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CONFLUENCE OF MUSIC AND ARCHITECTURE THROUGH ARTISTIC PARALLELISM; A STUDY OF CURRENT BUILDING AESTHETICS IN ADVANCED MUSIC LEARNING INSTITUTES WITH SPECIAL REFERENCE TO THE UNIVERSITY OF PERFORMING ARTS IN COLOMBO

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Abstract: Music is authentically interpreted as a universal language due to its strong strings between humankind. In addition, as an art, it becomes the source for other fields, which carry both intellectual and intuitive aspects. Thus, the combination of Music and the art of visualizing spaces, Architecture derives because of the resemblance between its origin, elements, and composition. Becoming a part of the built environment, the spirit of music responds to different types of functions for its effective benefits to the involved parties. While straightening the subjective inquiry on this point, it was identified that 'learning of music' becomes the prior concern with its active phenomenon since it expresses the 'art inside the art'. An expanded literature review has given supportive statements to the inquiry like the relevance of the classroom atmosphere as a distinctive aspect of music education that we may affect to maximize perception in this field besides the teacher's role and students' involvement in particular. Furthermore, the research has been concerned with how much the built space is perceived as a musical space and its response to the music learning process, considering various music pedagogical practices. The tool for the process was investigated with the Artistic parallelism between Musical elements and Architectural elements, and its compositional relativity. For the inquiring convergence, the research methodology was generated to investigate two main aspects; to which extend the musical variables and architectonics have stated their relativity in studied music learning spaces and its building performances with essential physical attributes, from the user's point of view. The study is intended to continue exploring how much the Artistic parallelism between Music and Architecture affects the conduciveness of Music Learning spaces and how it benefits the learning process and generation of good music, not only as a knowledge seeker but also as an artist.

Keywords. Music, Artistic Parallelism, Advanced music learning, Music variables, Architectonics, Music pedagogy, learning spaces, Musical space

1. Introduction

Music education is a fine art that emphasizes skill development and devotion to senses, rather than just intelligence. It differs from other fields due to its focus on student-centered teaching, achievement motivation, and physical and psychological attributes. Classroom environment and affection for music are essential factors that differentiate it from other academic fields. Audible experience in a physical space, such as a concert hall, can stimulate feelings and emotions, but the indoor conditions and architectural components also contribute to the quantitative details.

Asmus (2021) emphasizes the importance of a positive learning environment for music education, focusing on the classroom environment, external motivation, competition, teaching strategies, and the music itself as a motivator. Identifying connections between music elements and architecture is crucial for designing conducive learning spaces and creating a collective atmosphere that satisfies a group of inhabitants. Since the research is directed to explore the hidden mastery between music and architecture and its endowment on space for 'Music' which is focused on learning activity, the hypotheses are developed through two major notions,

- How elements of music are converted into the same positions in Architecture?
- How do these approaches address the functional and emotional benefits necessitated by advanced music learning environments?

1.1. LITERATURE REVIEW

1.1.1 Musical elements

Music is a fascinating subject that has been deeply connected to human life since before we were born. It is an art,

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which serves various functions and is derived from a combination of tangible and intangible forces. (Killin, 2018) Musicology has identified seven major elements: **Rhythm** is based on the continuation of the beat, while **Dynamics** involve fluctuating variations in sound intensity (Jacobson, 2014). **Melody** provides the ability to differentiate one piece of art from another, and humans have the intrinsic ability to mimic melody through singing, humming and whistling (Bosch & Gomez, 2014). Harmony is the simultaneous vertical variations of the pitch, with **tone colour** being connected to auditory image simulation (Letowski, 1992). **Texture** refers to the high–level feature of Music (Couturier et al., 2022), which strongly relates to musical style and form and the auditory perception of the musical flow. **Musical form** is the constructive or organized position (Morimoto, 2017).

1.1.2 Coherent and meaning-making performance of Music

Music's rational process is explained by its physical properties, known as sound waves. Its two-dimensional spectrum displays frequency, amplification, and timbre, but does not show all energy potentials. It can develop dynamic fluctuations over time through vector fluctuations or a spiral-type 3D mechanism (Kong, n.d.). Musicologists have discovered that sound waves have a three–dimensional behaviour, with various musical notes possessing personalized 3D designs. The vibration tray experiment creates 'Chladni patterns', which are then developed using 3D software for 3D visualization.

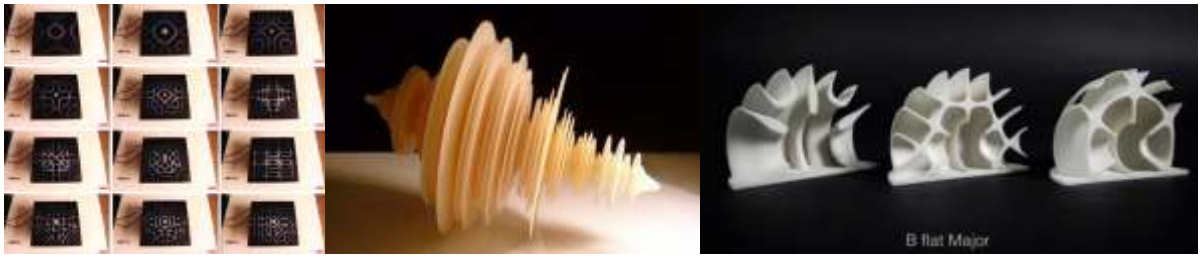


Figure 1: Chladni patterns, its three dimensional form and Representations using 3d software for different musical notes (Source: TEDx Talks, 2015)

