



## Noise, Nurture or Neutral: Soundscapes of Open Vs Closed Learning Spaces and their Effect on Student Discourse

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### Abstract

This study explored teachers' perceptions of soundscapes in open and closed learning spaces and their influence on classroom communication, discourse, concentration and collaboration. A qualitative multiple case study design was employed in five Hyderabad Public Primary Schools. A total of 10 teachers, two from each school were selected through purposive sampling to ensure in depth exploration of classroom experiences across different learning environments. Data were collected through semi structured interviews and classroom observations to analyze the data and identified key patterns related to classroom sound environments and their impact on teaching and learning processes. The findings revealed that soundscapes in open learning spaces were perceived by teachers as supportive. While open environments encouraged student interaction, peer discourse and collaborative learning, excessive noise often disrupted concentration and reduced clarity of communication. In contrast, closed classrooms were perceived as more acoustically controlled environments that facilitated clearer instruction, improved student focus and more structured participation, although they sometimes limited interaction and peer dialogue. Teachers reported that sound related factors such as background noise, echo, overlapping speech and classroom layout significantly influenced students' attention, engagement and quality of discourse. The study concludes that neither open nor closed learning spaces are universally effective or ineffective, in fact, their impact depends on how sound is managed within the classroom context. A balanced sound environment is essential to support both interactive learning and focused attention. The study recommends improved classroom design, teacher training in sound management and effective classroom organization strategies to enhance communication, participation and learning outcomes in primary school settings.

**Keywords:** Soundscapes, Open Learning Spaces, Closed Classrooms, Classroom Communication, Student Discourse, Participation and Collaboration

### Introduction

Learning spaces play a significant role in shaping students' academic experiences, communication patterns and classroom engagement. In contemporary educational settings, the design of classrooms has evolved from traditional closed rooms to more flexible and open learning environments. Open learning spaces are often designed to encourage collaboration, interaction, creativity and student centered learning, whereas closed classrooms provide structured environments with fewer external distractions. The sound conditions within these spaces may influence how students communicate, participate and concentrate during learning activities (Imms et al., 2021). Soundscapes, including background noise, echo; overlapping conversations and environmental sounds form an important part of the classroom atmosphere.

In educational setting, classroom sound environments are increasingly recognized as factors that affect students' learning experiences, discourse practices and social interaction. Excessive noise in open learning spaces may interrupt concentration and reduce the clarity of communication, while quieter closed classrooms may support focused learning but sometimes limit collaborative interaction. Therefore, the relationship between classroom sound environments and student discourse requires deeper exploration (Higgins et al., 2019). Student discourse refers to the ways students express ideas, participate in discussions, collaborate with peers and engage in classroom communication (Klatte et al., 2020). Effective discourse is essential for meaningful learning because it promotes critical thinking, knowledge sharing and active participation. However, different sound conditions may either support or hinder these interactions. For example, some students may feel encouraged to communicate in lively and interactive environments, while others may struggle to focus and express themselves in noisy settings. Limited research has specifically explored how soundscapes in open and closed learning spaces influence students' discourse, participation, concentration and collaboration. This study seeks to address this gap by exploring the perceptions and experiences of teachers in relation to classroom soundscapes (Mealings et al., 2022). The study aims to investigate how sound environments in open and closed classrooms shape communication, engagement, participation and discourse among students. This research may provide valuable insights for educators, school administrators and policymakers in designing learning spaces that balance collaboration. Ultimately, the study contributes to the growing body of knowledge on creating effective and inclusive learning environments that support both academic and social development (Mercer, N. 2020).

