Application of Acoustic Wall Materials for Enhancing Spatial Experience in an Audio Production Studio at UiTM Puncak Perdana

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ABSTRACT

Acoustic performance is a critical factor in the design of audio production studios, directly influencing sound clarity, monitoring accuracy, and user spatial experience. Recording, editing, and mixing spaces require carefully planned acoustic environments to ensure balanced sound distribution and controlled reverberation. However, many academic studios experience acoustic deficiencies due to sub-optimal selection and placement of wall materials, leading to localized echoes and poor frequency control. This study investigates user perceptions regarding the application of acoustic wall materials and their impact on spatial experience within the Audio Production Studio at UiTM Puncak Perdana. Employing a quantitative survey design (N = 42) combined with site observations, the research evaluates how existing wall treatments influence sound clarity, user comfort, and zone-specific functionality. Findings reveal that while existing treatments generally improve mid-to-high frequency clarity and user comfort, significant acoustic spatial inconsistencies remain between recording, editing, and monitoring zones. The paper provides targeted design recommendations for strategic material zoning to optimize both technical monitoring accuracy and spatial comfort in academic audio environments.

Keywords: Architectural Acoustics, Wall Materials, Spatial Experience, Audio Production Studio, User Perception

INTRODUCTION

Background of the Study

Architectural acoustics explores how sound behaves inside enclosed spaces and provides strategies for designers to optimize these environments for peak audio performance. At its core, the discipline addresses sound transmission, speech intelligibility, room modes, and acoustic isolation where all of which are essential for professional recording environments (Everest & Pohlmann, 2023). In commercial recording studios, intentional acoustic planning dictates the clarity, tonal balance, and overall fidelity of captured audio. Choices in architecture, layout, and interior surface treatments from floor composition to specialized wall materials ultimately dictate a space's acoustic response (Henke, 2022).

Current acoustic research continues to advance with innovative materials and modern fabrication techniques. Recent developments in additive manufacturing, particularly 3D-printed micro-perforated panels (MPPs) and engineered acoustic metamaterials, have unlocked new possibilities for targeted sound absorption (Du et al., 2021; Dogu, 2024). These micro-structured and porous materials can be fine-tuned to attenuate specific frequency bands, giving acoustic designers precise control over reverberation times without over-dampening high frequencies (Ikpekha & Simms, 2025). By blending time-tested acoustic principles with customizable

geometries, contemporary architectural acoustics is advancing toward greater precision, efficiency, and spatial functionality.

This study, titled Application of Acoustic Wall Materials for Enhancing Spatial Experience in an Audio Production Studio at UiTM Puncak Perdana, builds on these theoretical and material foundations to evaluate practical design implementations within an academic audio production environment.

Problem Statement

Audio production studios are engineered to capture, monitor, and refine sound with high fidelity, requiringaccurate sound reproduction for recording, mixing, and editing workflows. However, many existing studio facilities suffer from acoustic deficiencies caused by the suboptimal selection and placement of acoustic wall materials. Common issues include persistent flutter echoes that blur sound transients, uneven sound pressure distribution that creates "hot spots" and dead zones, and unmanaged low-frequency buildup that degrades bass definition (Everest & Pohlmann, 2023). These acoustic flaws force audio engineers and students to compensate through artificial post-processing or monitoring adjustments, compromising overall workflow efficiency and final production quality.

A major cause of these issues is the arbitrary application of wall treatments without holistic planning. For instance, applying excessive absorptive material, such as overly thick foam panels, which can make a room feel unnaturally "dead," stripping away natural reverberation and vitality essential for creative work. Conversely, insufficient or poorly chosen reflectors leave spaces too live and reverberant, amplifying unwanted reflections that smear instrument separation. This imbalance not only degrades technical sound quality but also erodes the user's spatial experience, turning an inspiring creative hub into a fatiguing, disorienting environment.

Furthermore, audio production facilities are multi-zonal spaces with distinct acoustic requirements. Recording areas demand targeted absorption and diffusion to isolate sound sources without unwanted spill, whereas monitoring and editing stations require controlled reflections and flat frequency response for accurate mixing decisions. Applying uniform wall finishes such as generic paint or identical acoustic foam across all walls and fails to accommodate these functional differences, leading to a mismatched space that hinders both workflow and user comfort.