Morimoto highlights the phenomenological output of music, focusing on fusion and adjustment techniques (Morimoto, 2017). Oxford University research shows listening to music fosters creativity, enriches spatial experiences, and inspires people with its concrete and ethereal values (Kong, 2021) (Olgen, 2018). The attributes developed by the intangible force of music are directly connected with both intellectual and intuitive aspects of the human brain as follows; Through rhythm, tension, and a variety of other ways, music stimulates our minds. In addition to **developing stress** (Morimoto, 2017), it also has features that individually stimulate the mind and elicit specific feelings. Music is an art that exists in one dimension, time, and stimulates brain functions (Seraj, 2017). It creates Alpha waves, which make people relaxed and composed, with frequencies between 8-13 hertz. Music can create tension and **release tension** (Morimoto, 2017), with discord building before resolving to gentle harmony. Rhythm in music influences the perception of time, affecting various situations like reading or working. It "destroys the root" of the music, causing the mind to automatically return to the original key. This creates a composition of music and movement with similar vibrations, extending the experience gained by a person, which creates the **feeling of movement** (Seraj, 2017). Listening to someone's voice and solo performances differ due to the amplified wholeness and individual timbre of each voice or instrument. Film score melodies can evoke strong feelings, while orchestral pieces can enhance their impact, which is introduced as **Orchestration** (Morimoto, 2017)**.**

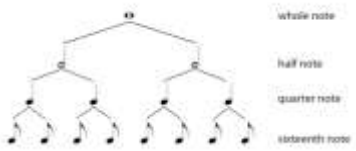
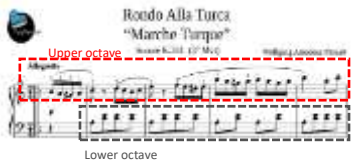
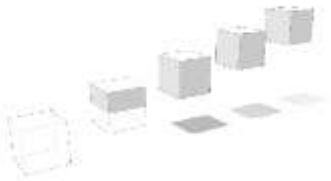
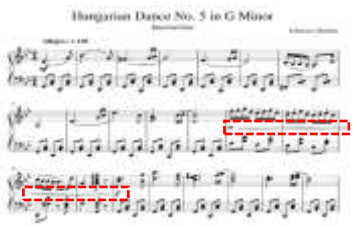
1.1.3 Correlation between Music and Architecture – Architectural elements in response to musical elements and architectural composition and Musical composition.

Music and architecture share a strong resemblance, expressed through experienced evidence from various backgrounds. To gain deeper insight, the mind's voice should be converted into physical representations (Hallam & Papageorgi, 2016). Music's intangible forces are not yet fully expressed, but their continuation in musical notes is noted in mensural systems.

Table 1: Music variables and its graphical representation *(Source: Seraj, 2017)*

Music	Architecture
Music is audible	Architecture is visual
Music is the time architecture.	Architecture is the place music
Music is animated.	Architecture is fixed and static.
Music: just creates a spiritual atmosphere.	Architecture: Creating an atmosphere of Spiritual material.
Music is the audio aspect of mathematical Abstraction.	Architecture: is the objective aspect of Abstract geometry.
Music is the application of proportion over time	Architecture is the application of proportion in the location volume

Table 2: Architectural elements in response to musical elements *(Source: Author generated)*

Convergence	Description	Musical Interpretation	Graphical Representation
Rhythm to spacing and density	Rhythm represents intervals and tempo in a piece, creating a continuous flow called 'tempo'. It is horizontally aligned with other elements, creating vibrations. The quality of rhythmic notes is similar to building elements' positions, like columns and beams in a space. Variations can ruin music or disrupt the compositional balance.	 *Figure 2, Tones and semitones (Source: Seraj, 2017)*	
Pitch and physical height	The chromatic scale's range of sound capacity varies between low, middle, and high octaves, with each music having its own range of notes. Composed interiors are similar in volume and dimensions, with gradual changes in components. This translation is not limited to numeric data but also encompasses gradual changes in components.	 *The difference of various pitch levels. Here the upper octave includes melody of the piece and lower octave contains chord progression.*	
Dynamics to scale and Hierarchy	The continuity of a musical piece without expressing the inner spirit can change the performer's and listener's emotional state. To emphasize uniqueness, rhythm pulses can be added to the score. Composers can also add markings to specify performance preferences. Loudness in music affects spatial dimensions and listener perception.	 *The difference of various pitch levels. Here the upper octave includes melody of the piece and lower octave contains chord progression.*	
Texture for supporting elements	Music is a universal language, with various types of systems in our daily lives, each with unique character and experiential diversification. Harmony and counterpoint are distinct elements, adding depth and complexity to simple melodies. Composers can add markings to the score to specify performance style. Loudness in music is related to spatial dimensions and listener perception, making it essential to consider these factors when creating music.		

The relationship between music and architecture is based on design elements and principles, with multiple interpretations. Studies evaluate the physical and conceptual aspects of space, focusing on three types that reveal intangible and tangible aspects of music and architecture.(Seraj, 2017).

The Acoustic space – The relationship between a performer or sound source and the audience is not solely determined by sound and its properties. The physical space surrounding the incident should be acoustically treated to provide extreme hearing comfort. Sound and space are interconnected bringing aurality into spatiality and aural definition (Bennet et al., n.d.). The number of surfaces and spacing between them influences the quality of reflections in a space. In the 18th century, concert halls used structural reflectors to avoid constructive reflection, but it led to disorganized and over-emphasized elements in indoor facades. Contemporary design solutions aim to preserve the architectural essence and impact on people while incorporating acoustic science (Henriksen, 2002).

The Musical space – These two subjects are linked as music sharpens the perception of a place. Music is bounded by time, creating intangible spaces with an imaginational matrix around the perceiver. Perceptual space is finite, heterogeneous and subjectively defined (Edward Relph, 1976), with fixed distances and directions related to man (Henriksen, 2002).

1.1.4 Learning environment and its threads towards Advanced Music Learning

The turning point is the upheaval of the system along with the development of social interventions and capacity,

which is encouraged in other relevant fields. Therefore, the cycling method of reformation depends on the *pedagogical change* and the *uplifted lifestyle of occupants*. In further explanations, Kokko and Hirsto (2021) state the idea of authors like Blackmore as; despite good design, spaces themselves do not always result in a shift in pedagogy, and how the change is done has remained unclear. Even researchers do not have sufficient knowledge of the beneficial consequences in open and flexible physical places. (Kokko & Hirsto, 2021) This argument leads to the **research gap that links with 'physical setting' and 'Architecture'.** Three major interaction processes have happened to be the pillars of modern learning methods. (Georgii-Hemming et al., 2020) as Teacher – Teacher, Teacher – Student and Student – Student.