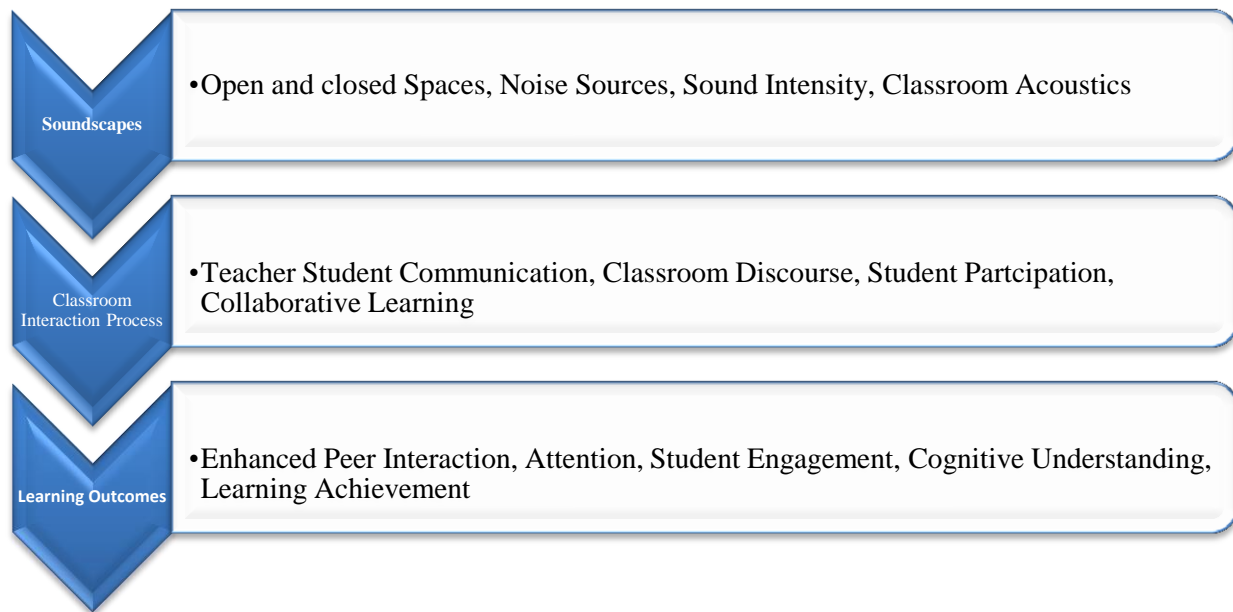
### **Literature Review**

Transformation of quality education to every students is their fundamental human right and so the school environment and more specifically classroom teaching learning experiences. Soundscapes in educational settings include background noise, classroom discussions, movement, technological sounds and environmental disturbances that influence how students and teachers experience communication and engagement. Both teachers and students interpret classroom sounds differently depending on the structure and atmosphere of the learning environment (Rashid et al., 2018). Open learning spaces are often perceived as dynamic and interactive because they encourage communication and collaboration among learners. Teachers in such environments frequently report increased student interaction and active participation during group based activities (Imms & Byers, 2021). Students also perceive open spaces as more flexible and socially engaging because these environments allow greater peer communication (Shield et al., 2021). Closed classrooms are generally perceived as quieter and more organized learning environments. Teachers often associate enclosed classrooms with better control over instruction and classroom management. Students may perceive these spaces as more suitable for concentration and individual learning tasks because sound distractions are relatively limited. Quieter classroom environments improve speech clarity and teacher student communication (Byers et al., 2021). Classroom soundscapes vary according to learning preferences and cultural contexts. Some students prefer lively and interactive environments, whereas others feel uncomfortable or distracted in noisy classrooms. Teachers also differ in how they adapt to sound conditions depending on their instructional strategies and classroom management styles. These varying perceptions demonstrate the importance of understanding soundscapes not only as physical conditions but also as socially experienced environments (Braun et al., 2006). Classroom discourse and participation are strongly connected to environmental conditions within learning spaces. Student discourse refers to verbal interaction, discussion, questioning and collaborative communication that occur during classroom activities (Fraser, B. J. 2020). Active discourse enhances critical thinking, knowledge construction and learner engagement. However, the quality of classroom sound environments may influence students' willingness and ability to participate effectively (Barrett et al., 2019). Open learning environments are commonly associated with collaborative learning approaches that encourage discussion and peer interaction. These spaces provide opportunities for group work, dialogue and cooperative learning activities. According to Mercer (2020), communication rich environments support the development of reasoning and social learning skills among students. In open classrooms, students may feel more confident engaging in discussions because the learning atmosphere is

