

Classroom Research Finds Soundfield Helps Learning

Research undertaken in New Zealand schools has found that students benefit significantly from the use of sound-field amplification systems in classrooms.

The research was undertaken by Michael Heeney, a regional co-ordinator for Kelston Deaf Education Centre, as part of his PhD from the University of Newcastle in Australia. Sound-field systems use FM technology to transmit a teacher's voice (signal) above the classroom noise, with the aim of making it easier for students to hear the teacher no matter where they are in the classroom at the time.



The research showed that the sound-field systems made a significant difference in terms of the listening and reading comprehension, vocabulary and mathematical skills of the students involved.

"The difference between the test scores of the students in classrooms with sound-field and those without was quite dramatic," Mr Heeney said.

"While sound-field made the greatest difference in low decile schools, the study shows that the systems provide considerable and significant benefits to all students regardless of their school, ethnicity, or whether they had middle ear problems such as glue ear."

The study involved 626 students at five schools in the Rotorua area and compared the learning achievement of students in classrooms fitted with sound-field systems with those in classrooms that weren't amplified. The project was funded by the Oticon Foundation with the systems donated by the Rotorua Energy Charitable Trust.

The students and teachers involved in the study were very positive about the systems. "Children found it easier to hear the teacher and found the quieter classroom environment more enjoyable. Because they could hear the teacher's answer to other children's questions, their 'incidental' learning increased and they didn't need to ask the question themselves,"

Mr Heeney said.

"Teachers noticed increased attention levels among students and a decrease in disruptive behaviour. They also had higher energy levels from reduced voice strain and not having to repeat questions or instructions."

Mr Heeney hopes the research findings will lead to a greater user of sound-field in New Zealand classrooms. "Sound-field systems are the single most cost effective intervention a school can invest in to increase literacy outcomes," he said.

Research summary and photos available from www.oticon.org.nz

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Oticon Foundation

The Oticon Foundation in New Zealand was established in 1976 as a charitable trust of socially responsible hearing aid manufacturer, Oticon New Zealand Limited. The Foundation allocated over \$1 million worth of grants during this time for research projects and organizations to disseminate knowledge about hearing and hearing loss, help remedy hearing loss, and improve the quality of life for hearing impaired New Zealanders and their families.

Rotura Energy Charitable Trust

Established in 1994, the Rotorua Energy Charitable Trust's mission is to "manage and enhance assets held in trust and distribute income for the long term benefit of the Rotorua District Community." Last year's New Zealand Trustees Association 'Trust of the Year,' the Trust supported over 130 community organizations with almost \$3.7 million in donations during the year.

Key Research Findings

- Progressive Achievement Tests (PATs) are standardized to New Zealand students and are group-administered to all students from year three. Children's percentile rankings are not expected to change significantly from year to year. The PAT results for listening and reading comprehension, vocabulary, and mathematics for students in the amplified classrooms in this project improved significantly.
- Phonological awareness tests measure achievement in ten specific phonologic areas. The students in the amplified classrooms made statistically significant improvements on all ten sub scores, with their improvements greater than that of the 'control' group in all aspects of the tests.
- High teacher acceptance of the equipment with 90% using the soundfield systems consistently.
- 66% of teachers reported lower noise levels.
- 73% of teachers reported increased on-task behavior and being able to refocus students without disrupting the routines of the children around them.
- One third of teachers noted reduced disruptive behavior.
- Around two thirds of teachers reported improved understanding of instructions and student cooperation.
- 80% of teachers reported reduced vocal strain - an important issue for teachers.
- 98% of students had positive feedback about the equipment.
- Students reported that teachers' voices were clearer and that it was easier to hear, even when sitting at a distance from the teacher and over competing noises.
- Students and teachers both reported enjoying the quieter, calmer classroom environment.