At UiTM Puncak Perdana's audio production studio, these challenges are particularly acute, mirroring broader trends in educational and commercial facilities. Budget constraints, lack of specialized expertise, and reliance on off-the-shelf solutions exacerbate the problem, resulting in subpar performance that limits student training and professional output. This study tackles these shortcomings head-on by examining strategic applications of acoustic wall materials tailored to the UiTM Puncak Perdana studio. Drawing from evolving principles in architectural acoustics like those blending traditional design with innovative 3D-printed absorbers; it aims to deliver sharper sound clarity, optimal balance across frequencies, and a revitalized spatial experience.

Research Aim

To investigate strategic applications of acoustic wall materials in the UiTM Puncak Perdana audio production studio, enhancing spatial experience to create a more effective, user-cantered environment for recording, mixing, and editing.

Research Objective

i. To investigate the role of acoustic wall materials in influencing spatial experience within an audio production studio.
ii. To study the types and characteristics of acoustic wall materials and their application in different studio zones.
iii. To evaluate the effectiveness of acoustic wall material applications in improving acoustic performance and enhancing spatial experience in an audio production studio at UiTM Puncak Perdana.

Research Question

i. How do acoustic wall materials influence spatial experience in an audio production studio?
ii. What types of acoustic wall materials and treatments are most effective for enhancing spatial experiences?
iii. How effective are acoustic wall material applications in improving acoustic performance and
iv. spatial experience in an audio production studio at UiTM Puncak Perdana?

LITERATURE REVIEW

Architectural acoustics in recording and editing spaces focuses on how room design and surface materials manage sound to achieve high audio fidelity and clarity (Henke, 2022). These spaces require proper management of sound reflection, absorption, and diffusion to reduce echo and improve listening quality (Everest & Pohlmann, 2023). Good acoustic design helps users hear sound more accurately during recording, editing, and monitoring (Dogu, 2024). Modern recording rooms are also designed to be flexible, allowing different audio activities to happen in one space (Henke, 2022). Therefore, the use of suitable acoustic materials and spatial planning is important to create a balanced environment that supports both sound quality and user experience (Ikpekha & Simms, 2025).

Acoustic Control in Recording and Editing Room

Sound Absorption and Reflection Control

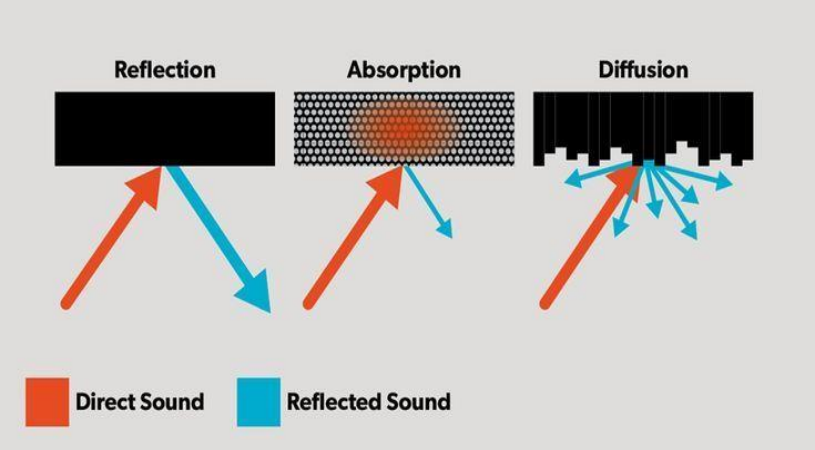

Figure 1.0 Sound absorption, reflection, and diffusion on different wall surfaces

Sound absorption and reflection control involve using specific acoustic surface treatments to dictate how sound waves interact with room boundaries (Everest & Pohlmann, 2023). Absorptive materials (such as acoustic foam, porous fiber panels, or engineered micro-perforated absorbers) dissipate sound energy to minimize reverberation and eliminate standing echoes (Du et al., 2021; Yang et al., 2020). Conversely, reflective surfaces redirect sound energy, which helps maintain room liveliness and spatial presence when positioned correctly (Henke, 2022). Diffusive materials scatter reflected sound evenly across a room without removing its energy, preventing harsh reflections while preserving acoustic naturalness (Cox & D'Antonio, 2024). Achieving an intentional balance among these three mechanisms prevents sound distortion during recording and monitoring (Ikpekha & Simms, 2025).

