LEARNING IN HARMONY: HOW MUSIC LABORATORIES AND INSTRUMENTS INFLUENCE STUDENT SATISFACTION AND GRADES

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ABSTRACT: *This study examined the relationship between BEED students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement in Teaching Music in the Elementary Grades. Employing a mixed methods design, the study collected quantitative data through a structured Likert scale questionnaire and qualitative data through open ended questions. Descriptive statistics were used to determine the levels of availability, facility quality, teaching learning support, and perceived academic improvement, while Spearman rho correlation was applied to examine the relationship between satisfaction and academic outcomes. Qualitative responses were thematically analyzed to capture students' lived experiences, challenges, and suggested improvements. Results revealed that BEED students generally expressed high satisfaction with the availability and accessibility of instruments, the quality and condition of facilities, and the teaching learning support provided by the music laboratory. Perceived academic and performance improvement was also rated positively. A strong and significant correlation was found between students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement. Qualitative findings highlighted the value of hands on learning in building musical competence and teaching confidence, while identifying limitations such as insufficient instruments and limited practice time. The study underscores the importance of adequate, well maintained music facilities in enhancing music pedagogy in teacher education programs.*

Keywords: Music Laboratory, Musical Instruments, Student Satisfaction, Academic Performance, Teaching Music.

1. INTRODUCTION

Music education plays a vital role in holistic learner development, contributing not only to artistic skills but also to cognitive, emotional, and social growth. In teacher education programs, particularly among Bachelor of Elementary Education (BEED) students, music courses such as Teaching Music in the Elementary Grades are designed to equip future teachers with the competencies necessary to facilitate meaningful musical learning experiences for young learners. However, the effectiveness of music instruction is not determined by pedagogy alone; it is also shaped by the availability, quality, and instructional use of musical instruments and music laboratory facilities.

Previous studies consistently emphasize that the availability of educational resources significantly influences students' learning experiences and outcomes. Research conducted in diverse educational contexts has shown that well-equipped laboratories and learning facilities enhance students' academic performance, motivation, and engagement [1; 2]; [3]. In practical and performance-based subjects, access to appropriate facilities and functional equipment becomes even more critical, as learning relies heavily on hands-on engagement, rehearsal, and experimentation [4]. In music education, this principle extends to the provision of musical instruments, rehearsal spaces, and supportive learning environments.

Music laboratories serve as specialized learning spaces where students can actively develop musical skills through guided practice and exploration. Studies focusing on music instruction demonstrate that the effective use of musical instruments positively influences students' motivation, engagement, and academic performance [5]; [6]. However, the mere presence of instruments and facilities does not guarantee improved learning outcomes. Research highlights the distinction between resource availability and resource utilization, suggesting that learning gains are more strongly associated with how resources are used rather than simply whether they exist [7; 8]. This distinction is particularly relevant in music education, where instruments may be underutilized due to limited access, inadequate instructional support, or poor maintenance.

The integration of technology has further reshaped contemporary music laboratories. Modern electronic equipment, digital musical instruments, and music education technologies have expanded opportunities for creative expression, performance feedback, and independent practice [9; 10]. Technology-enhanced music laboratories support diverse learning needs, promote inclusivity, and enable flexible learning beyond scheduled class time [11; 12]. Nevertheless, studies also caution that technological potential is often underexploited due to limited training, insufficient maintenance, and lack of structured instructional integration [13; 14].

Student satisfaction emerges as an important indicator of educational quality and learning environments. Satisfaction reflects students' perceptions of accessibility, facility condition, instructional support, and overall learning experience. Research suggests that positive perceptions of learning resources and facilities are closely linked to increased motivation and engagement, which in turn influence perceived academic and performance improvement [15; 16]. In music education, satisfaction with instruments and laboratory facilities may affect students' confidence, willingness to participate, and readiness to apply musical competencies in future teaching contexts.

Despite the growing body of literature on resource availability and music instruction, limited empirical attention has been given to BEED students' satisfaction with musical instruments and music laboratory facilities and how such satisfaction relates to perceived academic and performance improvement. Furthermore, few studies integrate quantitative assessment with qualitative insights that capture students' lived experiences, challenges, and suggested improvements. Addressing this gap is crucial, as BEED students are future

elementary teachers who will shape music instruction at the foundational level.

In response to these concerns, the present study examines the level of satisfaction of BEED students with musical instruments and music laboratory facilities in terms of availability and accessibility, quality and condition, and teaching–learning support. It further investigates the extent to which these facilities influence students' perceived academic and performance improvement in Teaching Music in the Elementary Grades and explores the relationship between satisfaction and perceived improvement. Finally, the study seeks to document qualitative insights from BEED students regarding the benefits, challenges, and suggested enhancements related to the use of musical instruments and music laboratories. By doing so, this research aims to contribute empirical and practical insights that may inform institutional planning, instructional improvement, and sustainable development of music education facilities in teacher education institutions.

Specifically, it purports to shed light to the following questions:

1. What is the level of satisfaction of BEED students with musical instruments and music laboratory facilities in terms of:
1.1 Availability and accessibility;
1.2 Quality and condition of facilities; and
1.3 Teaching–learning support?
2. What is the level of BEED students' perceived academic and performance improvement in Teaching Music in the Elementary Grades as influenced by the use of musical instruments and music laboratory facilities?
3. Is there a significant relationship between BEED students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement in Teaching Music in the Elementary Grades?
4. What qualitative insights do BEED students provide regarding their experiences in using musical instruments and music laboratory facilities in terms of benefits, challenges, and suggested improvements?