1.1.5 Impact of 'Musical space' on the physical setting as a primary attribute of Music pedagogical practice
Modern learning techniques shift focus from physical spaces to social relations, emphasizing individualism and decision-making. Emotional insecurity is introduced as a solution to reform learning methods (Puteh et al., 2015). The term "learning environment" often refers to social, psychological, or intellectual contexts (Kokko & Hirsto, 2021), but the dialogue between factors and students' psychological needs is often overlooked, leading to a negative response to physical environments (Susic & Benic, 2017).

The position of the physical setting - Liquid spaces are preferred for personalized activities, as they are self-managed by occupants (Kokko & Hirsto, 2021). The physical environment, also known as the learning space, should elicit favourable reactions and hold the interest of those occupying it (Dangara & Geraldine, 2019). Factors such as large and spacious classrooms, regularly shaped rooms, adaptability, and close access to support spaces are assessed (Fisher, 2005). The physical aspect of the classroom learning environment influences student behaviour and rapport between teachers and students (Day, 2009). The learning environment is crucial for motivation and attitude towards learning, and it directly connects with architectural interventions. A relaxing, pleasant, and active classroom environment is particularly important for students' motivation and attitude.

Internal Environment Quality - Educators should prioritize creating an optimal learning environment, considering various factors like temperature, lighting, and noise levels (Dangara & Geraldine, 2019). The built environment's effect on users is influenced by multiple sensory inputs, rather than measurable dimensions (Barrett et al., 2015). Classroom location, size, furniture, temperature, lighting, and indoor air quality affect learning and teaching. Adequate lighting, combining natural and artificial light, increases student motivation and performance (Puteh et al., 2015). A good visual environment is crucial for effective learning (Samani & Samani, n.d.).

Supporting elements and objects - Classrooms are multidimensional, time-sensitive spaces filled with diverse students and tasks (Puteh et al., 2015). The curriculum standards framework analyses factors such as support, productivity, independence, self-motivation, and reflection on student needs, backgrounds, perspectives, and interests (Fisher, 2005). The tangible boundaries between exterior and interior spaces are determined by facades. Complexity in learning environments determines the visual unity of elements, which can be coherent or chaotic (Barrett et al., 2015). Changes to layout and furniture may be necessary due to space requirements, student numbers, and usage of instruments and sound appliances. Supporting functions, such as recording and listening, musical manuscripts, books, sound and visual systems, and television, are essential for senior students' self-learning (Mills, 1976).

2. Research Methodology

The following content follows theory building for interpretation between music and architecture, the concept of 'musical space' and the conditions of music learning environments as a positive attribute of extrinsic motivation and effective functionality. An overall hypothesis is generated as the inception of "The spatial ambience of physical setting can be improved by architectural characters which link with music variables for effective Music learning." The above statement is taken as the basis of the following research efforts and through the literature review it was identified the previous studies by experts of psychology and musicology, the building performances of the learning spaces specially allocated for music studies. Therefore, the main statements for the area to be explored (research gap) will be

1. 'How the correlation between architectural composition and musical composition represented in a physical setting?'
2. 'How do the design principles contribute to improving the conduciveness of the learning environment to trigger the student's motivation on learning and performing Music?

To collect accurate data and for an easy process for findings on building performances, qualitative data collection is determined as the method of study. As the first phase, the linkage between the two subjects is distinguished with its 'building blocks', elements of music and design elements & principles.

In addition, the latter phase describes the significance of music learning and the theories of the first phase in those spaces as a solution response to the absence of physical and psychological needs. The main three components are considered as the parameters of this study, which is related proportionally to the above classification. To assess the

outcomes, there are five hypotheses generated for the inquiry on testable elements mentioned in research problem 1, the success or failure of the convergence between Music and Architecture.

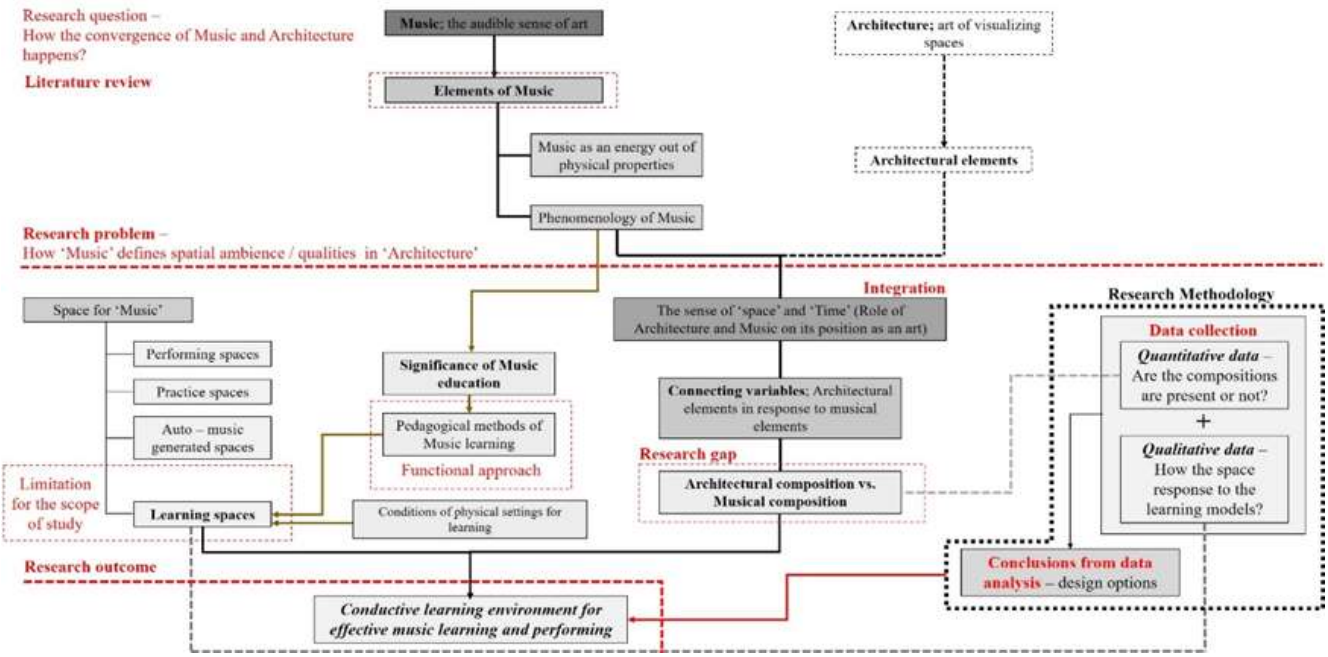


Figure 2, Research framework *(Source: Author generated)*

Table **3**, Correlation between elements of Music and Architecture; Table 2, Correlation between Architectural components and positive conditions of learning spaces *(Source: Author generated*

