be put into words" at 3.32, and "helping regain confidence when discouraged" at 3.30. The overall district results likewise reflected strong ratings in emotional regulation, indicating that students consistently associated instrumental music with calmness, coping, expression, and confidence. These findings indicate that instrumental music education functions not only as a technical training area but also as an important mechanism for emotional support and resilience. The results suggest that music provides students with a safe and meaningful space for stress management, emotional balance, and psychological well-being. This interpretation is supported by Geipel et al. (2022), Vidas et al. (2021), and de Bruin (2021), who all emphasize the value of music-making and instrumental pedagogy in strengthening emotional regulation, well-being, and resilience among learners.

3.1.2 Cognitive Regulation

The findings also showed a high level of cognitive regulation among SPA students. Across the three congressional districts, the highest-ranked indicator was "learning new musical pieces motivates one to improve skills" with an AWM of 3.62, followed by "practicing music improves concentration and focus" with 3.46 and "setting personal goals for music practice and working to achieve them" with 3.45. Lower but still positive ratings were recorded for "monitoring progress and adjusting practice strategies to improve performance" at 3.25, "maintaining attention for extended periods when practicing" at 3.23, and "practicing music helps organize thoughts and plan learning" at 3.17. Overall, the data show that instrumental music education supports focus, goal setting, and persistence, although planning and structured learning remain comparatively weaker areas. These results imply that instrumental music education in Albay contributes meaningfully to students' metacognitive development and cognitive discipline. The strong rating for learning new musical pieces suggests that challenge in music learning acts as a stimulant for growth mindset, concentration, and self-improvement. At the same time, the lower rating for organizing thoughts and planning learning indicates the need for more explicit guidance in study techniques and executive functioning. This interpretation is consistent with Mualem et al. (2023) and D'Souza et al. (2021), which support the idea that long-term instrumental training strengthens persistence, executive function, sustained attention, and cognitive control, while also pointing to the importance of explicit metacognitive support.

3.1.3 Music Engagement

In terms of music engagement, the findings showed that students were most strongly engaged in the social and performative dimensions of music learning. Across the three congressional districts, "performing or participating enthusiastically in music events" ranked first with an AWM of 3.40, followed by "enjoying spending extra time exploring new music or techniques" with 3.34 and "taking initiative in practicing without being reminded by the teacher" with 3.22. Lower ratings were observed for "spending enough time practicing and improving performance skills" at 3.13 and "practicing the instrument regularly (daily/weekly)" at 3.09, while "participating voluntarily in additional music activities beyond class requirements" ranked last. Overall, student music engagement remained positive, but the results show stronger enthusiasm for public performance than for sustained independent practice. The findings suggest that SPA students in Albay are highly motivated by belonging, performance, and visible musical participation, but they still need support in self-directed discipline and routine practice. Music events and competitions appear to sustain interest effectively, yet regular and voluntary practice outside formal requirements remains less consistent. This interpretation aligns with Gualda and Gomez (2021), who describe performance-based activities as strong drivers of engagement, and with Park et al. (2022), who note that daily practice demands a higher level of grit and self-regulated learning than interest in performance alone.

3.2 Effectiveness of Innovative Teaching Strategies

3.2.1 Technology Integration

The results showed that technology integration was moderately effective overall in enhancing student engagement in instrumental music education. Across the three congressional districts, the highest-rated indicators were "music software and apps in lessons enhance learning" and "online tutorials or video lessons improve understanding of musical concepts," both with an AWM of 3.32. These were followed by "technology helps address difficulties encountered in learning music" at 3.16, "learning music through technology increases motivation to practice" at 3.11, and "technology enables progress tracking and identification of areas for improvement" at 3.08. The lowest-rated indicator was "digital tools increase

interactivity and engagement during practice" at 2.98. The overall average for technology integration was 3.16, indicating a moderate level of effectiveness. These results indicate that technology is useful for explanation, access, and support, but its full instructional potential has not yet been maximized. Digital resources appear to help students understand concepts and address learning difficulties, yet they do not automatically generate deeper interactivity or sustained engagement. The pattern is consistent with Cheng et al. (2024) and Tague et al. (2024), who emphasize the value of digital tools and accessible apps, but it also reflects the warning of Biasutti et al. (2022) and O'Leary (2024) that technology becomes limited when it is not systematically integrated into instruction or used intensively enough to deepen understanding.