generally interactive and less restrictive (Taylor, A. 2019). Excessive noise in open spaces may negatively affect classroom discourse. Competing conversations and environmental sounds can interrupt communication and reduce students' ability to listen attentively. Some students may withdraw from discussions due to difficulties hearing or processing information clearly. Teachers may also struggle to maintain balanced interaction when multiple sound sources compete within the same space (Uline et al., 2018). Closed classrooms support more structured communication patterns. Reduced background noise can improve listening comprehension and allow students to follow classroom discussions more effectively (Duarte et al., 2019). Studies show that quieter environments may encourage meaningful teacher student interaction and improve participation among learners who are sensitive to distractions (Klatte et al., 2020). However, closed environments may sometimes limit informal communication and collaborative dialogue compared to open learning spaces (Shen et al., 2021). Sound related factors such as noise level, reverberation, speech clarity and background sounds significantly affect students' concentration and collaborative learning experiences. Concentration is particularly sensitive to sound disturbances because learners require clear auditory input to process information effectively (Woolner, P. 2022). Studies show that excessive classroom noise can reduce attention span and increase cognitive fatigue among students (Yang et al., 2020). Younger learners and students with learning difficulties are often more vulnerable to noisy environments because they require greater listening effort during instructional activities. Poor sound quality may also affect memory retention and task completion, particularly during activities that require focused attention (Mealings et al., 2022).

### Research Questions

1. What do students and teachers perceive about the soundscapes of open and closed learning spaces in relation to classroom communication and engagement?
2. How do sound environments in open and closed learning spaces affect students' discourse and participation?
3. How do sound related factors influence students' concentration, collaboration and discourse in open and closed classrooms?



### Conceptual Framework

## **Research Design**

This study employed a qualitative case study research design to explore teachers' perceptions and experiences of soundscapes in open and closed learning spaces and their impact on classroom communication, discourse, participation and engagement. A case study approach was used because it allowed an in-depth and contextual understanding of the phenomenon within its real life classroom settings, focusing on how and why sound environments influenced learning processes. The study adopted a multiple case embedded design, in which selected Hyderabad Public Primary Schools served as cases. Participants were selected purposively from these schools based on their experience with both open and closed learning environments. Data were collected through semi-structured interviews and classroom observations to gain rich insights into participants' experiences with classroom soundscapes. A total of 10 teachers were selected from five Hyderabad Public Primary Schools, with two teachers from each school, to ensure in-depth qualitative exploration.

## **Data Analysis and Interpretation**

### **Perceptions of Soundscapes in Open and Closed Learning Spaces**

#### **Theme 1: Sound as a Factor of Engagement and Interaction**

*Teachers described sound in open learning spaces as a double edged feature that could both support and disrupt learning. Several participants noted that moderate levels of classroom sound, such as group discussions and peer talk, reflected active student engagement. In these cases, sound was not seen negatively but rather as an indicator that students were participating in collaborative learning activities. Teachers observed that students in open spaces often felt more comfortable expressing ideas, asking questions and interacting with peers due to the lively learning atmosphere.*

*However, teachers also pointed out that when sound levels became excessive, it shifted from productive interaction to distraction. Overlapping conversations between groups made it difficult for students to focus on their own tasks and teachers sometimes struggled to maintain instructional clarity. One teacher explained during the interview that "when all groups speak at once, it becomes noise instead of learning." This shows that while sound can reflect engagement, it requires careful management to ensure it remains supportive of learning rather than disruptive.*

#### **Theme 2: Acoustic Comfort in Closed Classrooms**

*Closed classrooms were widely perceived by teachers as more acoustically controlled environments that support clearer communication. Teachers reported that reduced external noise allowed them to deliver instructions more effectively and students were better able to hear and understand lessons. Observations also showed that students in closed classrooms were more attentive during teacher explanations, with fewer interruptions caused by external disturbances.*

*In addition, teachers expressed that closed learning spaces helped maintain discipline and order during instructional time. The controlled sound environment allowed for smoother transitions between activities and improved student focus during individual tasks. However, some teachers also noted that while closed classrooms improved clarity, they sometimes limited the level of spontaneous student interaction, as the environment was more structured and less socially dynamic compared to open spaces.*