Music variables	Architectural elements and principles
Rhythm	**Spacing and density**
Dynamics	**Scaling and hierarchy**
Melody (pitch)	**Physical height**
harmony	
Texture	**Supporting elements**
Form	**'The musical space'**

Architectural elements and principles	Design pools
Spacing and density	The position of physical setting
Scaling and hierarchy	
Physical height	
Supporting elements	Supporting objects
'The musical space'	Indoor environmental quality

Study A
H1: The learning environment has **effective spacing and density** that represent the quality of 'Rhythm'.
H2: The learning environment has **effective scaling and hierarchy** that represent the quality of 'Dynamics'.
H3: The learning environment has an **effective physical height** that represents the quality of 'Melody/pitch' and 'harmony'.
H4: The learning environment has **effective supporting elements** that represent the quality of 'texture'.
H5: The learning environment has **effective Musical space** that represents the quality of 'Musical form'.

To investigate the expert opinion and user perception, the current classroom environment use in Sri Lankan higher institutional Music education, which has been categorized into three classroom environment characteristics, is taken into inquiry because of the presence or absence of the above-tested variables in research problem 2. Another five hypotheses are generated for that purpose;

Study B
H6: **The spacing and density** have contributed to the 'positive level of the position of the physical setting'.
H7: **The scaling and hierarchy** have contributed to the 'positive level of the position of the physical setting'.
H8: **The physical height** has contributed to the 'positive level of the position of the physical setting'.
H9: **The supporting elements** have contributed to the 'positive level of supporting objects and layout'.
H10: **The indoor environmental quality** has contributed to the 'positive level of creating **the musical space**'.

3. Research design and Analysis of data

3.1. PROCESS OF DATA ANALYSIS

3.1.1 Data collection of pilot studies
The analysis is qualitative and is focused on the aforementioned main study and other case studies in the following 2 steps; Even the ways that music is taught are very similar across different institutions, yet the targeted places differ

in terms of their tangible and intangible qualities. Consequently, step 1 of the process involves identifying the various learning spaces that have been allotted inside the building and characterizing their spatial aspects of the indoor environment aspects. Additionally, a qualitative comparative study is started using the primary study and two additional case studies (step 2).

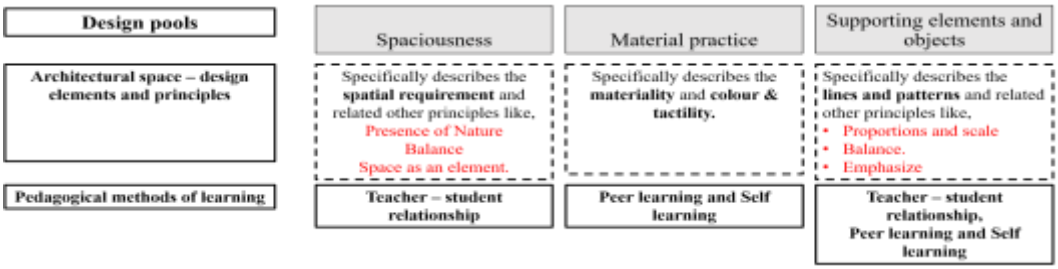


Figure 3, Design pools as a reference for data collection *(Source: Author generated)*

3.1.2 Data Collection for case studies and method of study

Phase 1 involves Modern teaching methods that emphasize individualism and autonomy while shifting the emphasis from physical environments to social interactions. The concept of emotional insecurity is put out as a way to improve teaching strategies. Although the phrase "learning environment" frequently refers to social, psychological, or intellectual contexts, the interaction between these elements and students' psychological requirements is frequently disregarded, which causes a negative reaction to physical environments.

Phase 2 consists of an open-ended and closed-ended questionnaire for academic staff members and students. The kids and teachers participating would be the best users of the area because the emphasis is on "Music learning." Because all of the people who are going to be interviewed are experts in their fields, the questionnaire is based on open-ended and closed-ended questions, without any projections on spaces as graphical representations.

