



The Role of Assistive Listening Devices for Education

WHAT ARE ASSISTIVE LISTENING DEVICES?

Many students who use hearing aids effectively in quiet environments have a difficult time following information presented in large classrooms. In the classroom, the teacher's voice is competing with background noise, room echo, and distance. Therefore, the intelligibility of the teacher's voice is degraded by the poor room acoustics as well as the hearing loss.

Most Assistive Listening Device (ALD) systems use a microphone/transmitter positioned close to the teacher's mouth to send the teacher's voice through the air or by cable to the receiver worn by the student. By placing the microphone close to the teacher's mouth, ALDs can provide clear sound over distances, eliminate echoes, and reduce surrounding noises.

WHAT ARE THE DIFFERENT TYPES OF ALDs?

ALDs utilise different technologies. Typically, they are wireless or wired. Wireless ALDs make use of radio frequencies, light rays, or magnetic inductive energy to transmit sound. Hardwired ones use direct electrical connection to transmit the auditory signal. Each system has special features, capabilities, advantages, and disadvantages.

ALD SYSTEMS FREQUENTLY USED

Frequency Modulated (FM) Systems

An FM system is a wireless, portable battery-operated device that uses radio transmission to send auditory signals, i.e. speech, from a transmitter to a receiver.

With most FM systems, the teacher wears a lapel microphone or a head worn microphone connected to a body-worn transmitter. The student wears the FM receiver unit clipped to his/her clothing or clipped straight on the hearing aid. The FM receiver can also be connected to the student's hearing aid via an induction neckloop system or direct audio input cables. Special FM cables are also available for cochlear implant users.

FM receiver units have been significantly miniaturised. In FM behind-the-ear (BTE) hearing aids, the FM receiver is built into the hearing aid or hearing aid manufacturers have wireless FM boot receivers that attach to the bottom of a hearing aid.

An FM transmitter can also be plugged into other electronic equipment such as TV, computers etc.



Soundfield Amplification Systems:

Soundfield amplification systems amplify and broadcast the teacher's voice through wall or ceiling-mounted loudspeakers. The system consists of a microphone/FM transmitter, amplifier, and one or more loudspeakers. A loudspeaker can also be placed next to the student.

Induction Loop Systems:

Induction loop systems use



electromagnetic waves for transmission. Sounds are picked up by the teacher's microphone, amplified, and sent through the wire/loop, creating an invisible electromagnetic field. The telecoil (T-switch) in the student's hearing aid serves as a receiver for the signal. The loop can encircle the entire room or be small and hidden under a chair or table.

What are the benefits of using ALDs?

A distinct acoustic advantage of ALDs is the position of the input microphone close to the teacher's mouth. The microphone location allows the level of the teacher's voice to stay constant to the student regardless of the distance between the teacher and the student. The teacher's voice is also heard clearly over room noises

such as chairs moving, fan motors running, and students talking.

- * ALDs can be moved from class to class or permanently installed.
- * ALDs are helpful when listening in a whole classroom or in small groups.
- * ALDs can be used alone or in conjunction with personal hearing aids and cochlear implants.
- * ALDs are used with students who have varying degrees of hearing loss.
- * ALDs can be beneficial when listening to audio and audiovisual equipment, e.g., VCRs, tape recorders, and stereos.

STRATEGIES FOR USING ALDS

ALDs will provide maximum benefit when used appropriately. Here are helpful tips for using ALDs.

1. Become knowledgeable about the ALD system. Request in-service training from an audiologist and/or manufacturer of the system. Involve the ALD user in the training.
2. Discuss with the student the situations where the ALD will be used.
3. Position the ALD's microphone in locations that will provide the clearest speech reception. The microphone should not be near a noise source, e.g. overhead projector. The lapel microphone should be between three to five inches from the mouth or sound source. Make sure that the voice intensity or sound source is not too loud. Loud speech signals can distort or over-amplify the ALD user.
4. Determine the best location for the ALD's receiver(s).
5. Provide information for the class on how the ALD will be incorporated into the classroom.
6. Continue to use the communication strategies you used with students who wear hearing aids.
 - a. Face the student. Although the student can hear at greater distances with the ALDs, she/he may rely heavily on visual cues to aid understanding. Make sure the microphone does not block the mouth.
 - b. Speak slowly and clearly.
 - c. Favourable seating, close to the teacher and blackboard is still recommended.
7. Allow the student to couple the ALD system to audiovisual equipment when possible.
8. Perform a listening check with the equipment each time it is used. A maintenance routine and schedule should be established.

There are a variety of ALDs which can be used effectively in the classroom. Consult with an audiologist to determine the most appropriate assistive listening device. ALDs can maintain a clear presentation of the speech signal in the presence of poor room acoustics.



ALDs ARE HELPFUL WHEN LISTENING IN A WHOLE CLASSROOM OR IN SMALL GROUPS.