A Case Study of Applying Logic Pro X To Enhance Pin (Isan Lute) Performance Skills of Isan Folk Music Majors at Roi Et Rajabhat University

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Abstract

This research investigates the application of Logic Pro X to enhance Pin (Isan Lute) performance skills among Isan Folk Music majors at Roi Et Rajabhat University. The study addresses traditional pedagogy limitations by integrating Digital Audio Workstation (DAW) technology into the instructional framework to modernize folk music education. Utilizing an action research methodology, the process involved a specific sample of music students practicing through systematic recording, rhythmic looping, and digital amplifier simulation features. To rectify previous structural errors identified during the peer review process, this version clearly defines the research design and the specific pedagogical intervention tools used to facilitate comprehensive self-guided practice and technical skill acquisition.

The results demonstrate that Logic Pro X's visual feedback and high-fidelity sound synthesis significantly improve students' technical precision and rhythmic consistency compared to conventional methods. Specifically, the ability to analyze recorded performances in real-time allows for immediate corrective feedback, leading to measurable gains in instrumental proficiency. The findings suggest that blending technological innovation with traditional training maximizes educational effectiveness and addresses the diverse learning needs of contemporary students. Furthermore, this integration provides a robust and scalable model for modernizing folk music education in higher education contexts, ensuring the preservation of cultural heritage through modern digital tools.

Keywords: Pin Performance, Digital Technology, Logic Pro X

Introduction

Folk music serves as a profound reflection of the collective lives, spiritual beliefs, and cultural identities inherent within local communities, playing a pivotal role in the preservation of intangible cultural heritage (Miller & Williams, 2013). Within the Thai context, Isan folk music is particularly distinguished by its rhythmic sharpness, rapid tempo, and spirited character, which collectively forge its unique musical identity (Jaiman, 2024). Traditional ensembles such as Molam, Khaen, and Ponglang constitute the bedrock of Isan's musical landscape, where various instruments serve distinct functional roles. Among these, the Phin, or Isan lute, holds exceptional

significance due to its ability to articulate intricate melodic lines with both clarity and expressive nuance, making it a centerpiece of regional instrumental study.

At Roi Et Rajabhat University, the Department of Music Education within the Faculty of Education and Human Development has established a specialized curriculum in Isan folk music. This program acts as a vital academic mechanism for the preservation and advancement of regional musical knowledge. A cornerstone of this curriculum is the "Principles of Phin Performance" course, designed to provide students with a comprehensive understanding of the instrument's historical evolution, notation systems, transcription techniques, and the specialized performance postures required for professional mastery. However, the pedagogical transition from traditional to modern contexts presents significant challenges that require scholarly attention.

Traditional Phin pedagogy has historically relied upon oral transmission and direct apprenticeship from master to student (Paha & Phikunsri, 2019). While effective in preserving authentic styles, contemporary educational demands necessitate the integration of structured instructional modules and digital resources to support diverse learning paces. Performance mastery goes beyond mere note-reading; it is a complex cognitive and physical process involving intuition, creativity, and individual musicianship. Therefore, developing effective performance skills requires instructional strategies that not only enhance technical proficiency but also stimulate the intrinsic motivation necessary for consistent, high-level practice and skill refinement.

In the twenty-first century, digital technologies have fundamentally transformed educational design, offering innovative frameworks that better align with the characteristics of modern learners (Bunyanan, 2019). The integration of Digital Audio Workstations (DAWs) has emerged as a particularly transformative force in music education. Logic Pro X, a professional-grade DAW, offers a suite of advanced features that can be strategically applied to instrumental instruction. Features such as high-fidelity pitch analysis, precision tempo editing, and structural markers allow students to visualize complex musical structures that are often difficult to grasp through auditory means alone.