Core Characteristics

• Controls unwanted echo and reverberation: Minimizes unwanted room flutter and long reverberation times.
• Improves sound clarity and accuracy: Improves vocal and instrument definition for accurate sound tracking and monitoring.
• Ensures balanced sound distribution within the space: Prevents localized sound buildup and acoustic hot spots across the room.

Spatial Requirements

• Acoustic wall panels for first reflection points: Installation of absorptive panels on side walls and ceilings at primary reflection points between monitors and the listening position.

• Controlled reflective surfaces for sound direction: Placement of controlled reflective or diffusive surfaces on rear walls to preserve natural room ambiance without generating echo distortion.

Acoustic Zoning for Functional Audio Use

Acoustic zoning involves dividing an audio production facility into dedicated acoustic sectors based on specific functional tasks (Henke, 2022). This allows users to experience different levels of sound accuracy depending on their activity, such as recording, monitoring, or editing (Everest & Pohlmann, 2023). Each zone is designed with specific acoustic properties to support its function within the same space.

Characteristics

• Supports multiple audio functions in one room: Accommodates recording, monitoring, and post-production tasks within a coordinated studio.
• Enhances listening accuracy for different tasks: Optimizes listening conditions based on whether the task requires dry isolation (recording) or balanced frequency response (mixing).
• Improves workflow efficiency in sound production: Streamlines movement and operations between mixing desks, editing stations, and recording areas.

Spatial Requirements

• Controlled monitoring and editing zones: Clear physical and acoustic separation between active recording zones and mixing/monitoring stations.
• Strategic placement of furniture and equipment to support sound flow: Strategic placement of furniture, loudspeakers, and studio hardware to maintain unobstructed sound paths and clear sightlines.

Low-Frequency Control Through Bass Trapping

Low-frequency sound waves are among the most difficult frequencies to control within recording and editing rooms because they accumulate in corners and along wall intersections, creating standing waves and uneven bass response (Everest & Pohlmann, 2023). Uncontrolled low frequencies cause uneven bass distribution, creating extreme bass buildup in some areas and severe frequency cancellation in others (Cox & D'Antonio, 2024).

To resolve this, specialized acoustic devices known as bass traps are installed to absorb low-frequency energy and smooth out room modes (Cox & D'Antonio, 2024). Without effective bass trapping, mixing decisions become unreliable because engineers hear distorted low-frequency levels that do not translate accurately to other playback systems (Ikpekha & Simms, 2025). As Everest and Pohlmann (2023) emphasize, combining corner bass traps with mid-to-high frequency absorptive panels and diffusers produces a balanced room response, improving both technical monitoring accuracy and psychological user comfort.

Characteristics	Spatial Requirements
Reduces standing waves and room modes.	Installation of thick porous or membrane bass traps in tri-corner wall intersections.
Improves low-frequency accuracy.	Floor-to-ceiling corner treatments to maximize attenuation of long wavelengths
Enhances monitoring reliability.	Strategic integration of bass traps alongside broadband absorptive wall panels
Creates balanced frequency response.	Coordinated placement of corner traps, side wall absorbers, and rear wall diffusers

Table 1.1 Low-Frequency Control Through Bass Trapping

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METHODOLOGY

Research Design & Sampling

This study adopted a quantitative survey approach supported by physical site observations. A non-probability purposive and convenience sampling strategy was utilized to recruit respondents with direct operational experience in the studio. The total sample comprised N = 42 participants. Target demographics included students (n = 35, 83.3%), academic lecturers (n = 4, 9.5%), and technical studio staff (n = 3, $7.1%).