2. REVIEW OF RELATED LITERATURE

This chapter presents a synthesis of related literature and studies relevant to the influence of music laboratories and musical instruments on student satisfaction and academic outcomes. The discussion is organized thematically to align with the variables of the present study, namely: (1) availability and accessibility of educational resources, (2) quality and condition of facilities, (3) teaching–learning support, (4) student motivation, satisfaction, and academic performance, and (5) technology, accessibility, and sustainability in music education.

Availability of Educational Resources and Student Learning Outcomes

Educational resource availability has long been recognized as a fundamental determinant of effective teaching and learning. Studies conducted across different educational contexts reveal that access to adequate learning resources significantly affects students' academic achievement and engagement. Abidoye *et al.* [1] found that the availability of laboratory facilities positively influenced students' academic performance in Nigerian upper basic schools, emphasizing that practical subjects require functional and accessible facilities to support learning. Similarly, Adebayo et al. [2], using large-scale TIMSS data in South Africa, reported that educational resources significantly affected academic performance, although the magnitude of the effect was smaller compared to factors such as school management and learner characteristics.

In East Africa, Mulatya *et al.* [3] provided strong empirical evidence demonstrating that learning resource availability accounted for a substantial proportion of variance in learner outcomes, as shown through regression analysis. Their findings underscore the importance of allocating adequate and high-quality learning materials and facilities, particularly in schools experiencing high dissatisfaction rates. Mbeya *et al.* [4] further reinforced this view by showing that access to basic equipment and well-equipped laboratories enhanced students' achievement in practical lessons, particularly through improved safety, technological integration, and instructional quality.

Within enrichment and independent learning contexts, Festiyed *et al.* [17] observed that limited availability of learning resources constrained enrichment programs in senior high schools. Their study highlighted the need for ICT-based instructional materials that allow learners to practice beyond regular class sessions, an issue directly relevant to music education, where repeated rehearsal and practice are essential.

Music Laboratories, Musical Instruments, and Academic Performance

Music education, by its nature, relies heavily on experiential learning, performance, and sustained practice. Research indicates that access to musical instruments and structured music learning environments plays a significant role in enhancing learning outcomes. Asingwire *et al.* [5] examined postsecondary institutions in Uganda and found that the use of musical instruments positively influenced student engagement, motivation, and academic performance, despite challenges related to funding and staffing.

Similarly, Tabuena [6], in a Philippine-based quasi-experimental study, demonstrated that research-based music classroom interventions led to significant improvements in students' performance in flute recorder education. This study emphasized that structured instructional strategies, when paired with music resources, can yield measurable performance gains. David [18] further explored this relationship and found that while the general availability of music resources did not always correlate strongly with music education outcomes, specific facilities such as rehearsal spaces significantly influenced learning outcomes, underscoring the importance of purposeful use of facilities rather than mere presence.

Availability Versus Utilization of Learning Resources

A recurring theme in educational research is the distinction between resource availability and actual utilization. Fakunle [8], in a study on school library resources, revealed that although learning materials were available, their utilization was hindered by limited awareness, inadequate technical

support, and infrastructural challenges. These findings parallel issues commonly observed in music laboratories, where instruments may exist but remain underused due to scheduling constraints, lack of guidance, or maintenance issues.

Harder [7] provided a strong theoretical and empirical basis for this distinction by comparing the effects of resource availability and usage on learning, achievement, and well-being. The study concluded that resource availability contributes to a sense of security and satisfaction, while actual usage plays a more decisive role in learning and achievement. This framework is particularly relevant to music education, where satisfaction with facilities may not automatically translate into performance improvement unless resources are actively and effectively used.

Teaching–Learning Support, Motivation, and Student Satisfaction

Teaching–learning support mediates the relationship between facilities and learning outcomes. Usman and Lesmana [16] established that the availability of teaching materials, combined with effective learning methods and appropriate learning stimuli, significantly influenced students' learning motivation. Motivation, in turn, has been shown to affect engagement, persistence, and academic outcomes.

Nurmayani *et al*. [15] further highlighted that educational resource availability significantly enhances learners' motivation, particularly when resources are concrete, visual, or digital. However, their study emphasized that teacher creativity and instructional competence determine whether these resources effectively motivate students. These findings align with Leenaars *et al*. [19], who reported that teachers frequently use music as an instructional support across subjects, yet expressed a strong need for additional training and materials to maximize its educational value.

Student satisfaction emerges as a critical outcome of effective teaching–learning environments. Positive perceptions of facility accessibility, quality, and instructional support contribute to greater engagement and perceived learning gains. In music education, satisfaction with instruments and laboratory environments can influence students' confidence, willingness to participate, and readiness to apply musical skills in teaching contexts.

Technology-Enhanced Music Laboratories and Instrument Pedagogy

Advancements in educational technology have expanded the scope of music laboratories beyond traditional instruments. Cheng [9] discussed how modern electronic equipment, multimedia tools, and networked technologies enhance music instruction, creativity, and performance analysis. Acquilino and Scavone [10] provided a comprehensive review of music instrument pedagogy technologies, highlighting the role of real-time feedback systems, performance visualization, and computer-assisted practice in improving musical proficiency.

