Achieving Student Success by Evenly Distributing the Teacher’s Voice Throughout the Classroom

- Improves speech intelligibility by amplifying the teacher’s voice
- Instant Alert allows the teacher to request assistance at the push of a button
- Seamless upgrade path to complete classroom AV switching and control
- Reduces distractions, redirection, and off-task behavior
- Decreased teacher vocal strain and voice fatigue results in reduced teacher absenteeism

VoiceLift®
CLASSROOM SOUND FIELD SOLUTIONS

Extron Electronics
INTERFACING, SWITCHING AND CONTROL
The primary mode of learning in the classroom is listening. Students are listening to the teacher and to each other. Researchers have estimated that students spend 45-75% of the school day engaged in listening activities. Unfortunately, the typical classroom has been shown to have acoustical characteristics, such as background noise, reverberation, and distance, that are detrimental to students with normal hearing, as well as students with a hearing loss or hearing difficulties. One of the ways to overcome these barriers to learning is to create a sound field in the classroom.

"We do not ask students to learn without seeing, so we have lights in the classroom. Why would we expect them to learn without hearing."
Public School Technology Director

What is a Sound Field?
A “sound field” is the area within a classroom where the teacher’s voice is distributed at a consistent level. A sound field is created by a classroom sound system specifically designed to slightly amplify the teacher’s voice using a microphone, audio amplifier, and speakers placed strategically throughout the room.

The key to success is not simply amplification or voice level, but increased intelligibility with an equal voice level for each student. The purpose of the system is to ensure that the teacher’s voice is clearly audible above the background sounds at all instructional locations within the room. Students in the back row, and throughout the class, need to hear as well as those in the front row.

To achieve this goal, effective sound field systems must accomplish the following:

• Raise the level of the teacher’s voice to 15 dB above classroom background noise
• Distribute sound evenly to each student throughout the entire classroom by using multiple speakers
• Provide superior audio performance in frequencies associated with the human voice and full-range reproduction of program audio
• Minimize distorted sound
A Proven Concept
The concept of a sound field is not new. Studies identifying the benefits of these systems go back as much as 25 years. The rationale underlying these systems is very simple: how well children hear a teacher affects how well they learn. The more they can hear, and the less they have to strain and guess, the better chance they will have of learning.

"Children have to be able to hear what’s being taught before they understand it, and so much of education is oral."
Audiologist

Typical Sound Field System
A typical sound field system is made up of a wireless microphone, receiver, amplifier, and speakers. Infrared microphone technology offers clear advantages over systems that use radio frequency, since infrared signals do not pass through walls and are not subject to RF interference. Sound field systems can be standalone systems or integrated with other classroom AV equipment.

The main goal of a sound field system is an equal voice level for each student, so students in the back row can hear as well as those in the front row.
Why Use A Sound Field System?
Studies show that significant gains in student achievement and teacher effectiveness can be made by simply ensuring that the teacher can be heard. According to research, even students with normal hearing ability benefit from the use of a voice amplification system.

“Because they’re using the system, teachers here have not been absent due to sore throats and none of them have lost their voices.”
School Principal

Creating a learning environment where the teacher can be heard is especially critical for children in the lower grades. These students are often engaged in activities that specifically focus on speech and sound recognition. Young, inexperienced learners do not develop the ability to adjust their hearing in noisy conditions that are unfavorable to listening until they are 13-15 years old.

For children, the teacher’s voice needs to be approximately 15 decibels louder than the background noise in the classroom for high speech intelligibility. This decibel difference is called the Signal-to-Noise Ratio - SNR. Comparatively, adults only require an SNR of 4 to 6 decibels. Research also shows that English as a Second Language - ESL learners need a greater SNR than those whose native language is English.

Sound field amplification systems enable teachers to spend the day speaking at a natural level, which significantly reduces voice strain and vocal fatigue.