3.2.2 Gamification

Gamification was also found to be effective, though only at a moderate overall level. The strongest gamification indicator was "completing music challenges or levels creates a sense of achievement" with an AWM of 3.48, followed by "music games and challenges increase enjoyment during practice" with 3.35 and "competitions, points, and rewards create stronger motivation in lessons" with 3.28. Lower ratings were recorded for "game-based activities reduce stress and increase fun in music learning" at 3.24, "gamified activities improve retention of musical concepts" at 3.13, and "regular practice becomes more likely with gamified elements" at 3.00. The overall average for gamification was 3.25, showing that it supports motivation and enjoyment but does not consistently translate into disciplined long-term practice. The findings suggest that gamification is particularly effective in producing enjoyment, recognition, and short-term motivational gains, but it requires clearer structure to support deeper and more sustainable learning. Its weaker effect on regular practice indicates that game-based elements alone are not enough to build routine and discipline. This interpretation is supported by Brewer and Ching (2023), Mamedov (2024), and the Arch iTone: LEGO-inspired Gamified System for Visualized Music Education (2024), which highlight the motivational value of gamified learning, while Chen and Lin (2023) explain that excessive interactivity can reduce attention to actual musical learning and create cognitive overload.

3.2.3 Collaborative Learning

Among the three innovative teaching strategies, collaborative learning emerged as the strongest. Across the three congressional districts, "working with others strengthens confidence in music performance" ranked first with an AWM of 3.50, followed by "teamwork and ensemble activities increase enjoyment in learning music" with 3.48, "collaboration with classmates encourages more consistent practice" with 3.45, "group practice sessions improve musical skills" with 3.42, and "peer feedback identifies areas for improvement" with 3.39. The lowest, though still positive, indicator was "sharing ideas with peers deepens understanding of music concepts" at 3.33. The overall average for collaborative learning was 3.43, indicating that it was highly effective and the strongest of the three strategies assessed. These findings show that collaborative learning supports not only musical improvement but also confidence, motivation, and interpersonal development. Group work appears to provide the social support and shared practice conditions that make instrumental learning more engaging and less intimidating. This result is consistent with Treacy and Gaunt (2021), Biasutti et al. (2022), and Oikonomou et al. (2025), who emphasize peer scaffolding, active exchange, and psychological safety in collaborative music-making. It is also reinforced by Gaunt et al. (2021) and Edgar (2021), who note that peer feedback and ensemble participation strengthen both musical understanding and interpersonal skills.

3.3 Relationship Between Innovative Teaching Strategies and Student Engagement

The statistical analysis showed a positive but non-significant relationship between innovative teaching strategies and student engagement in instrumental music education. Using the Pearson product-moment correlation, the study obtained an r-value of 0.50, indicating a moderate relationship between the variables. However, the computed t-value of 0.57 was lower than the tabulated t-value of 1.96 at the 1% level of significance, leading to the acceptance of the null hypothesis. Thus, although innovative teaching strategies were positively associated with student engagement, the relationship was not strong enough to be considered statistically significant. This result implies that student engagement in instrumental music education is influenced by factors beyond instructional strategy alone. The discussion in the manuscript points to learner interest, teacher-specialist skill, classroom management, administrative support, and the learning environment as likely influences on engagement. This interpretation is supported by Dayang Siti Hazar Awang Hassim and Chamil Arkhasa Nikko Mazlan (2023), who identified both internal and external contributors to music participation, and by Kaufman and Chen (2024), who found that teacher emotional support and classroom management may carry greater weight than the innovative tools being used.