However, these technologies are not without limitations. Sullivan *et al*. [14] noted that many digital musical instruments fail to achieve sustained use due to usability and engagement challenges. Niyonsenga and Wanderley [13] further emphasized the importance of maintenance, reliability, and technical support in ensuring long-term usability of digital instruments. Without adequate support systems, even well-designed technologies may fall into disuse.

Accessibility, Inclusivity, and Sustainability in Music Education

Inclusive education has become an essential consideration in modern music pedagogy. Frid [11] conducted a systematic review of accessible digital musical instruments and identified adaptability, user-centered design, and customization as key factors in inclusive music practice. Dickens [12] expanded this discussion by introducing the concept of facilitated performance, emphasizing the role of teachers and facilitators in supporting diverse learners' engagement with digital musical instruments.

These studies collectively suggest that quality music laboratories must be not only well-equipped but also accessible, adaptable, and supported by trained facilitators. Sustainable music education environments require continuous maintenance, professional development, and inclusive design principles to ensure long-term effectiveness.

3. SIGNIFICANCE OF THE STUDY

The findings of this study are expected to be beneficial to various stakeholders in the field of teacher education, particularly in music instruction. By examining the influence of music laboratories and musical instruments on student satisfaction and perceived academic and performance improvement, this research provides empirical and practical insights that contribute to the improvement of music education in elementary teacher preparation programs.

Students

For Bachelor of Elementary Education (BEED) students, this study provides an understanding of how the availability, quality, and instructional use of musical instruments and music laboratory facilities influence their learning experiences in Teaching Music in the Elementary Grades. Identifying factors that enhance satisfaction and perceived learning improvement may help students become more engaged, motivated, and confident in developing musical competencies essential for effective elementary teaching.

Teachers and Music Instructors

The study provides valuable feedback to music educators and instructors regarding the instructional value of music laboratories and instruments. Insights drawn from students' satisfaction levels and qualitative experiences may guide teachers in improving instructional strategies, optimizing the use of available facilities, and strengthening teaching and learning support. The findings may also encourage reflective teaching practices that emphasize purposeful and effective use of musical instruments.

School Administrators and Program Heads

For school administrators, department heads, and program coordinators, the results of this study offer evidence-based guidance for decision-making related to resource allocation, facility development, and maintenance planning. Understanding which aspects of music laboratories such as accessibility, condition, and instructional support most influence student satisfaction and perceived learning

outcomes may help institutions prioritize investments and interventions that improve instructional quality.

Teacher Education Institutions

Teacher education institutions may benefit from the study by using its findings to enhance curriculum implementation and instructional infrastructure. The results may serve as a basis for improving music laboratories, upgrading musical instruments, and developing sustainable support systems that promote effective music instruction. The study also supports efforts to develop inclusive and learner-centered environments aligned with quality assurance and accreditation standards.

Curriculum Developers and Educational Policymakers

The study provides empirical evidence that may inform curriculum development and policy formulation related to music education and resource provision in teacher education programs. By highlighting the relationship between student satisfaction, facility quality, and perceived academic improvement, the findings may support policies that emphasize both adequate resource provision and effective utilization in music instruction.

Future Researchers

This study contributes to the existing body of literature by integrating student satisfaction, perceived academic and performance improvement, and qualitative insights in a music education context. Future researchers may use the findings as a reference for related studies on music education, instructional facilities, resource utilization, and teacher preparation. The study may also serve as a foundation for comparative or longitudinal research across institutions or educational levels.

4. METHODOLOGY

This chapter presents the research design, respondents of the study, research instruments, data gathering procedures, data analysis, and ethical considerations employed in examining the influence of music laboratories and musical instruments on student satisfaction and perceived academic and performance improvement.

Research Design

This study employed a mixed-methods research design, specifically an explanatory sequential design, integrating quantitative and qualitative approaches. The quantitative component was used to determine the level of satisfaction of BEED students with musical instruments and music laboratory facilities, their perceived academic and performance improvement, and the relationship between these variables. The qualitative component was conducted to obtain deeper insights into students' experiences, benefits, challenges, and suggested improvements related to the use of music laboratories and instruments.

The mixed-methods design was deemed appropriate because it allows numerical trends to be supported and explained by students' narratives, providing a more comprehensive understanding of the research problem.

Research Locale

The study was conducted at a teacher education institution offering the Bachelor of Elementary Education (BEED) program. The institution provides a music laboratory and musical instruments used in the course Teaching Music in the Elementary Grades. The locale was selected due to its accessibility to the researcher and its relevance to the objectives of the study.

Respondents of the Study

The respondents of the study were BEED students who were currently enrolled in or had completed the course Teaching Music in the Elementary Grades. These students were considered appropriate respondents because they had direct experience using musical instruments and music laboratory facilities as part of their academic coursework.

For the quantitative phase, respondents were selected using total enumeration or purposive sampling, depending on the number of eligible students during the data collection period. For the qualitative phase, a subset of respondents was selected using purposive sampling to represent varied levels of satisfaction and learning experiences.

Research Instrument

The primary instrument used in this study was a researcher-developed questionnaire designed to gather quantitative and qualitative data aligned with the objectives of the research. The questionnaire was structured to assess BEED students' level of satisfaction with musical instruments and music laboratory facilities, as well as their perceived academic and performance improvement in the course Teaching Music in the Elementary Grades. The instrument was developed based on related literature and studies on educational resource availability, music laboratory utilization, and student satisfaction and learning outcomes.

