

Creating an Improved Listening Environment

What is an acoustically appropriate environment?

- An acoustically appropriate environment is one that allows for optimal hearing. The removal of barriers that obstruct listening enhances the environment for a child with a hearing loss. It is important that children with hearing loss be in an environment where they are able to access whatever they are able to hear. Children who expend more energy just trying to hear are less able to concentrate and focus on primary tasks.

Why should I be concerned about an acoustically appropriate environment at home?

- According to the United States Access Board, 2009, research indicates that levels of background noise and reverberation that go unnoticed by mature and skillful listeners adversely affect learning/listening environments for young children who require optimal conditions for hearing and comprehension.

How can I create an acoustically appropriate environment at home?

- Make your home "listening friendly." Reduce the background noises and reverberation (echoes) in your home. There are things you can do to reduce noise and reverberation: Use carpeting and cloth curtains. The more soft surfaces and the less hard surfaces, the better. Replace buzzing fluorescent lights. Operate noisy appliances (dishwasher, washing machine) when your child is not home or is sleeping. Keep fans, air conditioners, dishwashers, etc. maintained so the noise they make is minimal.
- Try not to let your child's better ear or hearing aid/implant microphone ear face noise if that noise is not removable (dishwasher, room air conditioner, radio).
- Do not have the TV, radio, vacuum cleaner, etc. on while eating dinner or at other times when you are talking with your child.
- Be aware of where you place your child at the dinner table. Try to have the child facing those who will be talking to him or her.
- Read to your child in a quiet environment. Sit your child on your lap so you speak into either his better ear or into his listening device's microphone.
- Create a quiet listening environment while your child is watching TV, communicating or playing with others.
- Distance listening is difficult for children with hearing loss. The greater the distance between the speaker and the child, the more difficult it is to hear. Do not give your child instructions from another room. He or she will likely hear your voice but may not understand what you are saying. Each time you double the distance between the speaker and listener, the signal decreases by 6db.
- Teach your child's siblings about strategies you have learned to help your child with hearing loss.
- If your child wears a hearing aid or implant, make sure it is functioning properly at all times.
- Close the window when outside noise may interfere with listening and learning.

Why should I be concerned about an acoustically appropriate environment at childcare/school?

Signal to noise ratio is important in all acoustic environments – especially a childcare/classroom setting. It is the ratio of the spoken message to the background noise. The more favorable the signal to noise ratio, the more intelligible the spoken message is. Hearing adults need a signal to noise ratio of +6db, meaning the speaker's voice is 6 decibels louder than the background noise. Hearing children need a signal to noise ratio of +16db and a child with hearing loss needs a signal to noise ratio of +20-30db. Typical classrooms average a signal to noise ratio of +4db.

(<http://www.ssc.education.ed.ac.uk>) (Carol Flexer, Children with Hearing Loss, 2007)

How can we make childcare settings/classrooms more "listening friendly"?

Improvements that can be made to a childcare/classroom setting include the following:

- Use of sound field in the room – allows for a signal to noise ratio of +20db.
- Use of personal FM system in the room – added to a sound field improves signal to noise ratio even more.
- Carpeting-if there is not wall-to-wall carpeting, place some area rugs on the floor.
- Request acoustically treated hanging ceiling tiles. The lower the ceilings, the less reverberation.
- Avoid situations where the class is split and half of the students are listening to teacher instruction and the other half are watching TV or listening to a tape recorder.
- Soft window treatments (thick material).
- Replace buzzing lights.
- Hang long pieces of felt on the wall on which children can pin artwork.
- Use "creative" artwork-hang egg crates and strips of carpet from the ceiling.
- Use corkboards whenever possible.
- Place flat surfaces (movable boards) at an angle.
- Place tennis balls or rubber tips on chair feet (keep in mind latex allergies).
- Have soft chairs (small beanbag chairs) in leisure/reading areas.
- Do not have noisy equipment (e.g., computers, projectors) on if you are not using them.
- Try to keep doors and windows closed.
- Smaller class size – less children = less noise.
- Position the child closer to the speaker.
- Teach your child to advocate for him or herself by learning to ask for clarification when messages are not understood: "Can you repeat that?"
- Give your class an age-appropriate lesson about sound. Show them how it is difficult to hear when many children are talking at once.