



Key Studies on Sound-field Amplification

1. MARRS Project Studies (1979 – 1993) Validated by the U.S. Dep't of Education

- 30% of average elementary (K–6) populations fail a 15dB screening test.
- Most of these children have this mild hearing loss due to otitis media (infections) and middle ear fluid.
- A smaller percentage have chronic mild hearing loss (MHL), and a larger percentage is affected periodically throughout a given school year.
- The majority of these children go undetected since they usually pass a routine screening of 25dB. (This level has traditionally been thought to be adequate for normal classroom learning.)
- 75% of these MHL children have academic deficiencies by the 6th grade.
- Many of the unidentified MHL students are misdiagnosed with various learning difficulties.

Abbreviated Study Results Indicate Everyday Use of SFA Provides Outstanding Results¹:

- Teaching quality is enhanced as every child receives clearly audible instruction, regardless of background noise or seating location.
- There are statistically significant improvements in reading and language test scores for K-6 students, both those with normal hearing and those with mild hearing loss.
- The significant gains in academic scores were clearly evident in less than one school year and were maintained for the study periods of up to three years.
- Sound-field amplification was lower cost than resource room instruction to achieve the same or superior academic test scores.
- Teachers reported much improved student attention, less student distraction, and less frequent need to repeat instructions.
- Teachers reported that classroom management was improved and discipline problems were reduced due to better voice command response throughout the classroom.
- Most students reported that they found it easier to understand and pay attention.

2. ICA (Improving Classroom Acoustics) Studies

- 1993-1994 Florida School Districts: Escambia, Orange Pinellas, Sarasota (855 students)
- 1994 Florida School Districts: Escambia, Orange Pinellas, Sarasota, Volusia (1319 students)
- 1994-1995 Florida School Districts: Bradford, DeSoto, Dixie, Flagler, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Highlands, Holmes, Jefferson, Leon, Okeechobee, Sumter, Walton (735 students)

Conditions:

- 97% of classrooms in the 1994 study failed the recommended acoustical standard for a good learning environment.
- Sound-field classroom amplification systems provided an average of 7-decibel increase in teacher voice intensity.
- Teachers used sound-field amplification on average of 4.2 hours per day.

Abbreviated Summary Results:

- Students in early grade general education classrooms demonstrated significantly greater change in listening, learning behaviors and skills; and at a faster rate than their grade-alike peers in unamplified classrooms.
- Younger students showed the greatest improvement in listening and learning behaviors and skills.
- More than 95% of students said sound-field amplification (SFA) made it easier for them to hear their teacher and helped them listen better.
- 100% of teachers identified a decrease in vocal strain as a key personal benefit of using SFA.
- 96% of teachers said that students' qualitative behaviors related to attentiveness, listening, and comprehension improved when using SFA.
- 92% of teachers said that the need to repeat directions and information decreased when using SFA.
- 92% of school administrators said that SFA enhanced class instruction and management.

¹ C. Crandell, J. Smaldino, and C. Flexer, Soundfield FM Amplification: Theory & Practical Applications, San Diego: Singular Publishing Group, 1995; pp 212-213