The questionnaire consisted of three main parts. The first part focused on gathering basic information related to the respondents' academic exposure to music instruction, ensuring that all participants had relevant experience in using musical instruments and music laboratory facilities. The second part measured the respondents' level of satisfaction with musical instruments and music laboratory facilities in terms of availability and accessibility, quality and condition of facilities, and teaching and learning support. Responses in this section were measured using a five-point Likert scale ranging from strongly disagree to strongly agree.

The third part of the questionnaire assessed students' perceived academic and performance improvement as influenced by the use of musical instruments and music laboratory facilities. This section included statements related to improvements in musical knowledge, performance skills, confidence, participation, and overall learning experience. In addition to the quantitative items, the instrument included open-ended questions that allowed respondents to express their experiences, perceived benefits, challenges encountered, and suggestions for improving music laboratory facilities and instructional support. These qualitative responses provided deeper insights and contextual explanations that complemented the quantitative findings of the study.

Data Analysis

The data gathered in this study were analyzed using both quantitative and qualitative procedures consistent with the mixed methods research design. Quantitative data obtained from the Likert scale questionnaire were coded, tabulated, and analyzed using appropriate statistical techniques.

Descriptive statistics, specifically the mean and standard deviation, were employed to determine the BEED students' level of satisfaction with musical instruments and music laboratory facilities in terms of availability and accessibility, quality and condition of facilities, teaching learning support, and perceived academic and performance improvement. The computed composite means served as the basis for interpreting the overall level of students' satisfaction and perceived outcomes.

To determine the relationship between BEED students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement in Teaching Music in the Elementary Grades, Spearman rho correlation was used. This non parametric test was deemed appropriate considering the ordinal nature of Likert scale data. The strength, direction, and significance of the relationship were interpreted using established correlation descriptors and a 0.05 level of significance.

Qualitative data obtained from open ended questions were analyzed through thematic analysis. Students' responses were carefully read, coded, and grouped into recurring themes related to perceived benefits, challenges encountered, and suggested improvements in the use of musical instruments and music laboratory facilities. These themes were used to enrich and support the quantitative findings, providing deeper insights into students' learning experiences. The integration of quantitative and qualitative results allowed for a comprehensive interpretation of the role of music laboratory facilities in supporting academic learning and teaching confidence among BEED students.

5. RESULTS AND DISCUSSION

Table 1.1 Availability and Accessibility

Availability and Accessibility	Mean	SD	Interpretation
The musical instruments needed for the course are available when required.	4.24	0.90	Agree
The music laboratory is accessible during scheduled class activities.	4.33	0.97	Agree
The number of available instruments is adequate for class demonstrations and practice.	4.11	0.95	Agree
Scheduling or borrowing procedures for instruments are well-organized.	4.22	0.81	Agree
Composite Mean	**4.23**		**Agree**

Table 1 presents the level of BEED students' satisfaction with the availability and accessibility of musical instruments and music laboratory facilities. The composite mean of 4.23, interpreted as Agree, indicates that respondents generally perceived musical resources as readily available and accessible during their music instruction. This suggests that the institutional provision of musical instruments and laboratory access adequately supports the instructional requirements of the course Teaching Music in the Elementary Grades.

Specifically, the highest mean rating was obtained by the statement "The music laboratory is accessible during scheduled class activities" (M = 4.33, SD = 0.97), reflecting students' positive perceptions of physical and temporal access to the facility. Accessibility during scheduled instructional time is a critical factor in resource effectiveness, particularly in performance-based subjects such as music, where structured rehearsal and hands-on engagement are essential. This finding supports previous studies emphasizing that ease of access to learning facilities enhances students' engagement and practical learning experiences [1; 3].

Similarly, respondents agreed that musical instruments needed for the course are available when required (M = 4.24, SD = 0.90) and that scheduling or borrowing procedures are well organized (M = 4.22, SD = 0.81). These results indicate that beyond physical availability, institutional systems governing the use of instruments function effectively. Organized access mechanisms reduce instructional disruptions and promote equitable use of resources, which Fakunle [8] identified as a key factor in maximizing the educational value of learning facilities. When students can access instruments without administrative barriers, learning activities become more fluid and meaningful.

The statement "The number of available instruments is adequate for class demonstrations and practice" yielded the lowest, yet still positive, mean (M = 4.11, SD = 0.95). While students agreed that the quantity of instruments was sufficient, the slightly lower mean suggests potential limitations in terms of instrument-to-student ratio during practice sessions. This finding aligns with David [18], who noted that although music resources may generally be available, specific facilities such as rehearsal spaces and sufficient instruments determine how effectively students translate access into learning outcomes.

Taken as a whole, the results of Table 1 indicate that BEED students are satisfied with both the availability and accessibility of musical instruments and music laboratory facilities. However, consistent with the arguments of Harder [7] and Adebayo *et al.* [2], the presence of resources alone does not automatically guarantee optimal learning outcomes. Rather, these findings suggest that adequate availability and accessibility provide a necessary foundation for satisfaction and engagement, which must be complemented by effective utilization and instructional support to produce meaningful academic and performance improvement.

