THE IMPACT OF

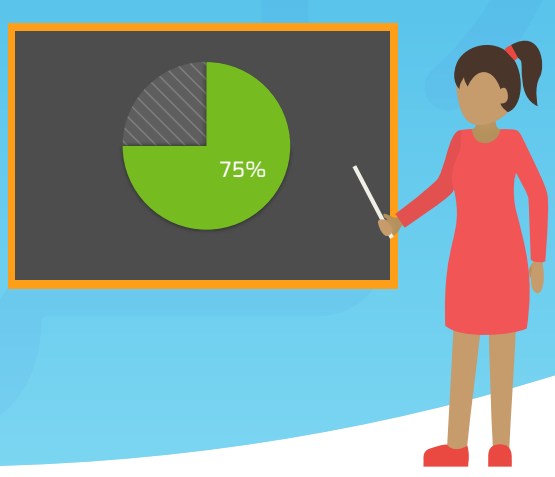
Poor Sound Quality in the Classroom

& WHY SOUND ENHANCEMENT IS SO IMPORTANT

DID YOU KNOW...

Research indicates 60-75% of the school day consists of

LISTENING-BASED ACTIVITIES[1]



THE PROBLEM:

Students Can't Hear You

ACOUSTICS + DEVELOPMENT

The typical classroom design may be useful for keeping things clean, but it is terrible for sound management.

Worse still, children do not develop the **cognitive ability** to use context to decipher meaning until about age 14. In other words, if a class of first-graders hears "My very educated mother just served up nine pizzas" as "Ny very educated mother just served up mine pizzas," they won't know to filter out the words "Ny" and "mine" with "my" and "nine."

TROUBLE WITH VERBAL TASKS

Indoor noise and reverberation in classroom settings are associated with poorer performance of verbal tasks.[4]

KIDS NEED MORE VOLUME

Adults with normal hearing require the voice to be about 50% louder than background sounds to hear the spoken message as consistently intelligible. Children, however, the desired signal needs to be up to *300% louder* than surrounding background sounds[3]!

POORER TEST RESULTS

As reported in a 2013 study in the Journal of Urban Health, scientists found that 8- and 9-year-old students who experienced higher "ambient" noise levels in school performed significantly worse on standardized tests in mathematics and French language, after controlling for their socioeconomic backgrounds.[5]

THE CURRENT SOLUTION:

"Just Speak up!"

· To account for students in the back row, the teacher would need to raise their voice up to **83 decibels** for everyone to hear.[6] This is quite loud – about **as loud as a garbage disposal**![7]

· While teachers make up only about four percent of the working population, they compose about 20 percent of the patient population in **voice treatment centers**.[8]

· Teachers are **32 times** more likely to be plagued with voice problems than any other voice-dependent occupation.[9]

THE BEST SOLUTION:

Sound Enhancement

STUDENTS RECEIVE HIGHER TEST SCORES

ASAT test scores were 15% higher, DIBELS scores were 35% higher, and DRA scores were 21% higher in amplified classrooms.[10] [11]

LESS SICK DAYS FOR TEACHERS

In 1996, Dubuque Community School District in Iowa reported teachers in classrooms without sound enhancement averaged fifty-two sick days per year due to voice, jaw or throat problems (0.93 sick days per teacher). However, teachers in sound enhanced classrooms took only nineteen sick days per year (0.34 sick days per teacher) for the same problems.[12]

AN EXTREMELY AFFORDABLE SOLUTION

At $100 per day for substitute pay, a sound enhancement system (like the **Qball**, only $179) can pay for itself by preventing just 2 days of teacher absences.

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[2] Johnson, B. (2014, August 22). Auditory Awareness: Are Students Hearing the Lesson? Retrieved August 13, 2018, from https://www.edutopia.org/blog/auditory-awareness-are-students-hearing-lesson-ben-johnson
[3] Moore, R. E., Ph.D. (n.d.). A Comparison of Acceptable Noise Levels in Children and Adults [PPT]. Mobile: University of South Alabama.
[4] Klatte, M., Bergström, K., & Lachmann, T. (2013). Does noise affect learning? A short review on noise effects on cognitive performance in children. Frontiers in Psychology, 4. doi:10.3389/fpsyg.2013.00578
[5] Pujol, S., Levain, J., Houot, H., Petit, R., Berthillier, M., Defrance, J., . . . Mauny, F. (2013). Association between Ambient Noise Exposure and School Performance of Children Living in An Urban Area: A Cross-Sectional Population-Based Study. Journal of Urban Health, 91(2), 256-271. doi:10.1007/s11524-013-9843-6
[6] Enhanced Classroom Hearing - Researching Teacher Preference. (n.d.). Retrieved August 13, 2018, from http://www.classroomhearing.org/research/teacher.html
[7] Comparitive Examples of Noise Levels. (n.d.). Retrieved August 13, 2018, from http://www.industrialnoisecontrol.com/comparative-noise-examples.htm
[8] Titze, I. R., Lemke, J., & Montequin, D. (1997). Populations in the U.S. workforce who rely on voice as a primary tool of trade: A preliminary report. Journal of Voice, 11(3), 254-259. doi:10.1016/s0892-1997(97)80002-1
[9] Smith, E., Kirchner, H. L., Taylor, M., Hoffman, H., & Lemke, J. H. (1998). Voice problems among teachers: Differences by gender and teaching characteristics. Journal of Voice, 12(3), 328-334. doi:10.1016/s0892-1997(98)80022-2
[10] Blazer, C. (2007, March 01). Improving the Classroom Environment: Classroom Amplification Systems [PDF]. Miami: Miami-Dade County Public Schools.
[11] Ibid
[12] Allen, L., M.A. (n.d.). The Effect Sound-field Amplification has on Teacher Vocal Abuse Problems [PDF]. Dubuque: Keystone Area Education Agency.