RESPONDENT BREAKDOWN (N=42)		
Category	Frequency (n)	Percentage (%)
Students	35	83.30%
Lecturers	4	9.50%
Studio Staff	3	7.10%

This study uses a non-probability sampling method to select respondents who are relevant to the research. Purposive sampling was chosen to ensure that the participants had direct experience using the Audio Production Studio at UiTM Puncak Perdana. The target respondents include students, lecturers, and staff who are familiar with the studio's acoustic environment and can provide reliable feedback based on their own experiences.

In addition, this study used convenience sampling to distribute the questionnaire to respondents who were available during the data collection period. This approach made the data collection process more practical and time-efficient while still ensuring that the respondents were suitable for the study. By combining purposive and convenience sampling, the study was able to gather relevant data from users with firsthand experience of the studio, which supports the achievement of the research objectives.

Research Process

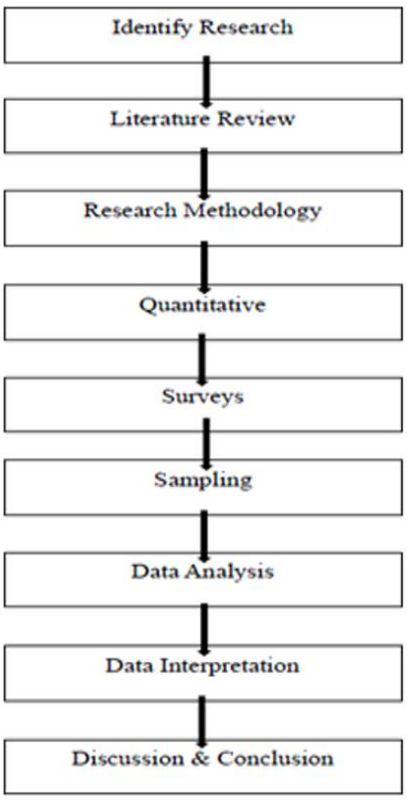

Figure 1.2 Research Framework

AIM	RESEARCH QUESTION	RESEARCH OBJECTIVE	RESEARCH METHODOLOGY	RESEARCH METHOD	SAMPLING	ANALYSIS
This research aim is to investigate how the strategic application of acoustic wall materials can improve acoustic performance and enhance spatial experience in an audio production studio at UiTM Puncak Perdana.	**Research Question 1** How do acoustic wall materials influence spatial experience in an audio production studio in UiTM Puncak Perdana?	**Objective 1** To investigate the role of acoustic wall materials in influencing spatial experience within an audio production studio.	Quantitative	**Questionnaire Survey**	**Target Respondents** Students at UiTM Puncak Perdana Recording, Lecturers , Studio Users **Criteria:** Users aged 18–35 at UiTM Puncak Perdana **Sampling Technique** **Target Sample:** 30-50 respondents	
	Research Question 2 What types of acoustic wall materials and treatments are most effective for enhancing spatial experiences?	**Objective 2** To study the types and characteristics of acoustic wall materials and their application in different studio zones.	Qualitative	**Case Study Analysis and Literature Review**		
	Research Question 3 How effective are acoustic wall material applications in improving acoustic performance and spatial experience in an audio production studio at UiTM Puncak Perdana?	**Objective 3** To evaluate the effectiveness of acoustic wall material applications in improving acoustic performance and enhancing spatial experience in an audio production studio at UiTM Puncak Perdana.	Quantitative	**Questionnaire Survey**		

Table 1.3 Research Breakdown

RESULTS AND ANALYSIS

Research Design

This study employs a quantitative research approach to address the research objectives. The study collects data using a structured questionnaire, which comprises four sections. Section A gathers respondents' demographic profiles, while Sections B, C, and D focus on the research objectives by assessing respondents' perceptions of acoustic wall materials, their application in different studio zones, and their effectiveness in enhancing acoustic performance and spatial experience in the Audio Production Studio at UiTM Puncak Perdana.