Table 1.2 Quality and Condition of Facilities

Quality and Condition of Facilities	Mean	SD	Interpretation
The musical instruments are in good condition for teaching and performance tasks.	4.15	0.89	**Agree**
The music laboratory is well-equipped with essential teaching materials for elementary music.	4.17	0.95	**Agree**
The learning environment helps me focus and participate in music activities.	4.33	0.90	**Agree**
The sound system, acoustics, and layout support effective instruction.	4.24	0.85	**Agree**
Composite Mean	**4.22**		**Agree**

Table 2 presents the BEED students' level of satisfaction with the quality and condition of music laboratory facilities and musical instruments. The composite mean of 4.22, interpreted as Agree, indicates that respondents generally perceived the physical condition, functionality, and instructional suitability of the music laboratory as conducive to effective teaching and learning in Teaching Music in the Elementary Grades. This finding underscores the importance of maintaining instructional facilities beyond mere availability, as quality directly influences learners' engagement and performance.

Among the indicators, the statement "The learning environment helps me focus and participate in music activities" obtained the highest mean (M = 4.33, SD = 0.90). This suggests that environmental factors such as layout, lighting, acoustics, and overall organization of the music laboratory positively contribute to student concentration and participation. Prior studies have consistently shown that a supportive learning environment enhances student engagement and academic outcomes, particularly in performance-based disciplines where sensory and spatial conditions matter [4; 1].

Respondents also agreed that musical instruments are in good condition for teaching and performance tasks (M = 4.15, SD = 0.89) and that the music laboratory is well-equipped with essential teaching materials for elementary music (M = 4.17, SD = 0.95). These findings suggest that instruments and materials are functional and appropriate for instructional use, allowing students to practice skills necessary for elementary music teaching. Cheng [9] emphasized that well-maintained and appropriately selected instructional equipment supports creativity, performance accuracy, and instructional effectiveness in music laboratories.

The item "The sound system, acoustics, and layout support effective instruction" also received a favorable rating (M = 4.24, SD = 0.85), indicating satisfaction with technical and spatial features of the laboratory. Effective acoustics and sound systems are critical in music instruction as they allow students to hear nuances in pitch, rhythm, and dynamics, which are essential for skill development. Acquilino and Scavone [10] highlighted that the instructional effectiveness of music facilities is strongly influenced by acoustic quality and technological support, particularly when students are learning performance and listening skills.

Overall, the results of Table 2 demonstrate that BEED students perceive the quality and condition of music laboratory facilities and instruments as supportive of focused participation and effective instruction. These findings align with Harder [7], who argued that high-quality learning environments contribute to learner satisfaction and a sense of instructional adequacy, which may subsequently enhance motivation and perceived learning gains. Thus, maintaining the quality and condition of music laboratories is essential not only for operational purposes but also for fostering positive learning experiences and instructional effectiveness.

Table 3 presents the BEED students' perceptions of teaching–learning support provided by musical instruments and music laboratory facilities. The composite mean of 4.50, interpreted as Agree, indicates a very high level of perceived instructional support, suggesting that the facilities and instruments play a central role in facilitating meaningful learning experiences in Teaching Music in the Elementary Grades. Compared with previous tables, the higher composite mean underscores teaching–learning support as the most strongly endorsed dimension of students' satisfaction.

Table 1.3 Teaching–Learning Support

Teaching–Learning Support	Mean	SD	Interpretation
Access to instruments helps me better understand concepts in elementary music teaching.	4.48	0.72	**Agree**
Practical activities using instruments make lessons more meaningful and engaging.	4.54	0.72	**Strongly Agree**
The laboratory setup supports the teaching strategies required in the course.	4.48	0.66	**Agree**
Using the facilities helps me gain confidence in demonstrating music lessons.	4.48	0.66	**Agree**
Composite Mean	**4.50**		**Agree**

The statement "Practical activities using instruments make lessons more meaningful and engaging" obtained the highest mean (M = 4.54, SD = 0.72) and was interpreted as Strongly Agree. This result highlights the critical role of experiential and hands-on learning in music education. Music instruction is inherently practice-oriented, and opportunities to actively engage with instruments enhance understanding, motivation, and retention. This finding is consistent with Tabuena [6], who demonstrated that structured, practice-based music activities significantly improved students' performance, and with Asingwire et al. [5], who reported that instrument use positively influenced engagement and learning outcomes in postsecondary music education.

Similarly, respondents strongly agreed that access to instruments helps them better understand concepts in elementary music teaching (M = 4.48, SD = 0.72) and that the laboratory setup supports the teaching strategies required in the course (M = 4.48, SD = 0.66). These findings suggest that music laboratories are not merely spaces for practice but are integral instructional environments that align with pedagogical strategies used in teacher education. Cheng [9] emphasized that well-designed music laboratories, supported by appropriate equipment, facilitate conceptual understanding and creative exploration, particularly when integrated with instructional strategies.

The item "Using the facilities helps me gain confidence in demonstrating music lessons" also received a high mean rating (M = 4.48, SD = 0.66), indicating that exposure to instruments and laboratory-based instruction contributes to students' instructional self-efficacy. Confidence is a critical outcome for BEED students who are being prepared to teach music in elementary classrooms. This result aligns with Leenaars et al. [19], who found that teachers value music-based instructional tools but require sufficient training and resources to confidently integrate music into teaching. It also

supports Usman and Lesmana [16], who identified instructional materials and learning stimuli as significant predictors of learning motivation.

