

Pump up the volume

Teachers don't need to shout to be heard, reports **Margaret Cook.**

CAROL FLEXER recalls a grade 3 student who was quietly filing books in her school library in the US. As she worked, she listened to the librarian read a much-loved story about farm animals, including the sounds they make, to a younger class.

Afterwards the girl told the librarian: "So it was 'bleating sheep', not 'bleeding sheep' in the story."

"You know, I worried about those bleeding sheep for a very long time."

Sound field technology had recently been installed in the library and the girl could clearly hear every word of the story, says Professor Flexer, an expert in pediatric and educational audiology who recently visited Australia.

With the technology, a teacher wears a wireless microphone and his or her voice is transmitted to a receiver that amplifies and evenly broadcasts it throughout the room via loudspeakers.

Many American schools have installed the technology, with some education districts making it mandatory, says Professor Flexer. The US has also set a national standard for classroom acoustics.

According to Robyn Massie, a research scientist with Australian Hearing, which is part of the Department of Human Services, a growing number of Australian schools are installing the technology.

Dr Massie has conducted two qualitative studies into the impact of speaker systems in classrooms. One involved 240 grade 2 children, most from non-English-speaking backgrounds or of Aboriginal and Torres Strait Islander descent. Their teachers reported they were more attentive, had better listening skills and stayed on task longer when the



technology operated in their rooms. "Beneficial effects were obtained in reading, writing and numeracy, irrespective of whether they had English as a native or second language," Dr Massie says.

The teachers said they did not have to raise their voice — resulting in less strain — although some complained of technical interference and that the children were distracted by

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PROFESSOR CAROL FLEXER

the microphones and speakers. The children's comments included: "We liked it loud and clear", "We could hear you better" and "We stopped because we could hear you say 'Stop'".

Dr Massie's other study involved 64 Aboriginal and Torres Strait Islander students in grades 1 to 4. About 20 per cent had normal hearing, 67 per cent had slight hearing loss, and the

rest had mild to moderate hearing loss. Their rooms were very noisy, she says.

Sound-field technology provides clear audio to help students' reading, writing, comprehension and numeracy.

"We found that with sound-field technology, there was increased teacher/student verbal interaction, increased responses to teachers' instructions to the entire class and less disruptive behaviour," Dr Massie says. "Also, the children were more proactive and relied less on non-verbal cues (to understand)."

These effects were more evident in rooms with non-indigenous teachers, she says. One reason might be that indigenous teachers already provided a more culturally responsive learning environment, leading to less communication breakdown.

"Children spend up to 70 per cent of the day listening — it's the cornerstone of the education system," Professor Flexer says. "Hearing is the velcro to which spoken language, reading and academic competencies are attached. If they can't hear or attend to instructions, then the entire premise of the education system is undermined."

However, children's highest

auditory brain centres aren't developed until the age of 15, and they can't maintain the same auditory focus as adults, she says.

"When adults — who have decades of life and knowledge experience — don't hear the full message or conversation, their brains fill in the gaps. But you can only fill in gaps about what you know. New words and new information aren't in children's brains' database. It means the information is meaningless to them or they make it up."

Also, classrooms tend to be noisy — and many teachers try to compensate by raising their voices, risking vocal damage, says Professor Flexer.

"But the problem with talking louder is that your voice becomes monotonal, strident and less distinct, and you put more noise and negative energy into the room. It's why teachers are often exhausted by end of day."

Professor Flexer's research in the US has found that children's academic results, attention levels, behaviour and time spent "on task" improve when sound-field technology is installed and used correctly.