Section A - Respondent Profile

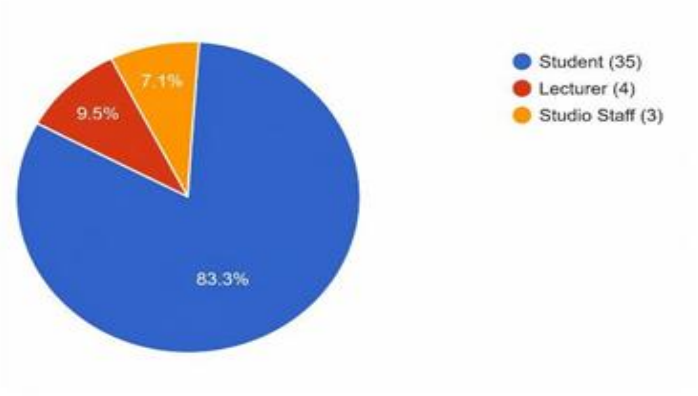

Figure 1.4 Respondents by Category

Figure 1.4 illustrates the distribution of respondents according to their category. The findings show that students represented the largest group of respondents, accounting for 83.3% (n = 35) of the total sample. This was followed by lecturers, who comprised 9.5% (n = 4) of the respondents, while studio staff accounted for 7.1% (n = 3).

The distribution indicates that the majority of the respondents were students, suggesting that the findings primarily reflect the perceptions of individuals who frequently use the Audio Production Studio for academic activities such as recording, editing, mixing, and practical coursework. The participation of lecturers and studio staff also contributes additional perspectives based on their teaching, supervision, and operational experience within the studio.

Respondent Category	**Frequency (n)**	**Percentage (%)**
Student	35	83.3
Lecturer	4	9.5
Studio Staff	3	7.1
Total	**42**	**100**

Table 1.5 Distribution of Respondents by Category

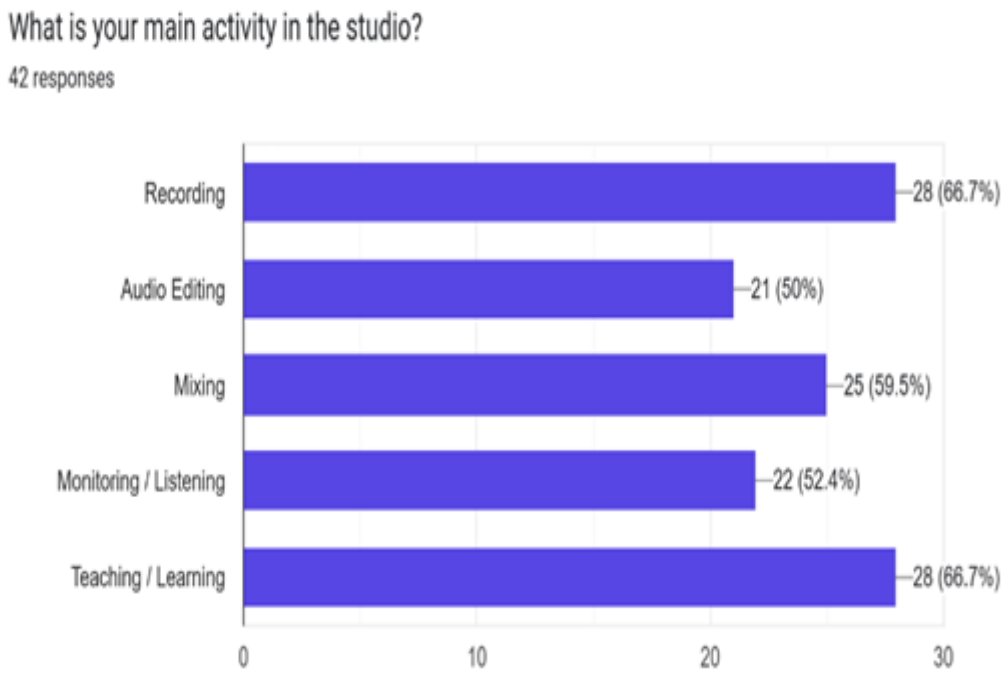

Figure 1.5 Respondents' Main Activity in the Audio Production Studio.

The findings show that the respondents use the Audio Production Studio for various activities, including recording, editing, mixing, and monitoring. The majority of respondents are students, followed by lecturers and staff, indicating that the studio primarily supports teaching, learning, and practical audio production. This diverse usage provides valuable feedback on the effectiveness of the existing acoustic wall materials and their impact on users' spatial experience.