“The minute you turn it on, the children really start paying attention.”
Elementary School Teacher
A large body of research exists to support the classroom benefits of sound field systems. These benefits include increased student attention, improved speech recognition, fewer distractions and decreased off-task behavior. In addition, significant decreases in teacher absences due to vocal fatigue and strain have also been reported. Below is a summary of some of the findings:

**Student Achievement**

Educators and researchers have documented measurable results in student achievement for classrooms that use voice amplification. In 2004, Leah Chelius compiled data from an elementary school in Canby, Oregon, into what is commonly called “The Trost Study”, and found the following:

- First grade students in the amplified classroom scored an average of 35 percent higher on the Dynamic Indicators of Basic Early Literacy Skills – DIBELS than students in the unamplified classroom.
- The same group of first grade students in the amplified classroom scored an average of 21 percent higher on the Developmental Reading Assessment – DRA.
- Third grade students in amplified classrooms scored an average of 21 percent higher on Oregon’s Technology Enhanced Student Achievement test and increased by an average of 32 words per minute in reading fluency.

**Student Attentiveness**

Research also has shown that improved classroom environments are a direct result of the use of classroom amplification. One of the most definitive works on the subject is the MARRS project which collected data for more than 15 years. It found that the use of classroom amplification systems results in easier classroom management due to increased student attention, decreased discipline problems, less student distraction, and less need to repeat instructions. In addition, a paper entitled “Turn on Sound” by Carol Flexer observed that students in amplified classrooms had better student production and on-task behaviors.

“Voice amplification is providing benefits for both our faculty and students. Teachers say they have more energy by not having to project their voice all day, and students comment that they do not have to work as hard at listening.”

Director of Technology Educational Services

**Teacher Benefits**

Classroom amplification systems allow teachers to spend the day speaking at a natural level, which significantly reduces voice strain and vocal fatigue. The previously mentioned MARRS Project also found the following:

- Voice fatigue and teacher absences due to vocal strain in amplified classrooms decreased from 15 percent to an average of 2 to 3 percent in one year.
- Teachers who use classroom amplification systems enjoy virtually unlimited freedom to move around the classroom while maintaining a stable acoustic environment. Wherever a teacher is located in relation to a student—even when the teacher’s back is turned—students can hear clearly.

For a detailed description of the research related to classroom sound field systems and the proven benefits they provide for both students and teachers, you can download a free copy of the Extron white paper entitled “Classroom Sound Field Amplification” at www.extronclassroom.com/whitepapers.
Extron VoiceLift® Microphone Systems are designed to bring the proven benefits of sound field to the classroom. VoiceLift evenly distributes the teacher’s voice throughout the room, allowing them to be heard clearly and resulting in significant gains in student achievement.

VoiceLift Microphones use infrared signals for transmitting the teacher’s voice to the receiver. Infrared signals do not pass through walls and are not subject to interference, offering clear advantages over systems that use radio frequency technology. Up to two microphones are supported per classroom, promoting team teaching or student participation.

Extron offers VoiceLift in two different configurations. VoiceLift Systems are complete standalone voice amplification systems. They include one or two IR microphones, IR receiver, switcher/amplifier, speakers, and cables. VoiceLift Microphone Systems are a seamless upgrade for PoleVault® and WallVault® installations. They include one or two IR microphones and an IR receiver that connects directly into the existing classroom system.

Instant Alert is a feature on the VoiceLift pendant microphone that enables the teacher to request assistance with the push of a button. The feature triggers an integrated relay that may be used with a variety of notification systems. In classrooms equipped with an Extron MediaLink® controller, Instant Alert sends an e-mail to school officials and safety authorities. Instant Alert can also interface with third-party alarm, security camera, mass notification, and other systems.

Complete Integrated System for Classroom AV Switching, Control, and Voice Amplification

Extron is the only manufacturer offering two upgrade paths to completely integrated AV switching, control, and voice amplification for the classroom — with no duplication or replacement of equipment. So, your technology investments provide not only the critical benefits needed today, but also a foundation for enhancing the system by simply adding selected components. Extron VoiceLift, PoleVault, and WallVault Systems allow you to make full use of your current equipment while also enabling you to take advantage of future innovations in classroom technology.

