

Vol. 13 • Issue 49 • Page 13
ALD Applications

Benefits of Sound Field Amplification in the Classroom

By Andy Olson

Decreased teacher vocal fatigue, increased student attention and improved test scores are among the benefits of using sound field amplification systems in classroom settings. These key benefits have been researched and proved and are widely accepted by education professionals. There are various ways to maximize sound field that will extend these key benefits.

Looking at the most basic level, a sound field system contains a wireless microphone, an audio amplifier, and a speaker or set of speakers. Sound goes into the microphone, is amplified by an audio amplifier, and finally is heard by the intended listener through the speakers. High-quality sound helps to maximize the benefits of the sound field as it relates to student hearing and performance. The quality of the sound delivered by the sound field system is determined entirely by the quality of the components.

The options for microphones are staggering, including collar, head-worn, behind the head (think N*Sync/Britney Spears-style), lapel, integrated and plug mount, just to name a few. Among the pick-up patterns are omni-directional, directional and super-directional.

What's the best type of microphone? That depends on application, personal style and comfort issues. However, a key element that must be considered when selecting from the vast options is the signal-to-noise ratio. It is critical to choose a microphone that picks up the desired sound source as clear and free of extraneous noise as possible.

Watts, RMS (Root-Mean-Square), and Peak Power are all terms that you may see on a given specification for measuring an amplifier. What's important? The key is to have enough watts to power the desired sound source to appropriately amplify the sound throughout a given space. Most sound field systems available today are designed to amplify the sound source an additional 10 to 15 dB in a typical classroom setting.

A good microphone and amplifier are essential; but the quality of the speakers ultimately determines the overall sound quality and performance of a system. The system should have professional-grade speakers that provide acoustical integrity and should easily support a wide frequency range of sound, offering clear, crisp sound. Higher quality components produce higher quality results.

The application and benefits of sound field systems in classrooms are evolving. Initially, sound amplification primarily was used to meet the needs of students with special needs in accordance with their individual education plans (IEPs). However, studies have shown that classroom settings using sound field systems benefit all children. As a result, sound field becomes a secondary sound source in the classroom, with the intercom system being the first.

Amplifying the teacher's voice is the primary use of a sound field system. Learning is achieved by hearing what is being taught. When looking at implementing a sound field system, consider the needs of the specific class and room setting. How many instructors are in the classroom? If there are two, a second transmitter is necessary to allow for a team teaching approach. This flexibility is critical when looking for an appropriate system.

A hand-held microphone is a great tool to use for passing around among the students. All of the students in the classroom will be able to hear the questions and comments of their classmates. The technology also will help to promote control of the classroom because only the student using the microphone can speak. Finally, a microphone is fun for students to use.

Audiovisual technology is a great tool in teaching, and now the sound field system integrates this tool. Most sound field systems have audio-input jacks, allowing for an input from the A/V cart. Instead of traveling through the small speakers on the television, the sound can be broadcast to all the children via the classroom sound field amplification system. In most systems the teacher still can talk over the A/V input, allowing for instruction and explanations while a video is playing.

Computer speakers are designed to provide sound for one person sitting approximately 18 to 24 inches from the monitor, not to fill a room with sound. By using the output of the computer and the input of the sound field system, the entire class can benefit by hearing the sound from a computer.

Projectors are being used more and more in classrooms. Like audiovisual equipment and computers, the speakers built into many projectors are not adequate to provide high-quality sound to an entire classroom. Most projectors have red and white audio-output jacks. Hooking the projector to the sound field system is easy and maximizes the benefits by providing high-quality sound to the entire class.

Sound field is an excellent tool to decrease teacher vocal fatigue, improve student attention, and increase test scores. A great sound field system is made up of high-quality, professional-grade parts, including microphones, amplifiers and speakers. Additionally, sound field is for the instructor and any audio source in the classroom. This is key because listening is the means by which students learn.

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