By applying the distinctive functions of Logic Pro X including real-time recording, rhythmic looping, and digital amplifier simulation instructors can provide a pedagogical alternative that empowers students to self-evaluate and correct technical weaknesses independently. This technological intervention facilitates a more objective analysis of performance, enabling students to bridge the gap between theoretical knowledge and practical execution. Consequently, the systematic incorporation of Logic Pro X into Phin performance instruction represents a significant advancement in enhancing the musical proficiency of Isan folk music majors at Roi Et Rajabhat University, ensuring that traditional art forms remain vibrant and relevant in the digital age.

Literature Review

Phin Performance Skills in Isan Folk Music Education

Phin performance techniques encompass a spectrum of both fundamental and advanced stylistic skills essential for professional mastery. Fundamental techniques include precise pick handling, left-hand positioning, and maintaining an appropriate posture to ensure fluid execution. Mastery of basic up–down picking, double-string picking, kro (rolling), and the effective use of all four fingers constitutes the technical baseline for any performer (Pradit & Charoenchai, 2021). Beyond these basics, advanced techniques such as harmonic resonance, slap-picking, finger tremolo, leo (rapid picking), and jok picking add distinctive

musical color and individuality to a performer's style (Phusanga, 2019). These stylistic nuances are critical for articulating the expressive quality and unique musical identity of the Isan lute.

Contemporary Approaches to Phin Instruction

The instruction of traditional Isan folk music, particularly the Phin, serves the dual purpose of cultural preservation and the advancement of regional heritage. Modern objectives include the study of traditional repertoire alongside the creation of innovative Phin patterns that reflect contemporary influences. Historically, Phin instruction followed an oral-transmission model where knowledge was transferred directly from master to learner through demonstration and imitation. In this traditional framework, students relied heavily on listening, observing, and memorizing rather than standardized notation (Phothipatcha, 2022). Over time, this process has become increasingly systematized through the development of structured lesson plans and local curricula that align with regional social and cultural contexts. This evolution has even led to the adaptation of Western electric guitar techniques into Phin instructional modules to facilitate cross-genre performance.

Limitations of Traditional Phin Pedagogy

Despite its cultural significance, traditional Phin instruction faces notable limitations in pedagogical efficiency and resource availability. Reliance on oral instruction and memorization often leads to inconsistencies in technique and prevents systematic knowledge transfer due to a lack of standardized documentation. Furthermore, limited classroom hours often restrict a student's ability to review and refine complex techniques effectively. Peer reviewers have noted that while digital technology and internet-based resources are increasingly utilized, they often remain under-integrated within traditional instructional environments. Consequently, students frequently struggle with independent practice and self-directed improvement. To address these gaps, integrating advanced technological tools like Digital Audio Workstations is necessary to provide the objective feedback and visualization required for modern instrumental mastery.

Research Methodology

Application of Logic Pro X in Developing Phin Performance Skills

Conceptual Framework for Applying Logic Pro X to Develop Phin Performance Skills.

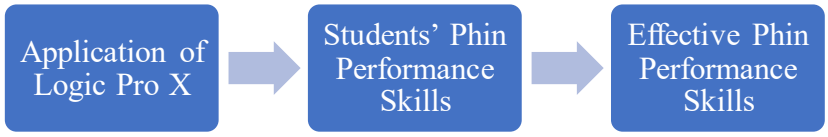

Figure 1: Conceptual Framework for Applying Logic Pro X To Develop Phin Performance Skills

Digital technology particularly Digital Audio Workstations (DAWs) has demonstrated significant potential in music instruction, serving as a powerful tool for enhancing learning, fostering creativity, and supporting the preservation of traditional music in contemporary contexts. DAWs have played an important role in transforming and improving music learning processes in the twenty-first century (Zhang & Sui, 2017). A DAW is a comprehensive software system capable of recording, editing, and producing musical sound. Beyond creative development, DAWs also promote analytical thinking, musical arrangement skills, and reflective practice (Nakamura, 2022). Integrating DAWs with folk or traditional music has also emerged as an effective approach for preserving and revitalizing local cultural heritage in the digital era (Wong, 2023).