*Projector, DVD/VCR and Laptop are not included and must be ordered separately.
**VoiceLift Systems**

**Complete VoiceLift Systems** are standalone voice amplification systems for any classroom. The VLS 1000 and VLS 2000 include all of the components necessary for a complete VoiceLift sound field system, including microphone, receiver, amplifier, speakers, and cables. The PVS 305SA Switcher/Amplifier works in conjunction with the VLR 102 Receiver and FF 120 Speakers to evenly distribute the teacher’s voice throughout the classroom.

Each standard system includes the following core components:
- One VLP 102 VoiceLift Pendant Microphone
- One VLR 102 VoiceLift Receiver
- 50’ CAT 5 cable for connecting the switcher and receiver
- PVS 305SA Five Input PoleVault Switcher with Integrated Audio Amplifier
- One pair of FF 120 plenum rated Flat Field® Speakers
- 100’ SPK 18 Precut Speaker Cable – Plenum
- Standard wall charger

<table>
<thead>
<tr>
<th>Model</th>
<th>Version Description</th>
<th>Part Number</th>
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</thead>
<tbody>
<tr>
<td>VLS 1000</td>
<td>Single Pendant Complete VoiceLift System</td>
<td>42-134-01</td>
</tr>
<tr>
<td>VLS 2000</td>
<td>Dual Pendant Complete VoiceLift System</td>
<td>42-134-02</td>
</tr>
<tr>
<td>VLS 2000H</td>
<td>Pendant and Handheld VoiceLift System</td>
<td>42-134-22</td>
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</tbody>
</table>

*NOTE: VLS 2000 Systems add a second microphone and desktop charging station*

**VoiceLift Microphone** packages are specifically designed for integration into existing or new Extron PoleVault and WallVault Systems. PoleVault and WallVault are all-inclusive, complete AV systems that are easy to install, use, and support, making them ideal for single projector classrooms. The VLM 1000 and VLM 2000 include the microphone, receiver, and charger, as well as all cables necessary for connecting to a PoleVault or WallVault System. The output of the VoiceLift receiver connects to the PVS 305SA PoleVault Switcher which works in conjunction with the Flat Field speakers to evenly distribute the teacher’s voice throughout the classroom.

Each standard system includes the following core components:
- One VLP 102 VoiceLift Pendant Microphone
- One VLR 102 VoiceLift Receiver
- 15’ CAT 5 cable for connecting the switcher and receiver
- Standard wall charger

<table>
<thead>
<tr>
<th>Model</th>
<th>Version Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLM 1000</td>
<td>Single Pendant with wall charger</td>
<td>42-139-01</td>
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<tr>
<td>VLM 2000</td>
<td>Dual Pendant with charging station</td>
<td>42-139-02</td>
</tr>
<tr>
<td>VLM 2000H</td>
<td>Pendant and Handheld with charging station</td>
<td>42-139-22</td>
</tr>
</tbody>
</table>
Extron VoiceLift Microphones use infrared wireless technology. The teacher’s voice is picked up by the microphone and transmitted wirelessly to an IR receiver mounted on the ceiling or wall. The signal is then passed to a switcher/amplifier where it is amplified and distributed to speakers placed throughout the classroom. This creates what is called a sound field that enables teachers to be heard clearly throughout the classroom. Infrared signals do not pass through walls and are not subject to interference, offering clear advantages over systems that use radio frequency technology.

**VLP 102**  
**VoiceLift Pendant Microphone**

**Unique Features**
- Infrared wireless microphone
- Lightweight pendant design is comfortable to wear
- Volume/mute controls for easy operation
- Instant Alert feature enables teacher to request assistance with the push of a button
- Auxiliary input for MP3 player or other audio source
- Rechargeable 2700 mAh NiMH AA battery included for up to 8 hours of talk time on a single charge; also works with a standard alkaline AA battery
- Two IR frequencies - 2.3 MHz and 2.8 MHz, selectable