3.4 Challenges Affecting Implementation

The findings across the three congressional districts revealed a consistent pattern in the challenges encountered by teacher-specialists. The most common and most highly ranked difficulties were lack of access to technology, including instruments, software, and applications, and time constraints in incorporating innovative strategies. In the third congressional district, insufficient training or knowledge in innovative teaching strategies also emerged as a major concern. By contrast, limited student interest in non-traditional methods, resistance to innovation, and teachers' willingness to adopt new strategies were generally ranked lower, indicating that the main barriers were structural rather than attitudinal. These findings show that the major implementation problem lies in insufficient logistical, technological, and institutional support rather than in

student openness or teacher readiness. The discussion links this pattern to prior studies emphasizing resource scarcity, infrastructure gaps, workload pressures, and the need for symbiotic support between tools and professional development. This interpretation is supported by Madulara, Paglinawan, and Orongan (2025), Johnson and Miralis (2023), Carter and Hughes (2024), Savage and Fautley (2024), Williams and Chen (2025), Harrison and Lee (2024), O'Sullivan et al. (2025), Foster (2024), Ponsaran (2024), Arcayera (2021), Lasauskiene and Zitkeviciene (2024), Castillo and Henderson (2025), and Navarro et al. (2024).

3.5 Development of the Instructional Output

The study culminated in the development of **PLAY, LEARN, ENGAGE: A Pocket Manual for Music Teachers**. The output is a practical guide that includes tuning apps, music notation software, open-ended tools, and related activities intended to support instrumental music instruction. The manual specifically includes digital pitch-analysis and tuning applications such as Guitar Tuna, Sound Corset, Pano Tuner Lite, and Fender Tune, with QR codes to help users access the correct applications. It also includes open-ended tools such as Chrome Music Lab, Groove Pizza, Artusi, and Aqwertyon to allow students to explore, create, and manipulate music through accessible digital platforms. The manual was validated by Ms. Apple N. Rubio, Assistant Professor II of Bicol University College of Education and trainer of Bicol University Chorale and Kwerdas Operandi (BU Rondalla). Based on her feedback, the manual was revised to improve its practicality and effectiveness in actual music instruction. The final output therefore reflects the study's central argument that innovative teaching strategies can be translated into a practical, research-based guide for SPA instrumental music teachers and can serve as a direct support material for enhancing student engagement.

4. Conclusion & Recommendations

The study concludes that SPA students in the three congressional districts of Albay exhibited a high level of engagement in instrumental music education in terms of emotional regulation, cognitive regulation, and music engagement. Technology integration, gamification, and collaborative learning were found effective in enhancing learning and participation, although their use still requires sufficient resources, systematic implementation, and strong instructional support. The findings further showed no significant relationship between innovative teaching strategies and student engagement in instrumental music education. Across the districts, the primary challenges encountered by teacher-specialists were lack of access to technology and time constraints in incorporating innovative strategies. The study also established that the validated, research-based pocket manual successfully integrates modern digital tools into traditional music instruction and serves as a practical guide for enhancing student engagement.

Based on the findings, the study recommends that teacher-specialists establish regular and structured practice schedules, provide additional music activities and enrichment opportunities, use monitoring tools to track student progress, and encourage personal goal-setting and self-assessment to improve self-regulation. It further recommends strengthening collaborative learning through group activities and ensemble sessions, maximizing technology integration through the provision of instruments, applications, software, and training, and using clear rules, rewards, and challenges to support sustained motivation and learning. Teachers are also encouraged to improve the factors affecting engagement by using innovative teaching strategies within a holistic approach and by considering student feedback in adjusting instruction. In addition, school administrators should provide sufficient funds, digital tools, flexible scheduling, reduced workload pressures, strong institutional support, administrative guidance, and regular evaluation and feedback to improve implementation. Finally, teachers and students should consistently integrate the manual's digital tools and gamified activities into daily rehearsals and independent practice to standardize technical skills and promote sustainable engagement.

The study was limited to SPA Instrumental Music Teachers/Specialists and students enrolled in SPA-Accredited Schools in the three congressional districts under the Schools Division Office of Albay during School Year 2025–2026. It focused only on the instrumental music specialization and did not include other SPA areas such as Visual Arts, Theater Arts, Dance, Media Arts, Creative Writing, and Vocal Music, nor did it cover general music education beyond the Special Program. Because of these boundaries, the results and conclusions cannot be generalized to other regions or educational systems, although they may serve as a reference for future research in the field.