#### **Theme 3: Contextual and Individual Differences in Perception**

*The study found that perceptions of classroom soundscapes varied significantly among teachers depending on their teaching experience, subject area and classroom management style. Experienced teachers were generally more tolerant of background noise and were better able to manage it without affecting instruction. In contrast, less experienced teachers often perceived even moderate noise levels as disruptive to teaching and learning.*

Furthermore, individual differences among students also influenced teachers' perceptions. Teachers noted that some students thrived in active and noisy environments, while others struggled to concentrate. One teacher mentioned that "some children learn better when they talk, others need silence." This variation suggests that soundscapes cannot be universally categorized as good or bad; instead, their effectiveness depends on context, teaching approach and learner characteristics.

## **Effect of Sound Environments on Students' Discourse and Participation**

### **Theme 1: Enhanced Peer Interaction in Open Spaces**

Teachers consistently reported that open learning environments encouraged greater peer interaction and student to student discourse. Students were observed engaging more freely in group discussions, sharing ideas and collaborating on learning tasks. The absence of strict physical boundaries appeared to promote communication and foster a sense of shared learning responsibility among students.

Teachers noted that open spaces created opportunities for informal learning conversations that often extended beyond structured lessons. Students were more likely to ask questions, seek clarification from peers and participate in group-based problem-solving activities. This increased level of discourse was viewed positively, as it supported active learning and improved students' confidence in expressing ideas.

### **Theme 2: Noise Related Communication Barriers**

Despite the benefits of interaction, teachers also identified significant communication challenges caused by excessive noise in open learning spaces. When multiple groups worked simultaneously, overlapping speech often made it difficult for students to hear instructions and follow discussions clearly. As a result, some students missed important information or became disengaged from ongoing activities.

Teachers further explained that noise sometimes discouraged quieter students from participating in discussions. These students tended to withdraw from group conversations due to difficulty hearing or fear of not being understood. Observations showed that in noisy periods, student participation became uneven, with more dominant voices controlling discussions while others remained passive.

### **Theme 3: Structured Participation in Closed Classrooms**

Teachers believed that in closed classrooms, student participation was generally more structured and teacher guided. Teachers reported that students were more attentive during question and answer sessions and were able to follow discussions with greater clarity. The reduced noise levels allowed students to concentrate on the speaker and respond more thoughtfully during classroom interaction.

However, participation in closed classrooms was often more formal and less spontaneous compared to open spaces. Teachers noted that students tended to wait for teacher prompts before speaking, which limited peer to peer dialogue. While communication was clearer and more organized, it lacked the fluid and collaborative nature observed in open learning environments.

## **Influence of Sound Related Factors on Concentration, Collaboration and Discourse**

### **Theme 1: Noise and Reduced Concentration**

Teachers strongly emphasized that high noise levels negatively affected students' concentration. During observations, students in noisy environments were frequently seen losing focus, requiring repeated instructions and showing signs of distraction. Teachers reported that cognitive tasks such as reading, writing and problem solving were particularly affected by background noise.

Teachers noted that continuous exposure to noise led to mental fatigue among students. Some students became frustrated or disengaged when they could not concentrate effectively. This was especially evident

*in younger learners, who were more sensitive to auditory distractions and required quieter conditions for sustained attention.*

### **Theme 2: Sound Conditions and Collaborative Learning**

*Teachers observed that moderate sound levels could support collaborative learning by encouraging communication and teamwork. In group activities, students benefited from being able to discuss ideas freely and exchange feedback with peers. This interactive environment helped develop communication skills and strengthened peer learning.*

*However, when noise levels exceeded a manageable threshold, collaboration became less effective. Teachers reported that students struggled to coordinate group tasks due to difficulty hearing each other clearly. Miscommunication within groups increased, leading to confusion and reduced productivity during collaborative assignments.*

### **Theme 3: Balance between Activity and Acoustic Control**

*Teachers emphasized that neither extreme silence nor excessive noise was ideal for learning. Instead, an optimal sound environment should support interaction while maintaining clarity of communication. Teachers explored the importance of school design in reducing sound interference between groups. This theme reflects the need to create learning environments that integrate both pedagogical goals and acoustic comfort to enhance student discourse, concentration and collaboration.*