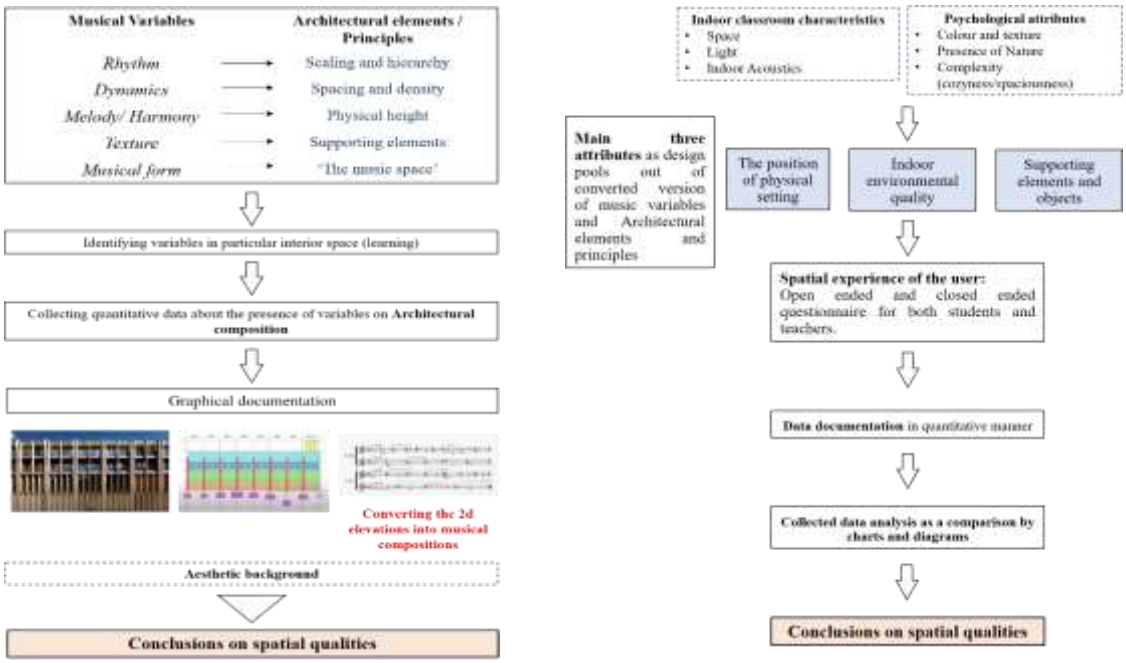


Figure 4, Case study research process – Phase 1 and phase 2 *(Source: Author generated)*

3.2. MAIN STUDY – DATA ANALYSIS

3.2.1 Data analysis of pilot studies

The University of the Visual and Performing Arts in Sri Lanka offers specialized degree programs in performing and visual arts, focusing on North Indian Music due to time constraints.

Each department occupies one floor starting on the first floor of the seven-story music faculty building. The third floor is occupied by the Department of North Indian Music. All of the functional areas, such as the auditoriums, instrument rooms, lecture halls, and office spaces, are oriented towards the exterior wall. The building's continuous corridors are legally ventilated by the central courtyard, and the building's edges include unofficial 'liquated' spaces.

Table 4, Pilot study analysis for study 3 *(Source: Author generated)*

Type of space		User preference
Space for teacher – student learning	1: Auditorium 2: Victor Perera hall 3: S. D. S . Kulathilaka Hall	
Space for peer learning	1. Classroom (Tabla) 2. Classroom (violin) 3: Practice room	
Space for self learning	1: Instrument room (Esraj) 2. Instrument room (violin) 3. Practice area	

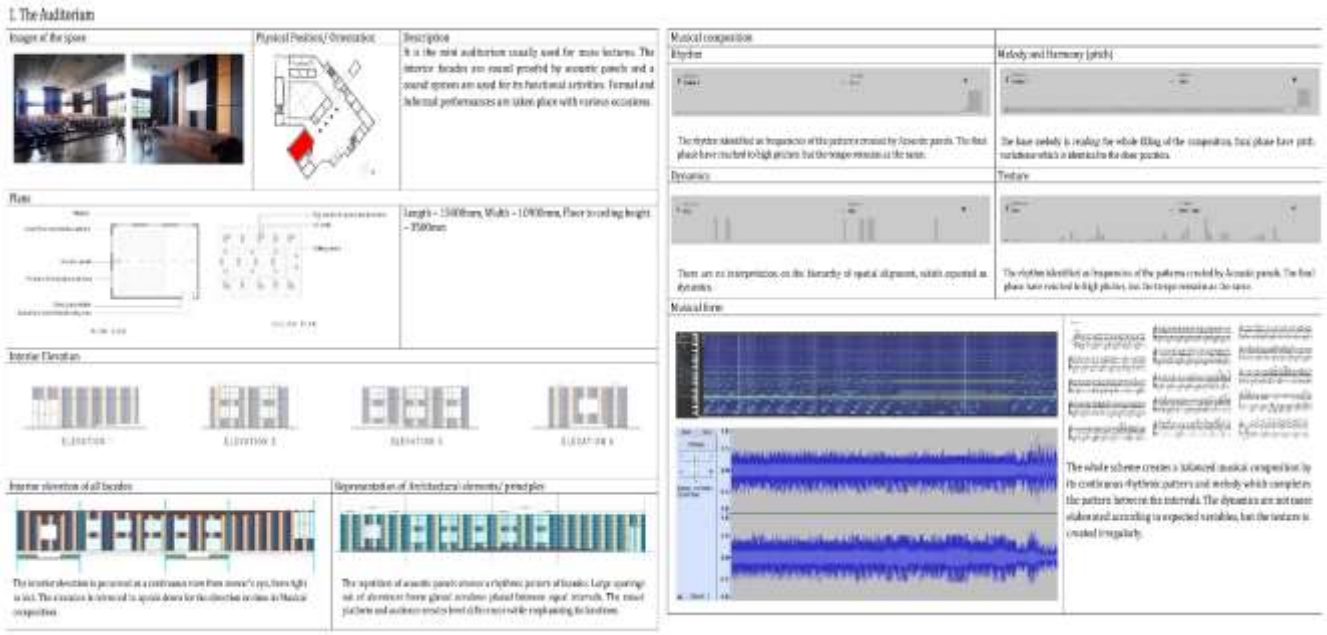
Description - The department of North Indian Music was selected because both teachers and students, due to the spiritual characteristics of pure music, concern the sense of place and spatial quality.
Out of 180 undergraduates in all academic years, 20 students of all levels was taken as the resource in this survey to evaluate all types of learning spaces.
Conclusions - The observations have given the decisions for most preferred spaces for each teaching method as: Lecture hall (3) for teacher – student learning, Peer learning area (2) for peer learning and Instrument rooms for each main subjects (2) for self-learning.