Discussion of Research Objective 1

The Role of Acoustic Wall Materials in Influencing Spatial Experience

No.	Questionnaire Item	Mean	Std Dev	Interpretation	Description of Findings
B1	The acoustic wall materials improve the overall clarity of sound in the Audio Production Studio.	4.12	0.68	High	The majority of respondents indicated that the acoustic wall materials contribute positively to sound clarity, allowing audio to be heard more clearly during studio activities.
B2	The acoustic wall materials help reduce echo and unwanted sound reflections.	4.05	0.73	High	Most respondents agreed that the wall materials minimize excessive sound reflections, creating a more controlled acoustic environment within the studio.
B3	The acoustic wall materials provide balanced sound distribution throughout the studio.	3.71	0.81	High	Respondents generally perceived that the sound is distributed evenly across the studio, although some differences in listening quality were observed in certain areas.
B4	The placement of acoustic wall materials affects the quality of sound in different parts of the studio.	4.24	0.62	High	Most respondents acknowledged that the location of acoustic wall treatments influences sound quality and listening conditions within the studio.
B5	The acoustic environment supports accurate listening during recording and editing activities.	3.98	0.75	High	The majority of respondents agreed that the acoustic treatment assists users in monitoring and evaluating audio more accurately during production activities.
B6	The acoustic wall materials make it easier to distinguish sound details and audio quality.	3.88	0.79	High	Respondents generally agreed that the wall materials improve the ability to identify subtle sound details, which is important for recording and mixing tasks.
B7	The acoustic environment enhances my overall spatial experience in the Audio Production Studio.	4.02	0.71	High	Most respondents perceived that the acoustic wall materials contribute positively to their comfort, concentration, and overall experience while using the studio.

Figure 1.6 Respondents' Main Activity in the Audio Production Studio.

Mean Score	Interpretation
1.00 – 2.33	Low
2.34 – 3.66	Moderate
3.67 – 5.00	High

Figure 1.7 Mean Score Interpretation

The findings show that acoustic wall materials play an important role in improving the spatial experience in the Audio Production Studio at UiTM Puncak Perdana. Most respondents agreed that the studio's acoustic environment affects their recording, editing, monitoring, and listening activities. They also believed that the

existing wall materials help improve sound clarity, reduce unwanted echoes, and create a more comfortable environment for audio production. This indicates that acoustic wall materials are essential for achieving good sound quality and enhancing users' overall experience.

However, some respondents felt that sound quality was not consistent throughout the studio. Certain areas provided better listening conditions than others, suggesting that the placement and selection of acoustic wall materials could be improved. This shows that having acoustic treatment alone is insufficient; it must also be properly planned and installed to create a balanced acoustic environment.

These findings are consistent with Henke (2022), who stated that architectural design and interior materials have a direct impact on the acoustic performance of recording studios. Similarly, King and Teo (2020) explained that modern acoustic materials can improve sound absorption and provide better control over sound quality. Therefore, this study confirms that acoustic wall materials are important in enhancing sound clarity, user comfort, and the overall spatial experience. Thus, the study successfully achieved the first research objective.

Discussion of Research Objective 2

The Role of Acoustic Wall Materials in Influencing Spatial Experience

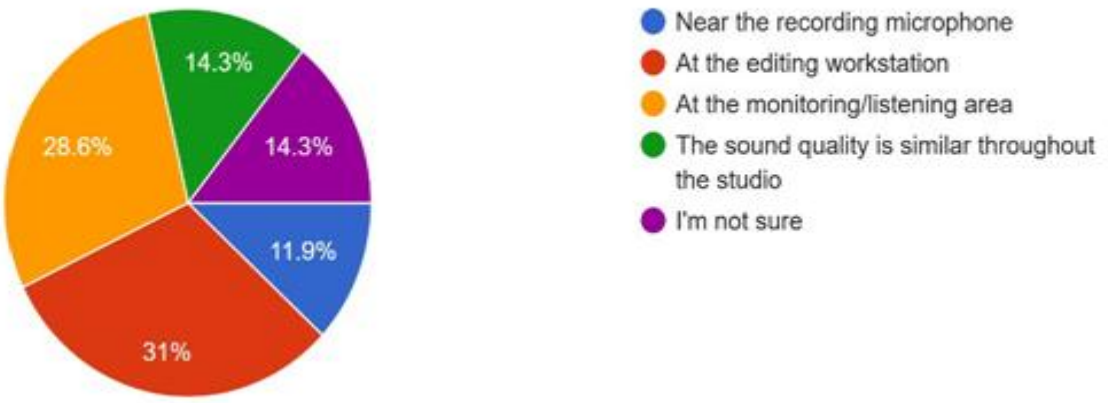

Figure 1.8 Respondents' Perception of the Area with the Best Sound Quality in the Studio