## **Discussion**

This multiple case study reveals that classroom soundscapes in open and closed learning spaces play a significant role in shaping students' communication, participation, concentration and collaborative learning. The study depicts that sound is not merely a background condition but an active element influencing teaching and learning processes. The results show that teachers perceived soundscapes in open learning spaces as both beneficial and challenging. On one hand, open environments promoted interaction, engagement and student centered discourse, supporting the idea that learning is socially constructed through communication. This aligns with Vygotsky's perspectives, which emphasize the importance of dialogue in cognitive development (Vygotsky, L. S. 1978). Teachers observed that students were more expressive and collaborative in open spaces, indicating that sound-rich environments can enhance participation when managed effectively. On the other hand, excessive noise in open classrooms was identified as a major barrier to effective communication and concentration. Teachers reported that overlapping conversations and background noise reduced speech clarity and made it difficult for students to focus on tasks (Choi et al., 2018).

Closed classrooms were generally perceived as acoustically stable environments that supported clearer instruction and improved student focus. Teachers noted that reduced noise levels enhanced teacher-student communication and allowed for better control of classroom activities. This supports existing literature suggesting that quieter environments facilitate concentration and improve academic engagement. The findings further indicate that sound environments directly influence student discourse and participation. In open spaces, students engaged more actively in peer discussions and group-based learning activities. However, participation became uneven when noise levels increased, often favoring more dominant speakers while quieter students withdrew from interaction. In closed classrooms, participation was more structured and teacher-directed, resulting in clearer but less dynamic discourse. This suggests that classroom soundscapes shape not only the quantity but also the quality and equity of student participation. The study found that moderate sound levels can support collaborative learning, while excessive noise disrupts both individual focus and group coordination. Teachers emphasized that students performed better in tasks requiring sustained attention in quieter environments, whereas collaborative activities benefited from controlled interaction. Educators and school designers should aim for a balanced acoustic environment that promotes interaction while minimizing unnecessary noise. This

balance is essential for supporting meaningful discourse, effective participation and sustained concentration among primary school learners.

### **Conclusion**

The study concluded that open learning spaces are more interactive and engagement oriented environments. They promote student discourse, peer collaboration and active participation; however, they also generate higher levels of background noise that can interfere with concentration and communication clarity. On the other hand, closed classrooms provide more acoustically controlled environments that support focused learning and clearer teacher student communication, but may limit spontaneous interaction and collaborative dialogue.

Soundscapes in both open and closed learning spaces have a direct impact on how students participate, concentrate and communicate during learning activities. An optimal learning environment requires a balance between acoustic comfort and interactive engagement. Effective classroom management, thoughtful space design and awareness of sound related challenges are essential to improving educational experiences. The research therefore contributes to a deeper understanding of how soundscapes influence classroom dynamics and emphasizes the need for educational planners and teachers to consider acoustic factors in designing inclusive and effective learning environments.

### **Recommendations**

#### **Improvement of Classroom Sound Environment Design**

Schools should improve the sound quality of both open and closed learning spaces by using sound absorbing materials, flexible partitions and thoughtful classroom layouts.

#### **Teacher Training in Sound and Classroom Management**

Teachers should be provided with professional development opportunities focused on managing classroom sound environments. Training should include strategies for controlling noise during group work, organizing student discussions effectively and maintaining a balance between interaction and focus in both open and closed settings.

#### **Structured Use of Open Learning Spaces**

In open learning environments, structured teaching and learning practices should be implemented. Clear group divisions, assigned roles within groups and time bound activities can help reduce uncontrolled noise and ensure that student discourse remains meaningful and productive.

#### **Integration of Sound Planning in School Policy**

Educational authorities and school administrators should include sound considerations as a key part of school planning and infrastructure development. Proper spacing, classroom arrangement and noise control strategies should be prioritized to create more effective learning environments for primary school students.

#### **Balance between Interaction and Concentration**

Classroom practices should aim to maintain a balance between collaborative learning and individual concentration. A moderately controlled sound environment should be encouraged, ensuring that students can actively participate in discussions while still maintaining focus during learning tasks.

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