Taken together, the findings in Table 3 suggest that music laboratories and instruments provide substantial teaching–learning support by enhancing conceptual understanding, engagement, instructional alignment, and confidence among BEED students. In line with Harder [7], these results demonstrate that the effective use of educational resources, rather than availability alone, plays a decisive role in shaping learning experiences and perceived academic improvement. Thus, teaching–learning support emerges as a key mechanism through which music laboratories and instruments influence student satisfaction and readiness for elementary music teaching.

Table 2 Perceived Academic and Performance Improvement

Perceived Academic and Performance Improvement	Mean	SD	Interpretation
My performance in assessments for Teaching Music improved due to hands-on use of instruments.	4.33	0.73	**Agree**
My understanding of rhythm, melody, notation, and basic theory improved through laboratory activities.	4.37	0.74	**Agree**
Practical sessions helped enhance my competency in preparing music lessons for elementary pupils.	4.46	0.72	**Agree**
The availability of functional instruments motivated me to study more and aim for higher grades.	4.43	0.83	**Agree**
Overall, the music laboratory and instruments contributed to my academic improvement in the course.	4.41	0.86	**Agree**
Composite Mean	**4.40**		**Agree**

Table 4 presents the BEED students' perceptions of academic and performance improvement as influenced by the use of musical instruments and music laboratory facilities. The composite mean of 4.40, interpreted as Agree, indicates that students generally perceived substantial gains in their academic performance, musical understanding, instructional competence, and motivation as a result of laboratory-based music instruction. These findings suggest that music laboratories and functional instruments contribute meaningfully to learning outcomes beyond satisfaction alone.

Among the indicators, "Practical sessions helped enhance my competency in preparing music lessons for elementary pupils" obtained the highest mean (M = 4.46, SD = 0.72), highlighting the role of applied practice in developing pedagogical competence. This result affirms the value of experiential learning in teacher education, particularly in music where demonstration, rehearsal, and lesson preparation are essential competencies. Consistent with Tabuena [6], structured and research-based music activities were shown to significantly improve students' performance outcomes, while Asingwire *et al*. [5] reported that hands-on instrument use enhances engagement and learning in postsecondary music education.

Respondents also agreed that hands-on use of instruments improved their performance in assessments (M = 4.33, SD = 0.73) and that their understanding of rhythm, melody, notation, and basic theory improved through laboratory activities (M = 4.37, SD = 0.74). These findings support the premise that performance-based instruction strengthens both conceptual understanding and assessment outcomes. Prior research has demonstrated that well-equipped and properly utilized facilities facilitate deeper understanding and skill acquisition in practical subjects [1; 4]. Cheng [9] further emphasized that practice-oriented laboratory environments enhance musical cognition and creative engagement.

The statement "The availability of functional instruments motivated me to study more and aim for higher grades" yielded a high mean (M = 4.43, SD = 0.83), underscoring the motivational role of accessible and functional resources. Motivation is a key mediator between resources and learning outcomes. Studies by Usman and Lesmana [16] and Nurmayani *et al*. [15] established that the availability of instructional materials and learning stimuli significantly influences students' learning motivation, which in turn supports improved academic performance. This aligns with Harder [7], who noted that while resource availability contributes to learners' satisfaction and security, effective use and perceived value of resources drive learning and achievement.

Finally, students agreed that the music laboratory and instruments contributed overall to their academic improvement in the course (M = 4.41, SD = 0.86), reinforcing the cumulative impact of facilities, instructional practices, and motivation on learning outcomes. In line with Adebayo et al. [2] and Mulatya *et al*. [3], these results suggest that educational resources are most impactful when they are functional, accessible, and pedagogically integrated.

Overall, the findings in Table 4 indicate that music laboratories and musical instruments play a significant role in enhancing BEED students' perceived academic and performance improvement by strengthening assessment performance, conceptual understanding, instructional competence, and motivation. These results support the view that purposeful integration of facilities into teaching practices is essential for translating satisfaction into meaningful learning gains in teacher education programs.

Table 3 Relationship Between BEED Students' Level of Satisfaction with Musical Instruments and Music Laboratory Facilities and their Perceived Academic and Performance Improvement in Teaching Music in the Elementary Grades

Level of Satisfaction	Spearman Rho	Degree of Relationship	p-value	decision
Perceived Academic and Performance Improvement	0.864	High Relationship	0.001	Significant

*Adapted from Calmorin

An r ± 0.00 denotes zero correlation.

An r from 0.01 to ± 0.20 deals on negligible correlation

An r from ± 0.21 to ± 0.40 denotes low or slight relationship.

An r from ± 0.41 to ± 0.70 indicates marked or moderate correlation.

An r from ± 0.71 to ± 0.90 shows high relationship.

An r from ± 0.91 to ± 0.99 denotes very high correlation.
An r ±1.0 indicates perfect relationship.

Table 3 presents the relationship between BEED students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement in Teaching Music in the Elementary Grades using Spearman's rho correlation. The computed correlation coefficient of $\rho = 0.864$ indicates a high positive relationship, while the p-value of 0.001 signifies that the relationship is statistically significant. This result leads to the rejection of the null hypothesis and suggests that students who report higher satisfaction with music laboratory facilities and instruments also tend to report greater perceived academic and performance improvement.

