



*Every Student Goes
To The Head Of The Class*

BOGEN.
ENHANCER

VOICE ENHANCEMENT SYSTEM



BOGEN.



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What Are Your Students Hearing?

Listening Is Key to Learning

Being able to listen is essential for learning. This is particularly critical in the classroom where students are dependent upon speech communications 60% of the day.¹ Yet classrooms, whether open or traditional layout, typically have poor acoustical qualities as well as background noise.

Bogen's Enhancer system improves the level of the teacher's voice or sound source and delivers it naturally, clearly, and equally to all areas of the classroom so that each student hears the teacher as if they were sitting at the front of the class.

Teaching: Getting Your Point Across

Students in the back of the classroom have more difficulty listening to the teacher because sound diminishes over distance. Thus those furthest away from the teacher hear the teacher's voice at a lower level than those sitting up front. This puts them at an educational disadvantage.

Background noise, ineffective soundproofing treatment, and mild hearing loss due to ear infections are additional reasons why children have difficulty hearing in the classroom.

"Hearing a teacher's voice at only half or a quarter of normal sound can cause students to misinterpret lessons and misunderstand directions. Kids who strain to hear tend to tire quickly, lose their concentration, and disengage from classroom lessons and activities."²

Why Noise Treatments Fail

Effective treatment of noise pollution in classrooms is not always possible. The root cause of many noise problems is inherent in the structure of the facility which, in many cases, was constructed at a time when there was less outdoor noise from fewer cars and aircraft, and before computers and air conditioning were included in the classroom. Some schools have resorted to sound absorption treatments or noise-masking techniques but these measures do not address the level of a teacher's voice and often negatively impact its intelligibility and understanding.

Intelligibility: The Finer Points of Language

Classroom audio amplification systems increase speech perception for both normal hearing and hearing disadvantaged students. Students need to hear clearly articulated letter and word sounds so they can learn new words, decipher letters for spelling, and comprehend verbal instruction. In addition, sound is diminished when teachers speak facing the chalkboard, move around the classroom, or when students answer from their seats.

The evidence for improved teaching and quality of instruction is reflected in the statistically significant gains in reading and language achievement test scores for K-6 students included in classrooms using amplification (students with and without hearing loss). These improvements were evident after only one year of use...

(The Use of Sound Field Amplification of the Teacher's Voice In The Regular Education Classroom, A Summary of Studies, The MARRS Project: Mainstream Amplification Resource Room Study, 1999)*

1. The American National Standard Institute ANSI S12.60-2002

2. "Can You Hear Me Now?" by Susan Black, American School Board Journal, May 2003

Bogen Enhancer: The Sound Solution for Every Classroom

Bogen Enhancer Systems use wireless, infrared technology to transmit the speaker's voice from the microphone to a receiving unit. The system then amplifies the audio and delivers it to strategically positioned audio speakers installed in the ceiling or on the walls. A/V equipment such as projectors, televisions, or computers can also be connected to the Bogen Enhancer system to ensure the clear and equal transmission of audio throughout the classroom.

The Enhancer system puts no demand on the teacher since it is easy to use and takes up little space in the classroom. In addition, technology has become so common in today's culture that children readily accept audio amplification in the classroom and do not consider it intrusive. In fact, students seem to participate more readily as they are eager for an opportunity to use the microphone.



Sound In Today's Classrooms

Bogen Enhancer audio amplification systems can be easily installed in new building construction as well as to retrofit existing schools. It works equally well in traditional or open classroom environments. With the Enhancer's flexible design, any application or physical environment can be addressed with a single system solution from Bogen.

More and more schools are using audio amplification systems in their classrooms in an effort to ensure that teachers are easily heard. Two pieces of legislation mandating the use of these systems have already passed. Ohio has mandated that new school construction, as well as rooms used by special needs students, have audio amplification. In Orange County, Florida, all classrooms for K-12 students require audio amplification.

Poor acoustics often caused by hard-surfaced floors and noise from heating and air conditioning systems, as well as additional ambient noise, reduce speech intelligibility to less than 75 percent in most classrooms.... Students in classes where teachers wear mikes are likely to achieve a minimum **10 percent overall gain in standardized test scores**, especially in subjects relying heavily on verbal instruction.

("Speaking Up" by Susan McIester, "Technology & Learning" Magazine, November 2004)

Teachers who use Classroom Amplification Systems Report:

- Increased student participation, attentiveness, and focus
- Reduced need to maintain discipline as students are better able to remain on task
- Better student performance
- Reduced need to repeat instructions, and ability to cover more of curriculum
- Increased comprehension of verbal directions
- Reduced distractions from ambient and background noise
- Decreased teacher fatigue, vocal stress, and absenteeism



Test Scores: Listening Makes the Grade

Achievement test scores are widely accepted as an indicator of successful classroom instruction. Research indicates that a positive correlation exists between the use of classroom amplification and improved student academic achievement, particularly in reading, comprehension, and language skills at the elementary school level. On the high school level, SAT scores show an improvement of 12-20 percent. (BYU, 2002)

According to the US Department of Education MARRS Project ("Educational Programs That Work", 1995), K-6 target students receiving instruction in standard classrooms equipped with sound field amplification make statistically significant greater gains in standardized achievement scores than do target students in control (non-amplified) classrooms.