Compliance with ethical standards

This study was conducted in accordance with institutional ethical standards and with due approval from the appropriate authorities prior to data gathering. Participation was voluntary, and informed consent was obtained from all participants before their involvement in the study. Confidentiality and anonymity of the respondents were strictly observed, and all information gathered was used solely for academic and research purposes. The author declares no conflict of interest in the conduct and reporting of this research.

REFERENCES

Aras, A., & Göksel, R. E. (2024). Technological transformation in music education: Opportunities, challenges, and future perspectives. *International e-Journal of Educational Studies, 9*(17). https://doi.org/10.31458/iejes.1378310

Araújo, L. S., & Spahn, C. (2022). Promoting a health-related lifestyle. In G. E. McPherson (Ed.), *The Oxford handbook of music performance* (Vol. 2). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190058043.013.25

Bangquiao, S. G. M., & Galigao, R. P. (2024). Music as a therapy for students' mental health. *PANTAO: International Journal of the Humanities and Social Sciences, 3*(4), 281–291.

Biasutti, M., Antonini, P. R., & Schiavio, A. (2022). Assessing teachers' perspectives on giving music lessons remotely during the COVID-19 lockdown period. *Musicae Scientiae, 26*(3), 585–603. https://doi.org/10.1177/10298649211014319

Bonneville-Roussy, A., & Evans, P. (2025). The support of autonomy, motivation, and music practice in university music students: A self-determination theory perspective. *Psychology of Music, 53*(6), 909–928. https://doi.org/10.1177/03057356241267894

Brewer, A., & Ching, Y. H. (2024). Designing and developing a gamified app for enhancing independent practice in K-12 music education. *The Journal of Applied Instructional Design, 13*(2), 35–39. https://doi.org/10.59668/723.13106

Cheng, L., & Lam, C. Y. (2024). Empowering children with a digital musical instrument mobile app: Perspectives of early childhood educators. *International Journal of Human–Computer Interaction, 40*(18), 5373–5383. https://doi.org/10.1080/10447318.2023.2233136

Concina, E., & Gesuato, R. (2025). "Musical instruments for girls, musical instruments for boys": Italian primary and middle school students' beliefs about gender appropriateness of musical instruments. *Education Sciences, 15*(4), 474. https://doi.org/10.3390/educsci15040474

de Bruin, L. R. (2021). Performance science, music education, and well-being: An ecological perspective on the role of instrumental pedagogy. *Frontiers in Psychology, 12*, 713000. https://doi.org/10.3389/fpsyg.2021.713000

Devaney, K., Fautley, M., Grow, J., & Ziegenmeyer, A. (2023). *The Routledge companion to teaching music composition in schools*. Routledge. https://doi.org/10.4324/9781003185345

D'Souza, A. A., Moradzadeh, L., & Wiseheart, M. (2021). Musical training, executive function, and the role of IQ, SES, and personality. *Psychology of Music, 49*(6), 1679–1692. https://doi.org/10.1177/0305735620973117

Fernandez, M. P. (2024). Scaffolding visual analysis in CPAR with human and AI-generated images. *International Journal of Multidisciplinary: Applied Business and Education Research, 5*(1), 163–172. https://doi.org/10.11594/ijmaber.05.01.16

Frischen, U., Degé, F., & Schwarzer, G. (2022). The relation between rhythm processing and cognitive abilities during child development: The role of prediction. *Frontiers in Psychology, 13*, 920513. https://doi.org/10.3389/fpsyg.2022.920513

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

Goehle, G. (2021). Gamification and the development of a growth mindset in the classroom. *Journal of Educational Technology Systems, 49*(4), 450–465. https://doi.org/10.1177/0047239520980287

Gualda, J. G., & Gómez, I. G. (2021). Musical performance and student engagement: A systematic review of factors. *Music Education Research, 23*(3), 345–358. https://doi.org/10.1080/14613808.2021.1925350

Habibi, A., Kreutz, G., Russo, F., & Tervaniemi, M. (2022). Music-based interventions in community settings: Navigating the tension between rigor and ecological validity. *Annals of the New York Academy of Sciences, 1518*(1), 47–57. https://doi.org/10.1111/nyas.14815