3.2.2 Data analysis for the main study

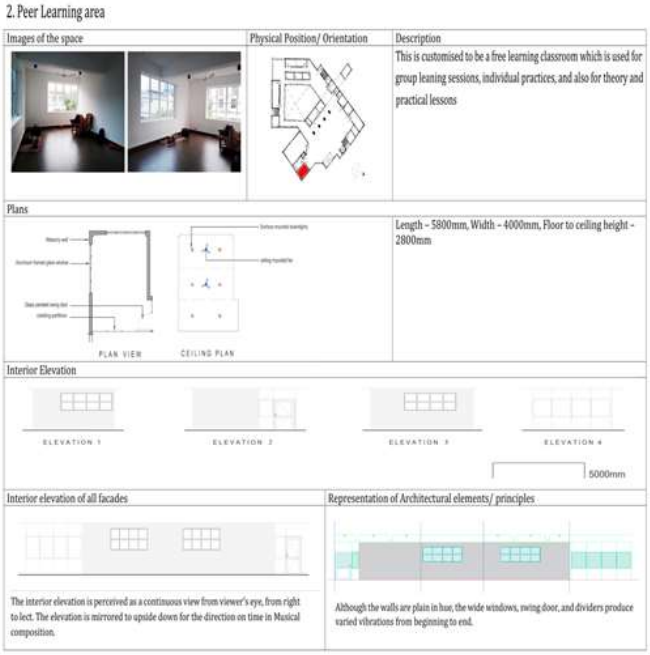
Phase 1: The study on interiors of learning spaces with converting architectural visualizations into musical compositions

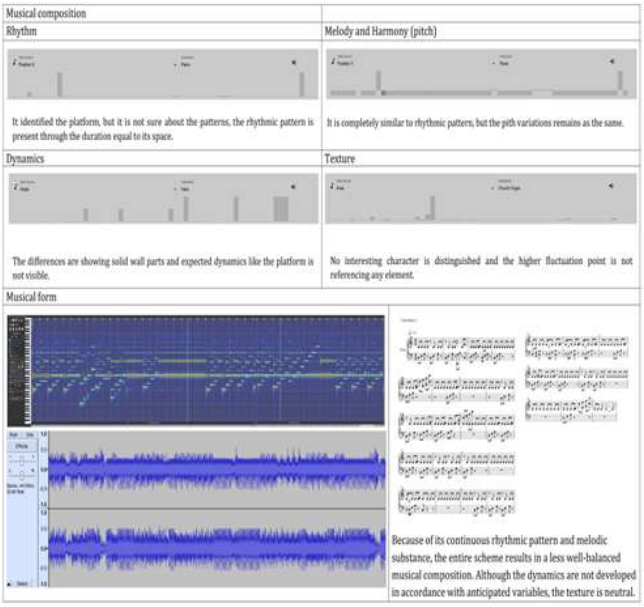
Table 5, Data Musification analysis *(Source: Author generated)*