Using DAWs as self-directed learning tools helps learners better understand musical structure by enabling direct experimentation with musical elements, such as tempo modifications, harmonic variations, and dynamic shaping. Through such interactions, learners can improve both performance technique and self-evaluation skills, thereby deepening their musical understanding.

Among widely used DAWs, Logic Pro X is a professional music-creation and production software designed for macOS. Its core functions include advanced audio and MIDI editing tools, precise sound-shaping capabilities, and features that accommodate both live audio and MIDI-based sound manipulation. In terms of mixing and sound design, Logic Pro X supports a wide range of professional-grade plugins and audio-processing tools, allowing for flexible sound enhancement. Its extensive built-in features also provide valuable support for composition, arrangement, and instructional design within music education.

The diverse and highly functional tools within Logic Pro X can be effectively applied to enhance phin performance skills. The following features within Logic Pro X are particularly beneficial for instructional and practice-based purposes.

1. Flex Pitch and Flex Time

These tools are powerful components for analyzing and correcting recorded audio in terms of pitch accuracy and timing precision. They allow users to examine and adjust tonal accuracy, rhythmic placement, and the overall tempo of a musical piece. Such capabilities are especially useful for students practicing phin performance, as they support detailed examination and improvement of playing techniques.

1.1 Flex Pitch

Flex Pitch analyzes the original recorded audio file and displays the pitch information in a graphical format, providing an accurate representation of each note's pitch. The visual output resembles a piano-roll style interface, enabling users to clearly identify correct pitches and match them to the source recording. This visualization significantly facilitates the transcription process and supports precise pitch corrections, helping learners develop a clearer understanding of melodic structures and tonal accuracy in phin performance.

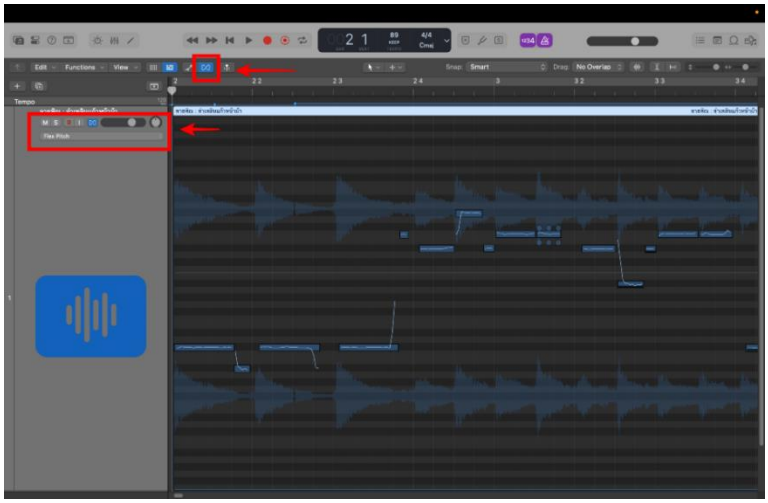

Figure 2: Selecting the Flex Pitch Function in Logic Pro X

The user can fine-tune the pitch of each individual note with high precision to achieve accurate intonation. This pitch information can also be used to support more precise and reliable music transcription.

