

Voice Amplification: Where? When? Why? How?

If a room is large, the background noise level is high, the room has a lot of echo, or you are outdoors, you will have to talk louder than your normal, comfortable speech level to be heard and to hear yourself. Speech under these conditions often results in throat tension and vocal strain. The longer you talk, the more strained your voice will feel and the more hoarse you may become. When your brain hears competing noise, or receives poor feedback from your ears about the clarity of your voice, it tells the voice box and breathing system to work harder to make a louder sound. Why? Because we rely on the feedback to our own ears as we speak to confirm that our speech is clear and audible; and because sub-consciously humans understand it is impossible to communicate effectively under poor acoustic conditions. Voice training can increase your awareness of the signs of improper voice use, but you cannot completely over-ride the powerful sub-conscious “strain to be heard” command (“the Lombard Effect”).

It is important to evaluate the room acoustics before deciding the best approach to reducing your speech level and vocal strain: refer to the brochure “Classroom Noise” at www.pvcrp.com.

- If room noise is created by external or internal sources such as machinery, ventilation, or traffic, it is best to look for a solution to controlling that environmental noise source.
- If people are creating noise that competes with a speaker, the best solution is to find non-vocal ways to get the audience’s attention and to modify the speaker’s agenda so it is not necessary to communicate while the noise is present.
- Sometimes noise sources cannot be fully controlled. As long as a room is not too acoustically reverberant (echoic) a high-quality voice amplification system may allow a speaker to be heard above ambient noise without raising the voice.
- If the physical characteristics of a room make it very reverberant, amplifying the vocal sound will also amplify the echo and create another competing noise source. In this situation, modifications to the room may be necessary. See Classroom Noise: “Tips for a quieter learning environment” for further information about room acoustics.
- A room with high or hard-surface ceilings, hard-surface flooring, many windows, concrete or other hard-surface walls will be more likely to cause delayed reverberation of your voice that actually interferes with your ability to hear yourself speak. In this case, providing more sound-absorbing materials in the room may help, for example: carpeting, curtains, ceiling sound-tiles, or formal sound baffles.
- If the room reverberation is too fast or the room is too sound-absorbent, you may not get the added benefit of your voice bouncing back to your ears confirming what you have said. In this case, reducing the amount of absorbent materials may help.
- There is a fine balance between too much and too little reverberation! When in doubt, have an Audiologist or sound engineer make measures of the noise and reverberation characteristics of your usual speaking environments, and make recommendations for improving the acoustic conditions.

If you determine that a voice amplification device would be beneficial to reduce vocal strain, make certain you obtain the best system to meet your needs:

- Select a system that has low distortion and feedback, a wide dynamic range (volume level), is comfortable to wear, and portable, if necessary. Some systems will allow you to adjust the “treble/bass” component to over-ride ambient noises with specific frequency ranges.
- If you always use the same speaking environment, you should mount 4 or more speakers in a room the size of an average classroom. The speakers should allow your voice to be heard equally well in all parts of the room. The feedback that you receive from the speakers is particularly important in allowing you to talk at a normal, comfortable level without straining to hear yourself.
- Make sure the system is powerful enough so you can use it at 50-70% gain (volume control) for the noisiest condition. If it is not powerful enough and you have to turn the gain all the way up, the speech signal may become distorted.
- Choose a high-quality, unidirectional head-mounted microphone that sits in front of your lips to amplify only your voice, not a lapel-microphone or lanyard microphone that will amplify all the sounds around it. Ensure the microphone is adjusted to amplify your voice optimally, rather than amplifying other sounds in the environment. Some of the lanyard infrared systems allow for a head-set microphone option, which is worth consideration.
- If you have an “FM system” or similar sound system installed in your room already, you may be able to “plug in” to it with a high-quality head-set microphone and transmitter.
- If possible, try using the system you intend to purchase in the specific environment(s) where you will be talking to ensure it meets your needs. Don’t settle for a less-expensive system that will not meet your demands.

Equipment sources

A number of companies specialize in voice amplification systems for a variety of speaking/vocal performance needs. Examples are listed below. Check their websites for more information on their systems, or visit a local professional electronic system or music merchant. Examples: *Front Row/Phonic Ear; Red Cat; Sennheiser; Shure*

Potential funding sources for voice amplification systems

Capital Budgets for Employers or Self-Employment
Employers, where occupational voice use is required
Extended Health Plans; Union Benefits
Neil Squire Society
Service Clubs
WorkSafe BC (with accepted claim)