

Attainment of school pupils with a sensory impairment – A response

I am an Educational Audiologist working in Renfrewshire, Inverclyde and East Renfrewshire authorities. I have worked in Deaf education for over 30 years as a teacher of the deaf and, for the last 15 years, as an Educational Audiologist in Donaldson's School. I have now left Donaldson's and am working in a freelance capacity.

The key issue to address in order to raise attainment for all children, but particularly for those with a hearing and a visual impairment, is classroom acoustics. Hearing and listening are at the centre of the education system. Hearing allows for the development of our listening skills, listening supports the development of our language skills, language allows us to move into literacy and our literacy level determines our level of achievement. If this is the case, then we need to build schools that allow children to hear their teachers and the other children in their environment.

Young children need the speech signal they receive to be at least 16 dB above the noise in order to be fully accessed. Children with hearing loss need the speech signal to be 20-30 dB above the noise to be fully accessed. Visually impaired children rely on a good acoustic signal even more than other children because of their visual difficulties. Studies on noise levels in class have shown that average noise levels of 70dBA are common with peaks above 90dBA recorded. How can the recommended speech levels above noise be achieved?

Two things need to be done. Firstly, all schools in Scotland should, at the very least, meet the BB93 acoustic standards for school builds (<http://www.bb93.com/bb93.htmls>). Secondly, all classrooms should be fitted with voice enhancement systems. These are low powered PA systems, called Soundfield systems. In the same way as lights are fitted in classrooms to support visual access to the curriculum, soundfield systems should be fitted to ensure that every child has appropriate access to the speech of the teacher and to the speech of others in the class. Inverclyde council are building all their new schools to the BB93 standards and are fitting soundfield systems in every new primary school build. This is a link to a 5min video on some of the research and benefits of soundfield systems: <https://www.youtube.com/watch?v=l4JMMeyNRSg>
Here is a link to a TED talk on acoustics:
http://www.ted.com/talks/julian_treasure_why_architects_need_to_use_their_ears

Some additional thoughts:

- Getting classroom acoustics right is essential for both hearing impaired and visually impaired children
- It may be the only issue that unites these two groups
- The two groups are not mutually exclusive. 40% of children with a sensorineural hearing loss also have a visual impairment (Hall and Elliman 2006)
- All children struggle to hear in less than ideal conditions
- Children's auditory systems are not fully matured till around 15 years of age
- Hearing is a first order event. If we do not hear the signal there is nothing we can do with it
- The more effort we have to put into listening the less cognitive resources we have for other activities
- Most children with hearing loss are unidentified
- The most common childhood illness is glue ear (fluctuating conductive hearing loss)
- Some children with mild hearing loss are performing less well than some children with profound hearing loss (Marschark et al 2014)
- It is the auditory system that drives literacy development, not the visual system

- For children, listening experiences that are accessible, interesting and set at the appropriate level lead to enhanced brain growth