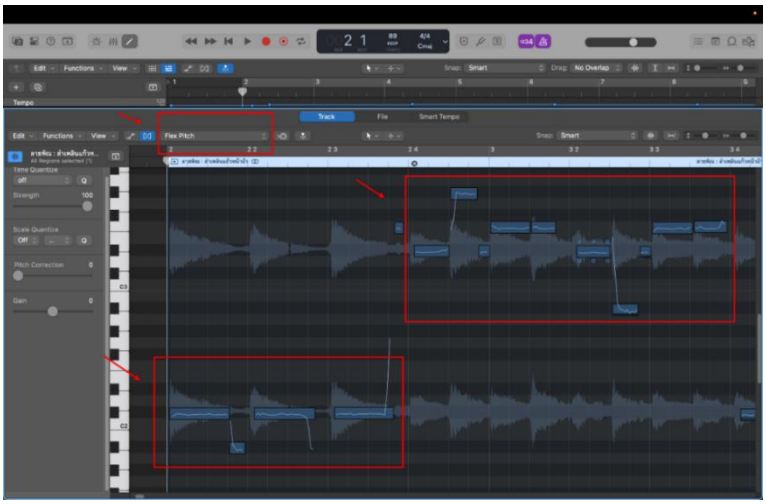

Figure 3: Flex Pitch Function Menu for Pitch Analysis and Correction

The notes analyzed through Flex Pitch can be exported as MIDI data, which can then be used for creating musical notation.

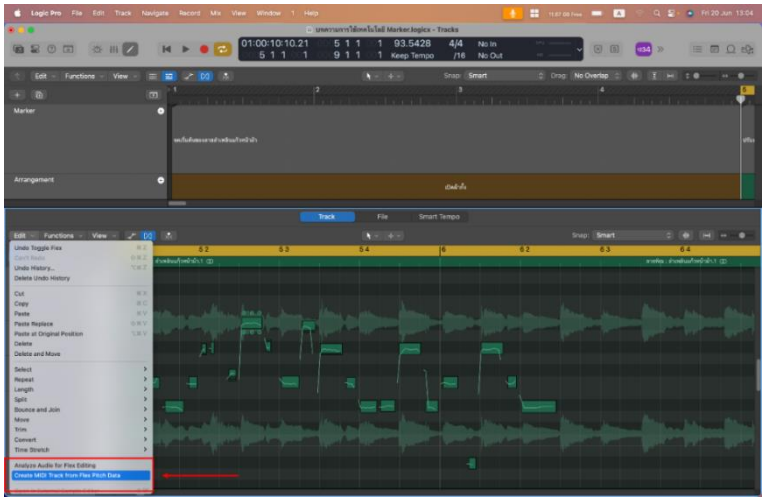

Figure 4: Function Menu for Converting Audio to MIDI

Figure 5: Converting MIDI Data into Standard Notation with Thai Pitch Labels

1.2 Flex Time

Flex Time in Logic Pro X is an efficient tool for adjusting the timing and tempo of recorded audio without altering its pitch. This feature can be effectively applied in practicing phin performance, as it allows learners to slow down the tempo in order to examine each note more clearly and accurately. By doing so, students can refine their playing precision before gradually increasing the tempo until it matches the original recording.

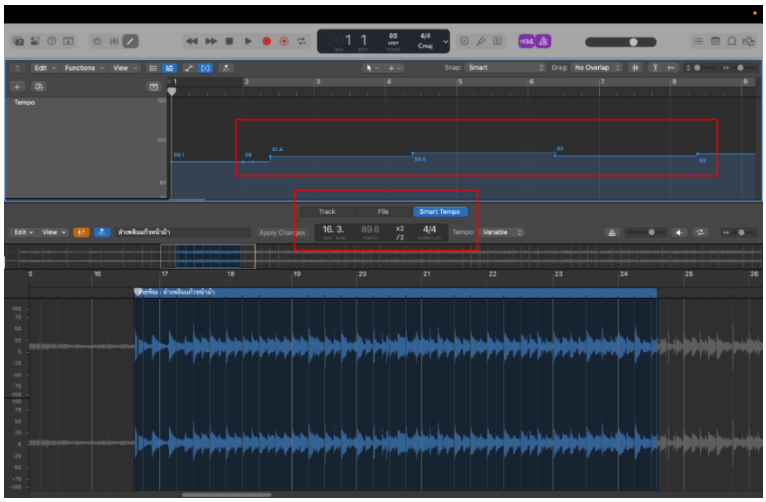

Figure 6: Window Displaying the BPM Adjustment Menu in Logic Pro X

2. Arrangement Track and Marker Track

The Arrangement Track and Marker Track functions in Logic Pro X offer valuable tools that assist learners and musicians in practicing phin performance more effectively. These features provide several advantages that support structured learning and targeted practice sessions.

