

Technical Tips: Acoustics in the Classroom

Good acoustic qualities are essential in classrooms where speech communication is an important part of the learning process. With good classroom acoustics, learning is easier, deeper, more sustained, and less fatiguing for everyone. This is particularly true for young children, persons with hearing difficulties, children with a second language, those with speech problems, attention deficit or other learning challenges. Good architectural design practice and attention to detail throughout the construction process can ensure conformance to the requirements of CHPS Minimum Acoustic Performance.

Three factors that affect acoustic performance

- Sound Reverberation (Time)– the amount of time a sound persists after the sound is produced, like an echo.
- Background Noise – sounds that are commonly present in a building like the HVAC and exterior noises. These can interfere with hearing what you are focused on hearing.
- Sound Isolation – preventing the transfer of sound from one building material assembly to another in outdoor-to-indoor and indoor-to-indoor situations.

Key strategies to good acoustics

- Interior wall, ceiling and floor finishes effect the ability of sound to persist and bounce. Provide some sound-absorbing finishes as opposed to all hard surfaces. Even fixtures and furnishings can absorb sound.
- Locate classrooms away from areas that create exterior environmental noise such as roads, parking lots, industrial buildings, and playgrounds.
- Consider the placement, both interior and exterior, of HVAC and other equipment that will be running when class is in session.
- Design walls, ceilings, doors, operable partitions and glazing that isolate noise in the area where it is created to control the amount of noise transferring from one area to another.

Plan, do, check, act

- Identify all Core and Ancillary Learning Spaces. Check our online Glossary and the prerequisite introduction for definitions. <https://chps.net/glossary>
- Share the acoustical design requirements and standards with all project members. The ability to meet the standards is an integrated effort.
- Calculate, compare, review and document that the planned design conforms with the requirements.
- Confirm that ALL as-designed acoustic details are included in the construction documents.
- Hold a pre-construction conference dedicated to the acoustical requirements. Include the contractor(s), architect, and acoustical consultant, at a minimum.
- Verify that changes made throughout construction do not compromise the acoustical performance.
- Engage an acoustical consultant or a qualified independent acoustical testing firm to conduct testing on representative building areas, only after the Test and Balancing of the HVAC system is complete. Document the testing results.
- Resolve findings that are not in compliance. Re-test if warranted.
- When working with a historic structure where modern acoustic standards are not possible, check with CHPS to see if all or some of the requirements can be waived.