Place 1 – Lecture Hall

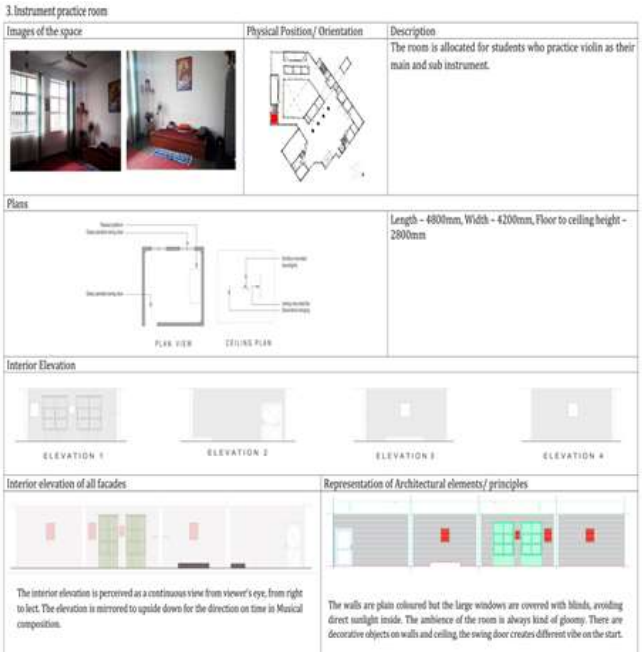


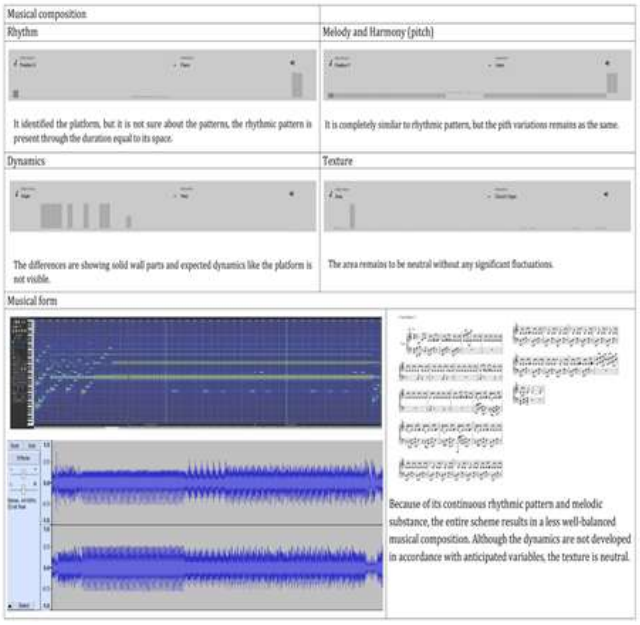
Place 2 – Peer learning area





Place 3 – Instrument room





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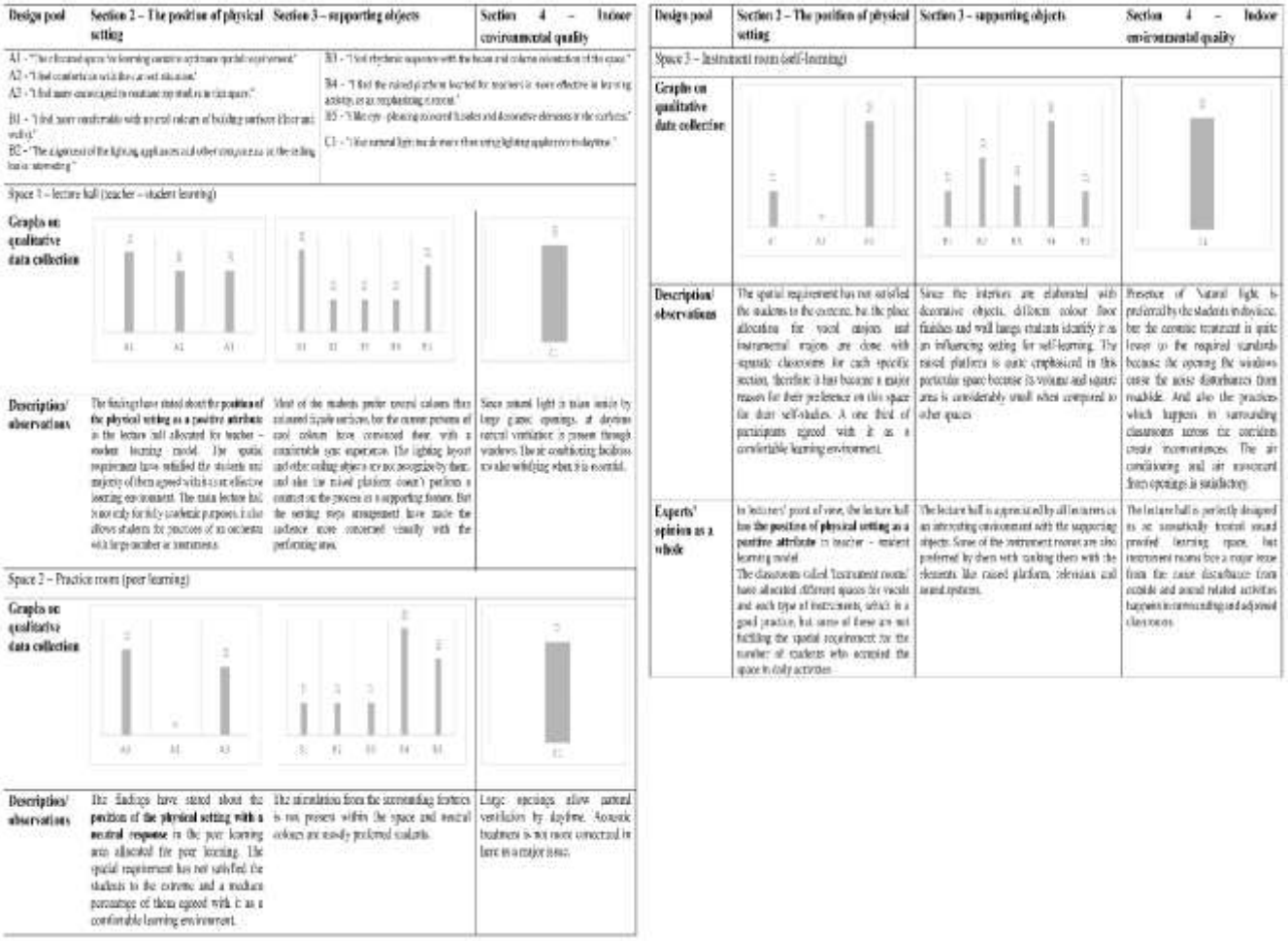
Phase 2 - The study in expert opinion and user perception – Interviews with lecturers and students

Table 6, Data analysis on user perception *(Source: Author generated)*



Design pool	Section 2 – The position of physical setting	Section 3 – supporting objects	Section 4 – Indoor environmental quality
A1 - "The allocated space for learning contains a pleasant spatial environment." A2 - "I feel comfortable with the given educational situation." A3 - "I feel more encouraged to maintain my study in this space." B1 - "I feel more comfortable with natural colours of building surfaces (floor and walls)." B2 - "The alignment of the lighting appliances and other components in the ceiling look so interesting."		B3 - "I feel rhythmic sequence with the beam and column orientation of this space." B4 - "I find the raised platform located for teachers is more effective in learning activity, as an emphasizing element." B5 - "I like eye -pleasing colourful leaders and decorative elements in the surfaces." C1 - "I like natural light much more than using lighting appliances in daytime."	
Space 1 – lecture hall (teacher – student learning)			
Graphs on qualitative data collection			
Descriptive/ observations	The findings have stated about the **position of the physical setting as a positive attribute** in the lecture hall allocated for teacher – student learning model. The spatial requirement have satisfied the students and majority of them agreed with it as an effective learning environment. The main lecture hall is not only for fully academic purposes, it also allows students for practices of an orchestra with large number of instruments.	Most of the students prefer neutral colours than coloured is quite suitable, but the current persons of cool colours have convinced them with a considerable spac experiences. The lighting layout and other ceiling objects are not perceptively them, and also the raised platform doesn't perform a contrast on the process as a supporting feature. But the seating steps arrangement have made the audience more concerned visually with the performing area.	Since natural light is taken inside by large glazed openings, at daytime natural ventilation is possess through windows. But air conditioning facilities are also satisfying when it is essential.
Space 2 – Practice room (poor learning)			
Graphs on qualitative data collection			
Descriptive/ observations	The findings have stated about the **position of the physical setting with a neutral response** in the poor learning area allocated for poor learning. The spatial requirement has not satisfied the students to the extreme and a medium percentage of them agreed with it as a comfortable learning environment.	The stimulation from the surrounding features is not present within the space and neutral colours are mostly preferred students.	Large openings allow natural ventilation by daytime. Acoustic treatment is not more concerned in here as a major issue.

Design pool	Section 2 – The position of physical setting	Section 3 – supporting objects	Section 4 – Indoor environmental quality
Space 3 – Instrument room (self-learning)			
Graphs on qualitative data collection			
Description/ observations	The spatial requirement has not satisfied the students to the extreme, but the place allocation for vocal majors and instrumental majors are done with separate classrooms for each specific section, therefore it has become a major reason for their preference on this space for their self-studies. A one third of participants agreed with it as a comfortable learning environment.	Since the interiors are elaborated with decorative objects, different colour floor finishes and wall hangs, students identify it as an influencing setting for self-learning. The raised platform is quite emphasized in this particular space because its volume and square area is considerably small when compared to other spaces.	Presence of Natural light is preferred by the students in advance, but the acoustic treatment is quite lower to the required standards because the opening the windows cause the noise disturbances from roadside. And also the practices which happen in surrounding classrooms across the corridors create inconveniences. The air conditioning and air movement from openings is satisfactory.
Experts' opinion as a whole	In lecturers' point of view, the lecture hall has **the position of physical setting as a positive attribute** in teacher – student learning model. The classrooms called 'Instrument rooms' have allocated different spaces for vocals and each type of instruments, which is a good practice, but some of these are not fulfilling the spatial requirement for the number of students who occupied the space in daily activities.	The lecture hall is appreciated by all lecturers as an interesting environment with the supporting objects. Some of the instrument rooms are also preferred by them with seeking them with the elements like raised platform, television and sound systems.	The lecture hall is perfectly designed as an acoustically treated sound proofed learning space, but instrument rooms have a major issue from the noise disturbance from roadside and sound related activities happens in surrounding and adjoined classrooms.