The strength of the relationship falls within the range interpreted as a high relationship based on Calmorin's correlation scale, indicating that satisfaction and perceived improvement move closely together. This finding implies that satisfaction with availability, quality, accessibility, and teaching–learning support provided by music laboratories is not merely an affective response but is strongly associated with students' perceived gains in knowledge, skills, confidence, and academic performance. Such a result reinforces the premise that instructional facilities play a central role in shaping meaningful learning experiences, particularly in performance-based disciplines such as music.

This finding is consistent with earlier studies showing that educational resources significantly influence learner outcomes when they are accessible, functional, and purposefully integrated into instruction. Abidoye *et al*. [1] and Mbeya *et al*. [4] found that well-equipped and properly maintained facilities enhance students' achievement in practical lessons. Similarly, Mulatya *et a*l. [3] reported a strong and significant relationship between learning resource availability and learner outcomes, emphasizing that resources form the backbone of effective instruction. Although Adebayo *et al*. [2] cautioned that resources alone may yield modest effects, the present finding suggests that in a specialized instructional context such as music education, students' satisfaction with facilities may more directly translate into perceived learning gains.

The strong correlation also aligns with Harder [7], who distinguished between resource availability and resource usage, arguing that satisfaction and learning outcomes improve when learners perceive resources as meaningful and supportive of their learning process. In the present study, the high correlation suggests that BEED students not only have access to music laboratories and instruments but also perceive these resources as effectively supporting instructional strategies, practice activities, and assessment preparation. This interpretation is further supported by Tabuena [6] and Asingwire *et al*. [5], who demonstrated that hands-on engagement with musical instruments enhances learning outcomes and performance in music-related courses.

Moreover, the relationship observed in Table 3 underscores the motivational dimension of satisfaction. Usman and Lesmana [16] and Nurmayani et al. [15] emphasized that access to instructional materials and supportive learning environments significantly influences students' motivation, which in turn contributes to improved academic performance. The high correlation suggests that satisfaction with music laboratories may function as a motivating factor that encourages greater engagement, practice, and effort, thereby reinforcing perceived academic and performance improvement.

Overall, the results in Table 3 indicate that BEED students' satisfaction with musical instruments and music laboratory facilities is strongly and significantly associated with their perceived academic and performance improvement in teaching music. This finding highlights the importance of maintaining high-quality, accessible, and instructionally aligned music laboratories in teacher education institutions, as these facilities serve not only as physical resources but also as key contributors to effective learning and professional preparation.

Qualitative Findings: Students' Experiences in Using Music Laboratories and Musical Instruments

This section presents the qualitative findings derived from BEED students' responses regarding their experiences in using music laboratories and musical instruments in the course Teaching Music in the Elementary Grades. Thematic analysis revealed four major themes: (1) hands-on experiential learning as the most helpful aspect, (2) limitations related to instrument availability and time, (3) contribution of facilities to academic performance and teaching confidence, and (4) suggested improvements to enhance learning experiences.

Theme 1: Hands-on Experiential Learning as the Most Helpful Aspect

The dominant theme that emerged from the responses was the importance of hands-on experience with real musical instruments. Students consistently emphasized that being able to touch, play, and explore actual instruments such as piano, guitar, keyboards, recorders, percussion instruments, Orff instruments, and rhythm tools significantly enhanced their understanding of music concepts. Many respondents highlighted that experiential learning helped them better grasp rhythm, melody, harmony, tempo, and dynamics, making abstract concepts more concrete and memorable.

Several students noted that seeing, hearing, and playing instruments enabled deeper learning compared to purely theoretical instruction. Others emphasized that guided demonstrations by instructors, combined with hands-on practice, strengthened their ability to translate music concepts into classroom-ready teaching strategies. These findings align with Tabuena [6], who found that practice-based music instruction significantly improved students' performance, and with Asingwire *et al*. [5], who reported that hands-on instrument use enhanced engagement and learning outcomes in postsecondary music education. Cheng [9] similarly emphasized that music laboratories serve as critical environments for experiential learning, creativity, and performance development.

Theme 2: Limitations Related to Instrument Availability, Time, and Technical Issues

Despite the positive experiences, students identified several limitations and challenges in using the music laboratory. The most frequently cited challenge was the limited number of instruments, which often required students to share and wait

for their turn, reducing individual practice time. Many respondents also mentioned limited laboratory time, which constrained opportunities to fully practice or master certain instruments, particularly for beginners with no prior musical background.

Other challenges included old, damaged, or poorly maintained instruments, inconsistent sound quality, noise during group practice sessions, and occasional difficulty in using unfamiliar instruments. First-time learners expressed that lack of prior exposure increased the learning curve and required additional time and guidance. These concerns echo findings by Fakunle [8], who noted that availability alone does not ensure effective utilization of learning resources, and by Niyonsenga and Wanderley [13], who emphasized that maintenance and reliability are crucial for sustained use of music-related equipment. Similar constraints were also reported by David [18], who found that resource quantity and condition affect the quality of music learning experiences.

Theme 3: Contribution to Academic Performance and Teaching Confidence

Another prominent theme centered on the positive contribution of music laboratories to students' academic performance and confidence in teaching music. Respondents widely agreed that laboratory-based instruction improved their performance in assessments, demonstrations, and practical tasks. Students reported that hands-on practice enabled them to understand lessons more deeply, recall content more easily, and apply musical concepts effectively during evaluations.