The findings show that respondents recognize the importance of selecting suitable acoustic wall materials based on the function of each studio space. Most participants agreed that recording, monitoring, editing, and mixing activities require different acoustic conditions, indicating that a single type of wall treatment is not suitable for all studio functions. This suggests that the acoustic properties of wall materials, such as sound absorption, reflection, and diffusion, should be matched to the specific purpose of each studio zone to achieve optimal acoustic performance.

The results also indicate that the placement of acoustic wall materials is as important as the materials themselves. Respondents believed that well-positioned acoustic treatments improve sound distribution, enhance sound clarity, and create a more comfortable listening environment. In contrast, excessive sound absorption may create an acoustically "dead" room, while insufficient treatment can lead to excessive echoes and poor sound quality. Therefore, achieving effective acoustic performance requires a balanced use of absorptive, reflective, and diffusive materials that are strategically placed according to the needs of each studio space.

These findings are supported by previous studies, which highlight that different studio environments require different acoustic solutions. Recording rooms require greater sound absorption to reduce unwanted reflections, while monitoring rooms need controlled reflections for accurate sound reproduction. King and Teo (2020) also noted that modern acoustic materials, such as micro-perforated panels and porous absorbers, provide more effective sound control than conventional wall treatments. Therefore, the second research objective was successfully achieved, demonstrating that both the selection and application of acoustic wall materials are

essential for improving acoustic performance and supporting the different functions of an audio production studio.

Discussion of Research Objective 3

The Role of Acoustic Wall Materials in Influencing Spatial Experience

The findings indicate that respondents generally perceived the existing acoustic wall material applications as effective in enhancing the overall performance of the Audio Production Studio at UiTM Puncak Perdana. Participants expressed positive perceptions regarding the ability of the wall treatments to reduce unwanted noise, minimise excessive sound reflections, improve listening comfort, and support various audio production activities. The majority of respondents also agreed that the acoustic environment contributes positively to their overall studio experience, allowing them to remain comfortable and focused during extended periods of recording, editing, and monitoring.

Despite these positive perceptions, the findings also reveal opportunities for further improvement. Some respondents indicated that sound quality varies across different areas of the studio, suggesting that the current acoustic treatment may not fully achieve uniform sound distribution. This inconsistency may result from insufficient diffusion, limited low-frequency control, or uneven placement of absorptive materials. Such conditions may reduce monitoring accuracy and affect users' ability to make precise audio production decisions. Therefore, while the existing acoustic wall materials perform satisfactorily, further optimisation is required to achieve a more balanced and consistent listening environment throughout the studio.

These findings are consistent with previous studies that emphasise the importance of integrating absorptive, reflective, and diffusive materials to create acoustically balanced spaces. Rather than relying on excessive absorption alone, effective studio design requires a comprehensive acoustic strategy that addresses reverberation control, frequency balance, and sound diffusion simultaneously. Moreover, the positive responses regarding listening comfort and immersive spatial experience suggest that acoustic wall materials contribute not only to technical sound performance but also to users' psychological comfort, concentration, and overall satisfaction. This supports the concept that spatial experience within an audio production studio is shaped by both measurable acoustic performance and users' subjective perceptions of comfort and functionality.

Overall, the third research objective was successfully achieved, as the findings demonstrate that appropriately selected and strategically applied acoustic wall materials enhance acoustic performance while simultaneously improving the spatial experience of users within the Audio Production Studio at UiTM Puncak Perdana.