4. Results, conclusions and discussions

The study carries two phases of hypotheses to inquire about building performances of the current situation of university-level music students. The study 'A' is introduced as the key to the Architectural composition vs. musical composition. The composed music pieces as an interpretation of each space's building features (Architectural design elements and principles) are compared with each other with their qualities. The comparison is done as a self-determination of the musical compositions derived from inserted data. Since the above content analysis explains the conclusions on each space, it doesn't bring the significance between identified variables and elements of Music and Architecture.
It is taken into summary as follows as the conclusion of data Modification analysis;

Table 7, Findings of the case study in Data Musification Analysis *(Source: Author generated)*

Identified Space	Case study				
	Rhythm	Melody/ Harmony	Variations/ Dynamics	Texture	Musical space
Space 1	1	1	1	1	1
Space 2	1	1	-	-	-
Space 3	1	1	-	-	-

According to the findings generated by the study on data Musification, the data on interior elevations has indicated the rhythmic pattern presenting the physical characteristics. Since all studied spaces identified the rhythm as the cloned component of spacing and density, **the H1 is confirmed.**

The rhythmic pattern might not be identical to the façade design with equal intervals, but the length of the combined interior elevations gives the representation for **the circumference of the space**, and then the musical composition derives it equally as the **tempo of counted time.** Since the rhythm is a constant factor, the melody, and

harmony are detected as a collaborating variable that follows the exact pattern. The 'y' position is increased from 0 levels to different height levels, but it does not show the exact situation of the physical height of studied spaces. Therefore, the **H2 is not confirmed** which states that the melody and harmony is not representing the physical height.

Scaling and hierarchy are determined by angles, highlighting unique characters. Interior features may not be present, but components on building facades may be lightly influenced. Only two selected spaces have at least a slit presence of variations in the Architectural components, and due to the least assurance on the above incidents, the **H3 is not confirmed,** as dynamics are not represented by the scaling and hierarchy of the physical space. The need for supporting objects for the functional process inside learning spaces is discussed in a literature review, but the findings do not support to the above statement to a satisfying level. Thus, the **H4 is not confirmed.**

The raised platform was found as an emphasizing element in music learning spaces while studying case studies, but in musical composition, it is not identified as a deviation from the spectrum as a contrasting factor.

As graphically expressed in Table 5, The lecture hall (space 1) is recognized as the most significant component in case study 01, which reflects an intense rhythmic pattern with a medium tempo (beat) and interesting dynamics (sudden variations along with the melody) and textures (parallel stimulations with using other small tracks). **The Architectural composition is compared with the music piece and the result has positively given similarities,** According to the above pieces of evidence out of data Musification has helped **hypothesis 5 (H5) is confirmed as the music form represents the 'musical space'.**

Table 8, Findings of the case study 1 - Students 'opinion on each space for different learning modes
(Source: Author generated)

	High	Satisfactory	Low
Selected learning spaces	**The position of physical setting**	**Supporting elements**	**Indoor environment quality**
Space 1			
Space 2			
Space 3			

But from that point, the 'Musical form' has become positive as a whole idea about each space in a personalized manner, and it leads to the contradiction that all the hypotheses are positive with effective learning environments as 'musical spaces'. If the music is interesting with all musical variables that create emotions and feel about the spatial quality, that happens. The study 'B', as it is based on the user perception and experts' opinions has been analyzed with both quantitative data and content analysis. The findings are summarized below in each case study, According to the above reasoning; the study 'B' hypotheses are evaluated based on their applicability to classroom environment characteristics.

Space is a crucial indicator for music learning activities and teaching techniques. In case studies, space 1 (case study 1) has the ideal spatial requirements for teacher-student learning, allowing for various activities like performances, discussions, and presentations. Therefore, **the H6 is confirmed as the spacing and density directly acts as an indicator of the position of the physical setting.** The scale of interiors, derived from the spatial arrangement, affects learning activities. Surveys and discussions with students and teachers suggest that spaciousness is essential for effective practice, but physical boundaries are not the main concern. A small courtyard in classrooms for peer learning and self-learning would provide both spaciousness and privacy. The current situation does not reflect these ideas, but the importance of scale and hierarchy in specific spaces is crucial. Furthermore, **the H7 is confirmed as the scale and hierarchy directly act as an indicator of the position of the physical setting.** Physical height is crucial for user perception and volume in spaces, but it is not considered a critical aspect due to horizontal spacing and scale. It influences acoustic behavior and stage operations, affecting both ground level and performing spaces. Therefore, **the H8 is not confirmed because physical height is not considered to directly act as an indicator of its position in the physical setting.** The layout of spaces is influenced by the arrangement of objects, with raised platforms being an emphasis piece. Teachers-student learning spaces can be converted into small pockets with temporary partitions, allowing for different learning activities without contrasting demarcations. Accordingly, **the H9 is confirmed as the interior layout and objects directly convey as supporting elements.** This study focuses on indoor environmental factors, including air quality, lighting, and acoustic design. It emphasizes the importance of musical space, the fusion of music with architecture, and optimum comfort for inhabitants, ensuring perceptual perception. For that reason, **The H10 is confirmed as the indoor environment factors directly contribute to creating a 'musical space'.**

The collective decision about the analysis of above findings prove that physical height is not essential for place making, but spacing, density, scaling, and hierarchy achieve efficiency. Indoor environment quality, especially acoustic treatment, is crucial for musical spaces. Supporting objects and layout are essential in learning

environments, ensuring effective teaching, learning, and performance. My insight to the conclusions is, as an art which always makes people relay on it, 'Music' needs to motivate who creates it in the visualized spaces which represents 'Architecture', the metamorphose of these arts needs for better learning environments where 'good music' is generated.

5. Citations and References

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