Hassan, M. I. A., Ismail, F. H., Rahman, S. F. A., Arifin, A. G., Ahmad, T. B. T., Ismail, H., & Zainuddin, N. (2025). Bridging 7th-century Islamic pedagogy and modern gamification: Culturally responsive design for digital education. *Journal of Advanced Research in Social and Behavioural Sciences, 40*(1), 72–86. https://doi.org/10.37934/arsbs.40.1.7286

Jamey, K., Foster, N. E., Hyde, K. L., & Dalla Bella, S. (2023). Music training and inhibition control. *Annals of the New York Academy of Sciences, 1520*(1), 5–11. https://doi.org/10.1111/nyas.14925

Kiss, B., Oo, T. Z., Biró, F., & Józsa, K. (2025). Students' motivation for classroom music: A systematic literature review. *Education Sciences, 15*(7), 862. https://doi.org/10.3390/educsci15070862

Koehler, F., Schäfer, S. K., Lieb, K., & Wessa, M. (2024). The interplay between music engagement and affect: A random-intercept cross-lagged panel analysis. *Emotion, 24*(3), 562–577. https://doi.org/10.1037/emo0001258

Krause, A. E., & Davidson, J. W. (2021a). A qualitative exploration of aged-care residents' everyday music listening practices and how these may support psychosocial well-being. *Frontiers in Psychology, 12*, 585557. https://doi.org/10.3389/fpsyg.2021.585557

Krause, A. E., & Davidson, J. W. (2021b). Social and environmental factors predicting everyday music participation and well-being. *Frontiers in Psychology, 12*, 670233. https://doi.org/10.3389/fpsyg.2021.670233

Leipold, B., Loepthien, T., Loidl, B., & Saalwirth, C. (2023). Goal adjustment and subjective well-being in adulthood: Longitudinal results from a three-wave panel study. *Journal of Individual Differences, 44*(4), 245–253. https://doi.org/10.1027/1614-0001/a000398

Lin, Y. L., Wang, W. T., Kuo, C. C., & Chen, P. H. (2025). Motivational incentives in the context of online game-based formative assessment and improved student learning performance. *Education and Information Technologies, 30*(4), 4669–4694. https://doi.org/10.1007/s10639-024-12686-3

Madulara, L. L. M. B., Paglinawan, J. L., & Orongan, R. C. (2025). Transforming teaching: How instructional support and a positive school culture drive teacher productivity. *International Journal of Research and Innovation in Social Science, 9*(2), 2596–2605.

McFerran, K. S. (2023). Navigating uncertainty: A music-based, insight-oriented, online group process for early career researchers during the global pandemic. *Voices: A World Forum for Music Therapy, 23*(3). https://doi.org/10.15845/voices.v23i3.3644

McPherson, G. E. (Ed.). (2022). *The Oxford handbook of music performance* (Vol. 2). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190058043.001.0001

Miksza, P., Shaw, J. T., Richerme, L. K., Hash, P. M., & Hodges, D. A. (2023). *Music education research: An introduction*. Oxford University Press. https://doi.org/10.1093/oso/9780197605158.001.0001

Moral-Bofill, L., López de la Llave, A., Pérez-Llantada, M. C., & Holgado-Tello, F. P. (2022). Development of flow state self-regulation skills and coping with musical performance anxiety: Design and evaluation of an electronically implemented psychological program. *Frontiers in Psychology, 13*, 899621. https://doi.org/10.3389/fpsyg.2022.899621

Mualem, R., Levenberg, K., & Klein, P. S. (2023). The impact of long-term instrumental music training on cognitive performance and psychological well-being. *Journal of Cognitive Enhancement, 7*, 124–135. https://doi.org/10.1007/s41465-023-00262-x

O'Leary, E. (2025). Considering the possibilities and problems of AI in music education: The need for critical literacies. *Action, Criticism, and Theory for Music Education, 24*(3), 138–164. https://doi.org/10.22176/act24.3.138