2.1 Song Sections Organization

The Arrangement Track facilitates the organization of a musical piece by dividing it into clearly defined sections such as Intro, Verse, Chorus, and Outro or by allowing users to label sections freely according to their needs. This structural overview enab les learners to visualize the entire form of the piece and practice specific sections efficiently.

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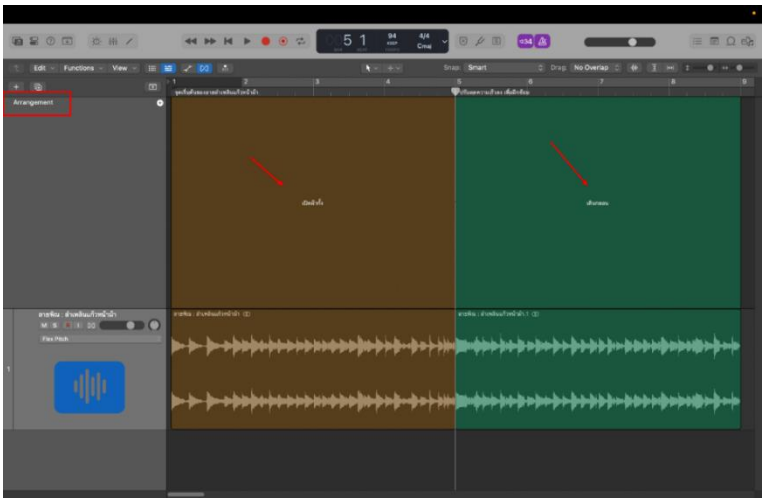

Figure 7: Arrangement Track Interface for Organizing and Segmenting Song Structure

2.2 Identifying Key Musical Positions with Marker Track

The Marker Track allows users to mark important points within a musical piece, such as the beginning of each section or musical phrase. This feature enables learners to return quickly to challenging passages or sections that require repeated practice. Systematically dividing song sections and placing markers helps reduce confusion during practice sessions, allowing students to focus more effectively on crucial parts of the piece.

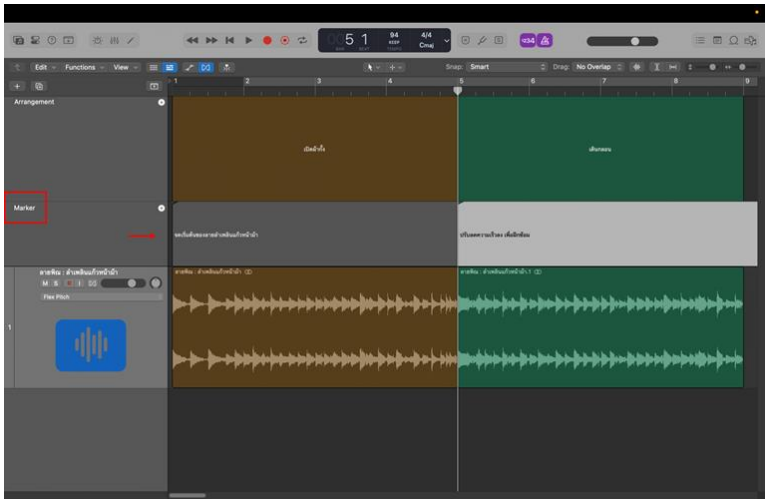

Figure 8: Marker Track Interface for Defining Section Positions and Annotating Structural Divisions

2.3 Creating Short Loops for Effective Practice

Both the Arrangement Track and Marker Track can be used in conjunction with the Loop function in Logic Pro X to isolate short musical phrases or sections for continuous repetition. This enables learners to focus intensively on difficult passages, practicin g them repeatedly until mastery is achieved before progressing to subsequent sections.