Overall Discussion

The Relationship Between Acoustic Wall Materials, Acoustic Performance and Spatial Experience

Overall, the findings of this study demonstrate that acoustic wall materials are fundamental design elements in achieving high-quality audio production environments. Respondents consistently recognized that appropriate acoustic treatment improves sound clarity, reduces unwanted reflections, enhances listening comfort, and supports the functional requirements of recording, editing, monitoring, and teaching activities. These findings highlight that acoustic wall materials influence not only the technical performance of a studio but also users' overall perception of the space, including comfort, concentration, and satisfaction during prolonged studio use.

However, the findings also indicate that achieving an optimal acoustic environment requires more than simply installing acoustic materials. The selection of suitable materials, together with their strategic placement according to the specific acoustic requirements of different studio zones, is essential for creating balanced sound distribution and consistent listening conditions. Consequently, this study reinforces the importance of

integrating architectural acoustics into interior design practice, ensuring that acoustic wall materials are carefully planned as part of a comprehensive studio design strategy. Such an approach will enhance both the technical quality of audio production and the overall spatial experience for users at UiTM Puncak Perdana.

LIMITATION AND SUGGESTION

Limitations

This study has several limitations that should be considered when interpreting the findings. Firstly, the research was conducted only in the Audio Production Studio at UiTM Puncak Perdana, limiting the applicability of the findings to other educational or commercial audio production studios with different acoustic environments. Secondly, the study involved a relatively small sample of 42 respondents, consisting of students, lecturers, and studio staff, which may not fully represent the perceptions of all studio users. In addition, the researchers primarily based the findings on respondents' perceptions collected through questionnaires rather than objective acoustic measurements, such as reverberation time (RT60), sound pressure level (SPL), or frequency response analysis. Therefore, the results reflect users' experiences of the acoustic environment rather than its actual physical acoustic performance. Furthermore, this study focused specifically on the application of acoustic wall materials and did not examine other design elements, such as ceiling treatments, flooring materials, room geometry, furniture arrangement, or mechanical noise, which may also influence acoustic performance and spatial experiences.

Suggestions

Based on the findings of this study, this study proposes several recommendations for future research. Future studies should include a larger and more diverse sample from multiple audio production studios to improve the reliability and generalisability of the findings. In addition, researchers are encouraged to combine subjective user evaluations with objective acoustic measurements, such as RT60, sound pressure level (SPL), frequency response, and speech intelligibility, to provide a more comprehensive assessment of acoustic performance. Future research may also investigate the effectiveness of a wider range of acoustic materials, including bass traps, diffusers, micro-perforated panels, and sustainable acoustic materials, in different studio environments. Furthermore, other architectural and interior design factors, such as ceiling and floor finishes, room geometry, furniture layout, and studio configuration, should be considered to better understand their combined influence on acoustic performance and users' spatial experience. These recommendations will contribute to the development of more effective acoustic design strategies for audio production studios in educational and professional settings.

CONCLUSIONS

This study investigated the application of acoustic wall materials in enhancing the spatial experience within the Audio Production Studio at UiTM Puncak Perdana. The findings demonstrate that acoustic wall materials play a significant role in improving sound clarity, reducing unwanted sound reflections, and creating a more comfortable and functional environment for audio production activities. Respondents generally perceived that the existing acoustic treatment supports recording, editing, monitoring, and listening activities by providing better acoustic performance and enhancing their overall studio experience.

Furthermore, the study confirms that specialized studio zones necessitate tailored acoustic treatments aligned with their distinct operational demands. Appropriate combinations of sound absorption, reflection, and diffusion, together with strategic placement of acoustic wall materials, contribute to balanced sound distribution and improved listening accuracy. However, some respondents indicated that sound quality is not entirely consistent throughout the studio, suggesting that further optimization of acoustic material selection and placement is required to achieve a more uniform acoustic environment. In conclusion, the three research objectives were successfully achieved. The study confirms that the effective application of acoustic wall materials enhances both acoustic performance and users' spatial experience within the Audio Production Studio at UiTM Puncak Perdana. The findings provide practical recommendations for future studio design by emphasizing the importance of integrating suitable acoustic materials into interior design to create functional, comfortable, and acoustically balanced learning and production environments. These recommendations may also serve as useful references for future research and for institutions seeking to improve the quality of educational audio production facility.

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