**VLH 102**  
**VoiceLift Handheld Microphone**

**Unique Features**
- Infrared wireless microphone
- Handheld design is ideal for use as a pass around microphone for student participation or team teaching
- Integrated anti-roll collar ensures microphone will not roll off flat surfaces
- On/Off/Mute switch for easy operation
- Auxiliary input for MP3 player or other audio source
- Rechargeable 2700 mAh NiMH AA battery included for up to 8 hours of talk time on a single charge; also works with a standard alkaline AA battery
- Two IR frequencies - 2.3 MHz and 2.8 MHz, selectable
The heart of VoiceLift Systems, as well as PoleVault and WallVault Systems, is the PVS 305SA Switcher/Amplifier. The PVS 305SA offers an input for the VoiceLift Receiver and an integrated 50 watt rms amplifier capable of driving up to eight Extron speakers and filling up the room with full, rich sound. In addition, it offers video switching and auxiliary audio inputs and outputs for expanding the capabilities of the classroom system.

With the included PVS 305SA, VoiceLift Systems provide a seamless upgrade path to integrated audio, video, and control in the classroom, making it easy to add multimedia capability in the future. Simply add AV input wallplates, a MediaLink controller, a projector, and AV sources for a complete, easy-to-use classroom AV system.

PoleVault and WallVault Systems also provide a seamless upgrade path to integrated audio, video, and control in the classroom, making it easy to add sound field capability to the system. The PVS 305SA included with these systems offers a dedicated VoiceLift input. Simply add the VoiceLift Microphone and receiver for a complete, easy-to-use classroom AV system.

**Features**

- Receives VGA computer video, composite video, and stereo audio signals from AV input wallplates
- Integrated 50 watt rms audio amplifier for stereo or dual mono audio
- Receives audio/video signals and provides power to AV input wallplates over CAT 5-type cable
- VoiceLift Receiver input simplifies installation of the VoiceLift Microphone
- A switched auxiliary audio input provides support for audio from an HDMI/DVI video source or MP3 player
- Independent input sensitivity adjustments are provided for program audio and VoiceLift Microphone
- Configurable audio line output for podcast recording, assistive listening systems, or adding an additional amplifier
- Paging sensor input mutes program audio when a public address system announcement is detected by the optional Priority Page Sensor Kit (70-619-01)
- Software-based tone and dynamics for audio adjustments to meet the needs of the acoustic environment
- Auto Power Save and Power Standby modes provide energy efficiency to reduce operating costs
FF 120

- Extron patented Flat Field® Technology for consistent sound levels across the listening area, reduces the number of speakers required
- Full-range driver with exclusive horn-loaded design provides extended low frequency response
- 1’ x 2’ (30.5 cm x 61 cm) drop-in ceiling tile enclosure for suspended ceilings
- White perforated grille matches appearance of air conditioning vents and deters theft
- UL 2043 plenum rated speaker; required by code for plenum ceilings

The Extron FF 120 is a full-range sound field speaker that drops easily into standard suspended ceilings. The FF 120 features a full-range driver with incredibly wide frequency response and an exclusive horn-loaded design for enhanced low frequencies.

Patented Flat Field Technology

Extron patented Flat Field Technology makes this speaker truly unique. Flat Field Technology allows the FF 120 to reduce beaming of mid and high frequencies directly under the speaker, delivering consistent sound levels across the listening area to each student.

Extremely Wide Sound Dispersion

The FF 120 offers an extraordinarily wide dispersion area of 170 degrees, which provides a very wide room coverage pattern. This is especially important for rooms with low ceilings.

With the combination of Flat Field Technology and wide dispersion area, only two FF 120 speakers are required in a standard classroom, as opposed to four or more traditional ceiling speakers.

For easy installation and theft deterrence, the FF 120 features a neutral white, perforated steel grille and included T-bar, which matches the appearance of standard air conditioning vents and grid ceilings.

ADVANTAGES OF FLAT FIELD TECHNOLOGY

Traditional ceiling speakers have difficulty providing even sound pressure levels throughout a classroom with a limited number of speakers. Typical results include gaps in coverage or hot spots.