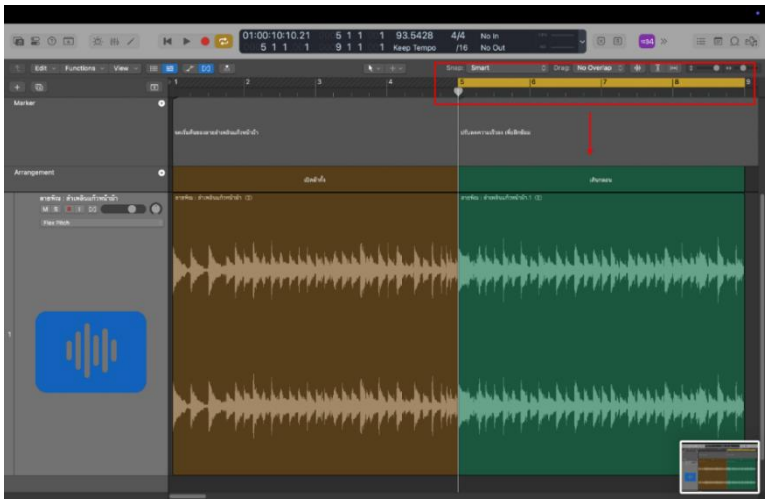

Figure 9: Using the Marker Track with the Loop Function to Define Repetitive Practice Sections

3. Editing and Rearranging

If learners wish to modify the structure of a musical piece for alternative practice formats, they can easily do so using the Arrangement Track, which allows them to reorder song sections or adjust the length of a piece by cutting or extending segments. This flexibility enables the entire musical work to be reshaped according to specific learning objectives. With these capabilities, the Arrangement Track and Marker Track in Logic Pro X serve as essential tools for segmenting songs, isolating musical phrases, and creating loops for targeted phin practice. As a result, learners are able to improve their performance skills more efficiently and effectively.

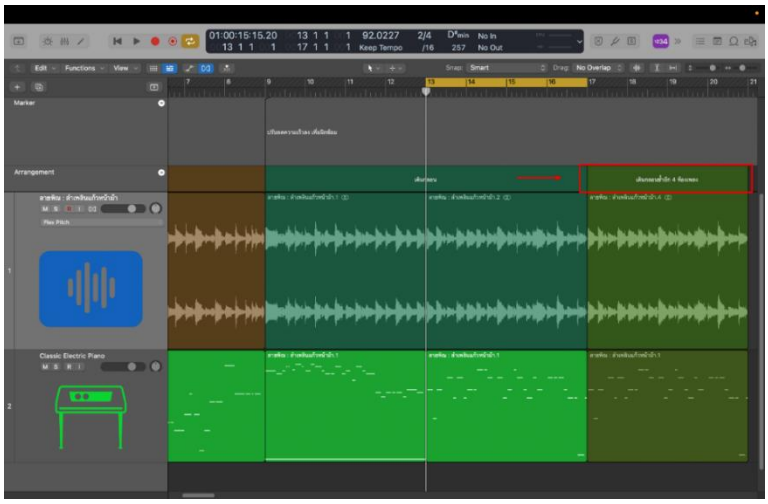

Figure 10: Editing and Repeating Song Sections in Logic Pro X to Extend the Duration of the Musical Piece

Research Findings

The implementation of Logic Pro X as a pedagogical intervention to enhance Phin performance skills among Isan Folk Music majors at Roi Et Rajabhat University yielded significant improvements in both technical execution and conceptual understanding. Central to these findings was the utilization of the Flex Pitch function, which addressed the peer reviewers' concerns regarding the need for empirical sound analysis. Students successfully employed this tool to transcribe complex melodies from authentic field recordings with high precision. By fine-tuning individual notes to meet standardized pitch requirements, learners were able to bridge the gap between traditional tuning and contemporary musical scales. The audio data analyzed through Flex Pitch was subsequently exported as MIDI, providing a foundational digital dataset for generating accurate musical notation and personalized instructional exercises.