An independent research study conducted at the Cecil Trost Elementary School in Oregon in 2002/2003 found that students in classrooms with audio amplification achieved:

- **35%** average increase on the *Dynamic Indicators of Basic Early Literacy Skills (DIBELS™) Composite Score*
- **35%** average increase of student's words per minute reading scores
- **21%** average increase on the *Developmental Reading Assessment (DRA™)*
- **21%** average increase on the *Technology Enhanced Student Assessment (TESA™)*
- **43%** reduction in off-task behaviors (calling out of turn or leaving assigned seat)
- **72%** reduction in need for teachers to redirect students for behavioral problems

Who Benefits?

- Students of all ages, pre-kindergarten to university, even life learners
- Students with mild hearing loss due to illness (e.g., ear infections or colds), which may be as many as 30% of the K-6 population in a school year
- Students for whom English is a second language
- Students who are inattentive or may have behavioral problems
- Students in schools affected by disruptive background noise
- Teachers who spend the majority of their day speaking in class
- Teachers in large or odd-shaped classrooms
- Administrators who wish to improve student academic achievement
- Administrators who want to reduce teacher absenteeism

Bogen's Enhancer system can be installed in many different configurations to meet the varied needs of your school. Available user components include microphones, transmitters, and rechargers.



Reliability from a Sound Company

Bogen knows schools and schools know Bogen. We have been in business since 1932, manufacturing audio and public address systems for schools as well as businesses. Chances are your school has a Bogen intercom, public address, or sound system somewhere on the premises. Now you can trust Bogen to provide audio amplification systems in your school's classrooms. With over 70 years of experience working with and designing sound reinforcement products, Bogen is a name students can hear with and you can rely on.

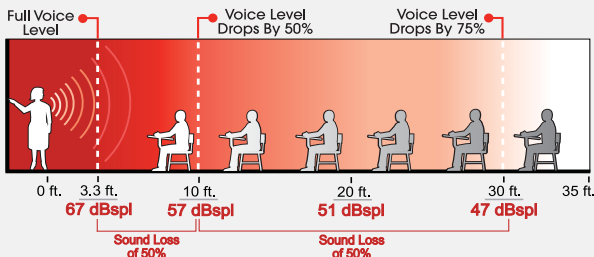
Well Suited For...

Classrooms • Lecture Halls • Cafeterias
Conference Rooms • Auditoriums
Recreation or Meeting Rooms

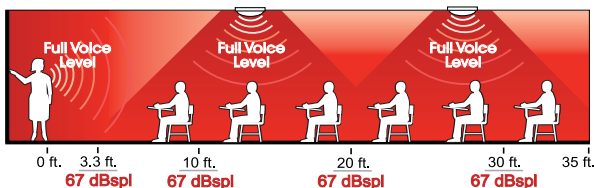
Distribute Sound Evenly Throughout The Classroom

Typical classroom in which the students sitting in the rear of the class hear only 25% of what the teacher says.

A Decrease of 10 dB = 50% Sound Loss



With the Bogen Enhancer, students sitting at the back of the class hear just as well as those sitting up front.



Physics dictates how sound dissipates over distance. When there is a single point of origin of a sound source, such as when a teacher speaks, sound decreases following the inverse square law. This causes sound levels to drop ever more rapidly with increasing distance. For each decrease of 10 dB, sound intensity is cut in half. Thus a 57 dB level sounds half as loud as a 67 dB level, and a 47 dB level is half as loud as a 57 dB level. The only way to combat this sound dissipation in a classroom is to electronically reinforce the sound source using amplifiers and speakers.

Noise Competition: Contending with Many Sources

A teacher's most critical instructional tool is his or her voice. In order to be heard, teachers must raise their voice to combat offending noise pollution. However, this constant voice projection can lead to educator fatigue, vocal strain, hoarseness, laryngitis, or chronic voice problems.

When using the Bogen Enhancer, teachers speak at their natural projected voice level (about 67 dB) and students in all parts of the classroom can hear at that same level. Plus, the teacher has freedom of movement and can even face the chalkboard while speaking without any drop in voice level for any student. When using the Bogen Enhancer the teacher may speak at a natural sound level (without projecting), allowing the Enhancer system to increase the sound level as needed so the students can easily hear.

Classroom & Outside Background Noise

Sources of background noise include adjacent classrooms, hallway noise, activity in schoolyards and stadiums, grounds maintenance, building construction, roof-mounted machinery and equipment, vehicle traffic and parking areas, HVAC systems, and nearby highways or airports. Noise within classrooms include wind noise from air conditioners and ventilation, rumbling heaters, the hum of computer fans, ticking of analog clocks, chatty students, squeaky desks, light fixtures, and noise from A/V equipment.

Trying to combat background noise can be expensive and is not always effective. On the other hand, it is much less expensive and easier to distribute the teacher's voice at the same level to all parts of the classroom. This way, students sitting in the rear of the room or in areas where background noise is most distracting can hear the teacher as if they were at the head of the class.

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