O'Neill, M., & Bagchi-Sen, S. (2023). Public universities and human capital development in the United States. *GeoJournal, 88*(1), 733–751. https://doi.org/10.1007/s10708-022-10654-2

Papageorgi, I. (2022). Prevalence and predictors of music performance anxiety in adolescent learners: Contributions of individual, task-related, and environmental factors. *Musicae Scientiae, 26*(1), 101–122. https://doi.org/10.1177/1029864920923101

Park, S., Kim, J., & Moore, J. L. (2022). Grit and self-regulated learning in instrumental music practice. *Psychology of Music, 50*(1), 215–230. https://doi.org/10.1177/0305735620988602

Ponsaran, J. N. (2024). Employing critical visual methodologies in development education: An auto-ethnographic inquiry. *Education and Society, 42*(1), 61–83. https://doi.org/10.7459/es/42.1.05

Robison, T., Edgar, S. N., Eros, J., Councill, K. H., Fredrickson, W. E., Helmick, J., ... & Williams, B. A. (2021). Inspiring the next generation of music educators: A multiple case study of high school music experiences and career choice. *Journal of Research in Music Education, 69*(2), 207–227. https://doi.org/10.1177/0022429421997280

Sachs, M. E., Kaplan, J., Der Sarkissian, A., & Habibi, A. (2023). Increased brain state dynamics during listening to music after music training. *Cerebral Cortex, 33*(14), 8978–8988. https://doi.org/10.1093/cercor/bhad176

Sachs, M. E., Ochsner, K. N., & Baldassano, C. (2023). Brain state dynamics reflect emotion transitions induced by music. *bioRxiv*. https://doi.org/10.1101/2023.01.27.525916

Schiavio, A., & Nijs, L. (2022). Implementation of a remote instrumental music course focused on creativity, interaction, and bodily movement. Preliminary insights and thematic analysis. *Frontiers in Psychology, 13*, 899381. https://doi.org/10.3389/fpsyg.2022.899381

Silverman, M. (2022). *Music therapy in mental health for illness management and recovery*. Oxford University Press. https://doi.org/10.1093/med-psych/9780197624128.001.0001

Tague, A. P., Pablo, J. O., & Franca, G. C. (2024). The use of Android phones and the academic performance of Grade 10 students in Jose Abad Santos National High School. *Asian Journal of Education and Social Studies, 50*(8), 1–13. https://doi.org/10.9734/ajess/2024/v50i81501

Tanriguden, B. (2025). A cognitive load theory-based teaching method to western standard music notation. *Journal of General Music Education*. https://doi.org/10.1177/27527646251395675

Toda, A. M., Palomino, P. T., Rodrigues, L., Klock, A. C. T., Pereira, F. D., de Sousa Borges, S., ... & Cristea, A. I. (2024). Brazilian teachers' concerns towards the use of gamification in education: Perceived barriers to its adoption. *Revista Brasileira de Informática na Educação, 32*, 510–532. https://doi.org/10.5753/rbie.2024.3644

Treacy, D., & Gaunt, H. (2021). Artistic peer feedback in higher music education: A case study of a conservatoire ensemble. *Music Education Research, 23*(3), 365–379. https://doi.org/10.1080/14613808.2021.1913123

United Nations Educational, Scientific, and Cultural Organization. (2023). *Global education monitoring report 2023: Technology in education: A tool on whose terms?* https://unesdoc.unesco.org/ark:/48223/pf0000385723

Vidas, D., Larwood, J. L., Nelson, N. L., & Dingle, G. A. (2021). Music-making as a strategy for emotion regulation, coping, and well-being during the COVID-19 pandemic. *Frontiers in Psychology, 12*, 644341. https://doi.org/10.3389/fpsyg.2021.644341

Zhang, J., & Chen, W. (2025). A decade of music emotion computing: A bibliometric analysis of trends, interdisciplinary collaboration, and applications. *Education for Information, 41*(3), 227–255. https://doi.org/10.3233/EFI-240093

Zhu, Y., & Zhang, X. (2022). Gamified music learning: A study on the sustainability of student engagement and practice habits. *Psychology of Music, 50*(3), 890–905. https://doi.org/10.1177/03057356211018312