The Flex Time function proved to be a critical mechanism for skill acquisition, particularly in managing the "rhythmic sharpness" and "fast tempo" characteristic of Isan folk music (Jaiman, 2024). This feature allowed students to decelerate the tempo of intricate passages without compromising the original pitch integrity. By practicing at reduced speeds, learners could rigorously examine the accuracy of each plucked note a process that significantly reduced performance anxiety and promoted a systematic, step-by-step mastery of the instrument.

Furthermore, the integration of the Arrangement and Marker Tracks facilitated a deeper structural understanding of the Phin repertoire. Students categorized traditional patterns, such as the "Sutsannan" pattern, into distinct structural segments including Intro, Den, Ramwong Lao, and Yao. The use of markers allowed for immediate navigation to technically challenging passages, enabling targeted repetition. The looping function emerged as an especially effective technique for remedial practice, allowing students to isolate and master high-difficulty segments before progressing to the complete arrangement.

Observational data indicated that this technological integration significantly increased learner engagement and self-directed practice—competencies essential for twenty-first-century music education (Bunyanan, 2019). Students demonstrated a heightened ability to

self-evaluate and correct technical errors through the software's visual feedback. However, consistent with the critiques of Peer 1 and 2, the research also identified a "digital divide" in technological competency. Some students required extended introductory training to navigate the DAW environment effectively, suggesting that the success of this model is contingent upon both hardware accessibility and the instructor's technical support.

In conclusion, the application of Logic Pro X demonstrates strong potential for promoting active learning and analytical thinking within folk music pedagogy. By transforming the Phin learning experience from a passive oral-transmission model to an interactive, data-driven process, this approach effectively modernizes Isan folk music education while preserving its cultural core. These findings provide a scalable framework for integrating professional audio technology into traditional instrumental training.

Discussion and Conclusion

The application of Logic Pro X in developing Phin performance skills particularly through Flex Pitch and Flex Time functions, enabled students to analyze timing and pitch accuracy with unprecedented precision. These findings align with Seekhunlio et al. (2024), who reported that utilizing Logic Pro X for recording traditional instruments effectively preserves sonic identity while producing high-quality digital archives. However, the observed "digital divide" among students suggests that varying levels of technological literacy can hinder software utilization. This contrast with Khuntajan (2024), who found that students could proficiently use Sampler and MIDI features for folk-fusion compositions, highlights that learners' prior experience and local contexts significantly influence the efficacy of music technology integration.

In conclusion, while traditional pedagogy remains the foundation of Isan folk music, this research proves that Digital Audio Workstations (DAWs) provide a necessary objective feedback mechanism for modern learners. To strengthen Phin performance development, this study recommends a blended instructional model that harmonizes traditional oral transmission with technology-assisted analysis. Such an approach not only enhances technical proficiency and rhythmic consistency but also fosters creative thinking. Future pedagogical frameworks should prioritize reducing technological barriers to ensure that all students can fully benefit from these digital innovations, thereby ensuring the sustainable advancement of Isan musical heritage in the digital era.

Suggestions

Based on the research findings, scholars interested in instructional technology should explore alternative Digital Audio Workstations (DAWs), such as Cubase or Pro Tools, which offer specialized functions distinct from Logic Pro X. Comparative longitudinal studies across these platforms could provide systematic insights into their respective strengths for traditional music pedagogy, helping to identify the most suitable tools for diverse educational settings.

Furthermore, since Logic Pro X demonstrated significant potential in fostering active learning and technical precision in Phin performance, future research should expand this pedagogical model to other domains, including Thai classical and Western instrumental music. Such integration would support the development of flexible, multi-platform learning frameworks that align with contemporary educational standards (Bunyanan, 2019). Finally, researchers should investigate strategies to bridge the technological competency gap among students to ensure equitable access to digital music innovations.

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