Importantly, many students emphasized that using actual instruments increased their confidence in teaching music, particularly in demonstrating lessons, guiding activities, and managing classroom instruments for elementary pupils. Several respondents stated that repeated practice reduced anxiety, improved self-efficacy, and prepared them for real classroom situations. These findings are consistent with Usman and Lesmana [16] and Nurmayani et al. [15], who emphasized the role of instructional materials and learning stimuli in enhancing motivation and confidence. Harder [7] further explained that satisfaction and learning outcomes improve when learners perceive resources as meaningful and supportive of their learning process.

Theme 4: Suggested Improvements to Enhance Learning Experiences

In terms of suggested improvements, students consistently recommended increasing the number and variety of functional instruments to allow individual or simultaneous practice. Regular maintenance and repair of existing instruments were also frequently mentioned to ensure proper sound quality and effective learning. Many respondents suggested extending laboratory hours or providing additional practice schedules to give students more time to develop skills, especially beginners.

Some students proposed integrating modern digital music tools, audio equipment, and music applications to support contemporary music instruction. Others recommended incorporating more demonstrations, guided workshops, peer mentoring, and simulated teaching activities to strengthen instructional readiness. These suggestions align with Acquilino and Scavone [10] and Sullivan *et al.* [14], who highlighted the need for well-supported, adaptable, and pedagogically integrated music technologies, as well as with Leenaars *et al*. [19], who found that teachers desire more training and resources to maximize music instruction effectiveness.

6. CONCLUSION

This study examined the level of satisfaction of BEED students with musical instruments and music laboratory facilities and determined their relationship with perceived academic and performance improvement in the course Teaching Music in the Elementary Grades. The integration of quantitative and qualitative findings provides a comprehensive understanding of how learning resources influence students' musical learning experiences, skill development, and teaching confidence.

The descriptive results indicate that BEED students demonstrated a high level of satisfaction with the availability and accessibility of musical instruments and music laboratory facilities. The consistently high mean ratings suggest that access to functional instruments, organized scheduling, and an accessible laboratory environment supported regular participation in hands on musical activities. Likewise, students rated the quality and condition of facilities positively, confirming that a well equipped laboratory and a supportive physical environment contributed to effective engagement in music learning activities.

Findings related to teaching learning support further highlight the instructional value of music laboratories. Students agreed that access to instruments enhanced their understanding of musical concepts, increased lesson engagement, and strengthened their confidence in demonstrating music activities appropriate for elementary learners. These results underscore the role of experiential learning in music education, where practical application supports deeper conceptual understanding.

In terms of perceived academic and performance improvement, students reported that laboratory based activities improved their performance in assessments, strengthened their understanding of rhythm, melody, and basic music theory, and increased motivation to perform well in the course. The presence of functional instruments enabled students to actively practice skills that are essential for teaching music effectively in elementary classrooms.

The correlational analysis revealed a high and statistically significant relationship between students' level of satisfaction with musical instruments and music laboratory facilities and their perceived academic and performance improvement. This finding confirms that students who reported higher satisfaction with available resources also experienced greater learning gains and confidence in teaching music, emphasizing the strong association between learning environments and educational outcomes.

Qualitative findings further supported the quantitative results by providing insights into students' actual experiences in the music laboratory. Students highlighted hands on interaction with instruments as the most beneficial aspect of learning, noting that touching, playing, and exploring instruments

made musical concepts clearer and more memorable. At the same time, students acknowledged challenges such as limited instrument availability, time constraints, and difficulties faced by beginners. Despite these challenges, the overall experiences shared by students reflected positive learning outcomes, increased confidence, and stronger preparation for teaching music in elementary settings.

7. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are proposed to further enhance the teaching and learning of Teaching Music in the Elementary Grades among BEED students:

First, higher education institutions offering teacher education programs should continue to strengthen the provision of musical instruments and music laboratory facilities. Maintaining adequate quantities of functional instruments and ensuring their accessibility can sustain students' engagement in hands on learning activities, which have been shown to significantly contribute to academic performance and teaching confidence.

Second, regular inspection, maintenance, and upgrading of musical instruments and laboratory equipment should be institutionalized. Ensuring that instruments are in good condition will support accurate sound production and effective skill development, particularly for beginners who rely heavily on guided practice to build foundational competencies.

Third, program administrators and faculty members may consider extending laboratory access hours or providing additional scheduled practice sessions. Increased opportunities for practice can help address time constraints identified by students and allow for deeper skill mastery, especially for those with limited prior musical experience.

Fourth, music instructors are encouraged to integrate more structured, hands on instructional strategies within laboratory sessions. Guided demonstrations, peer supported practice, and performance based activities can further strengthen students' understanding of musical concepts and enhance their readiness to teach music in elementary classrooms.

Fifth, the incorporation of basic digital music tools and audio visual resources may complement traditional instruments. Integrating simple music applications, audio systems, and instructional technologies can enrich learning experiences and align music instruction with contemporary classroom practices.

Finally, future researchers are encouraged to expand similar studies by including other teacher education institutions, using longitudinal designs, or incorporating objective academic performance measures. Such investigations may provide deeper insights into the long term impact of music laboratory resources on teaching competence and professional readiness.

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