These difficulties are eliminated with Extron patented Flat Field Technology that allows a minimum number of speakers to provide consistent sound levels across the listening area.
VoiceLift Microphone packages are specifically designed for integration in existing or new Extron PoleVault and WallVault Systems. PoleVault and WallVault are all-inclusive, complete AV systems that are easy to install, use, and support, making them ideal for single projector classrooms. The VLM 1000 and VLM 2000 include the microphone, receiver, and charger, as well as all cables necessary for connecting to a PoleVault or WallVault System. The output of the VoiceLift Receiver connects to the PVS 305SA Switcher/Amplifier to evenly distribute the teacher’s voice throughout the classroom.
The Extron Classroom AV System Grant Program provides increased visibility to K-12 educational technology projects by supplying selected pilot classrooms with advanced audio/video solutions. It has been proven that the use of audiovisual technology in the classroom increases student interest, participation, and achievement. The goal of the pilot classroom is to demonstrate the ease-of-use and benefits of Extron classroom AV technology to both teachers and administrators. The grant award includes installation of an Extron Classroom AV System and complete training.

How to Apply
Applying for the Extron Classroom System Grant is easy. Our online application at www.extronclassroom.com/grant takes only minutes to complete. Simply provide your contact information and location, as well as details on your classroom environment. Once your information has been submitted, an Extron Grant Administrator will review the application and contact you to discuss your project.

Training and Installation Included
Once the grant has been awarded, an authorized Extron integrator will contact you to review the details of the system and schedule installation and training. All equipment, installation, and training are provided free of charge, with no required commitment for future purchases.

24/7 Customer Support
Your grant classroom is backed by Extron’s industry leading S3 support. We offer 24/7 telephone assistance and have a nationwide network of specialists to ensure the system is optimized for your application. In addition, you will have access to the Extron K-12 Web site which offers additional resources including product information, manuals, white papers, How To videos, case studies and more.

Grants are available for the following systems:
PoleVault Systems for ceiling mounted projectors and
WallVault Systems for wall mounted projectors/displays:
PoleVault and WallVault Systems are designed by Extron for classrooms with either a ceiling mounted projector, wall mounted projector, or flat panel display. They are complete, centralized AV systems which include an AV switcher with integrated 50 watt amplifier, AV input wallplates, MediaLink controller, patented Flat Field speakers, mounting hardware and cables, as well as Free GlobalViewer® for remote control and management over a network. Also included is the Extron VoiceLift Microphone which further enhances PoleVault and WallVault Systems by evenly distributing the teacher’s voice throughout the room.

VoiceLift Microphone:
VoiceLift Microphone Systems are infrared wireless microphone systems that evenly distribute the teacher’s voice throughout the classroom. Standalone VoiceLift Microphone Systems provide a seamless upgrade path to PoleVault or WallVault with no duplication or replacement of equipment.

Districts Standardizing on Extron PoleVault, WallVault, or VoiceLift Systems

<table>
<thead>
<tr>
<th>District</th>
<th>Classrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay District Schools, FL</td>
<td>Over 1,200</td>
</tr>
<tr>
<td>Poway USD, CA</td>
<td>Over 1,100</td>
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<tr>
<td>Leander ISD, TX</td>
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<tr>
<td>Placentia-Yorba Linda USD, CA</td>
<td>Over 1,000</td>
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<tr>
<td>Indian River CSD, FL</td>
<td>Over 850</td>
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<td>South Washington County Schools, MN</td>
<td>Over 680</td>
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<td>Muscogee County SD, GA</td>
<td>Over 500</td>
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<tr>
<td>Eagle Pass ISD, TX</td>
<td>Over 450</td>
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<tr>
<td>Monroe TSD, NJ</td>
<td>Over 150</td>
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</tbody>
</table>

Extron Classroom AV System Grant Program

Apply Today
www.extronclassroom.com/grant
or contact your Education Support Representative at 800.633.9876 for additional information

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UNITED STATES
+800.633.9876 Inside USA/Canada
+1.714.491.1500

EUROPE
+800.3987.6673 Inside Europe
+31.33.453.4040

ASIA
+800.7339.8766 Inside Asia
+65.6383.4400

MIDDLE EAST
+971.4.2991800

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