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## FOR ALL STUDENTS EVERYWHERE:

# Technology Means Independence in a Beautiful Digital World

*By Tina Childress*

I love technology! In fact, my love for technology is so strong that my nickname is “Techy Tina.” I am a former hearing audiologist who became a deaf audiologist. I use two cochlear implants: one for each ear. Teachers, parents, and those involved in the lives of deaf and hard of hearing students should not fear technology but, like me, embrace it—and help their students to embrace it.

Technology benefits everyone, but perhaps especially deaf and hard of hearing students; it allows them direct access to the world around them and continued connection with others. Technology can mean increased access, independence, and self-reliance. The T-coil and all of the cables and accessories that come with hearing devices are essential for those that use hearing technology. Below are some of the options I’ve discovered in our new techy world. Read on!

### **Wearable Technology and Alert Signaling Devices**

From the moment they wake up, and even before they wake up, today’s teenagers can know if there is an emergency. While strobe lights, loud alarms, and bed shakers have been around for many years, a new technology is spreading today: the smart watch. The smart watch, a wearable computer that slips around the wrist like a watchband, shows texts and e-mail messages along with the time. In addition, the watch can function as an alert signaling device. Wearers can set up an alert at times of their choice and the alert occurs as a strong tactile vibration. Similar



**Right:** Today’s students are technology savvy, skilled in texting, e-mail communication, videoconferencing, and surfing the Internet for information.

*Photo by John T. Consoli*

*Product photos courtesy of Harris Communications and Apple*



vibrations occur when e-mail and text messages arrive. Apple has just released a smart watch that connects with the iPhone, but I have had a smart watch for a while. Mine is a Pebble watch, and before I put on my cochlear implants—when I can't hear, see, or feel my phone—I depend on it.

As much as connection, wearable technology and signal devices foster independence. Getting up and receiving a message is not dependent on a family member. These devices are one way that allow deaf and hard of hearing young people to take responsibility for their own lives.

### **Helpful Systems to Combat Environmental Noise**

The most common complaint I get from hard of hearing individuals is how hard it is to listen in a noisy environment. This may be particularly difficult for deaf and hard of hearing students who use audition as they are still learning the importance of telling their teachers and friends where to stand and how to speak so they are able to understand them. It is definitely not easy for a young person to suggest that she and her friend go to a quieter place or a place with better lighting to talk. It may be even more difficult asking adults or an authority figure to do so. Several systems have been designed for use in public places. Students should know about each of them—and which is of most benefit for their unique needs.

The systems include:

- **FM/DM systems.** Found most often in schools—but becoming more widely accepted in other listening-intensive situations like meetings—these systems send auditory information via an analog (FM) or digital (DM) signal. There are two parts to these systems: a transmitter that connects to the person speaking, speakers, radio, or whatever it is that the deaf or hard of hearing person wants to hear, and a receiver that is worn by the deaf or hard of hearing person. There are various microphone styles for the teacher and various receiver options for the student. Students might use a receiver directly plugged into their hearing aids or cochlear implants or the receiver may be in the form of a speaker that the whole class can hear. Sometimes a deaf or hard of hearing individual can use a microphone that looks like a pen and point it toward whatever it is he or she wants to hear.
- **Infrared devices.** Most commonly found in theaters, infrared devices send auditory information through an infrared signal, which I like to think of as a cone of sound. The person with hearing loss sits within the cone using



specialized receivers. Several receiver options are available, including headphones that fit over the ears, plugging into hearing aids or cochlear implants with special cables, and neckloop receivers that connect to the T-coil in a hearing aid or cochlear implant. For deaf and hard of hearing individuals who do not need implants or hearing aids, some theaters offer receivers with headphones that can access the signal directly. Unfortunately, too many theaters use under-the-chin-style headsets, which do not work for those of us with amplification; under-the-chin-style headsets do not work well with earmolds and ear hooks.

- **Induction loop systems.** Found in a variety of settings, these systems are becoming more prevalent throughout the United States. The induction loop—a specialized perimeter of wire that surrounds a designated area—sends auditory information to a T-coil setting on either hearing aids or cochlear implants. Looped areas can be of varying sizes. Theaters, places of worship, live performance areas, and public meeting rooms in local libraries can be looped; so can cars and even favorite chairs. The beauty of loop systems is that individuals who wear a device that has a T-coil setting don't need any kind of special receiver to hear the sound. All they have to do is switch their hearing aids or cochlear implants to the T-coil setting and sit within the looped area.

To find a phone's HAC rating, look in the "specifications" section of the literature for that particular model of phone. Also, check out the accessibility page of any of the major carriers; often these pages list the HAC rating of each phone.

There are also ways to caption phone calls. There are services that use voice recognition software to convert conversation to text, which is displayed on a screen on a specialized phone, on a computer, or on a mobile phone. There is also an app that uses live CART writers to transcribe your conversations and even to listen to your voicemail.

Individuals who use American Sign Language (ASL) have a choice of devices that enable easy communication. These include front-facing cameras on computers that allow direct communication with other ASL users and with hearing people through video relay. Video relay services throughout the country provide interpreting services between those who use ASL and those who use voice in real time. In addition, FaceTime, the Apple app automatically included on every iPhone, provides effortless face-to-face communication through which signing is fairly easily understood.

## Movies and Plays

Accessibility in movie theaters and live theaters has come a long way! Caption systems include DoReMi's CaptiView and Sony's Entertainment Access Glasses.



There are two technologies that display closed captions for individuals in movie theaters: one has a text display on a flexible gooseneck arm that has a base that fits into the cup holder of the theater seat, and the other displays captions in special glasses. Movie theaters tend to use one or the other—and the job of the deaf or hard of hearing individual is to find the theater that best matches his or her technology preference. My favorite source for finding captioned movies is Captionfish (<http://captionfish.com>) because it explains which technology is used in which theater for which movie.

Live theater, in addition to looping or other methods of enhancing access to sound, sometimes provides visual access to dialogue as well. Open captions show through various technologies that permit print to be displayed through light. Captions are usually set up on or near the stage. ASL interpreters are also available for various performances. Teachable moments occur as students learn to use this access—because they learn to plan ahead. Like all of us, they have to remember to ask about accommodations early!

## Apps and Applicability

A few years ago I started collecting and categorizing apps, and this list has grown!

## Phones and Telecommunication

Today texting, e-mail, Instant Messaging, visual chatting, and videoconferences are standard practice. These technologies have leveled the playing field for participating in everyday communications. Families can keep in contact during the school day. At the end of the school day, students are able to let parents know if they want to stop and visit a friend on the way home. Like their hearing peers, deaf and hard of hearing students have full and continuous access to friends and family via text.



When deaf and hard of hearing people ask me, "What kind of cell phone should I get?" I

recommend that they look at the Hearing Aid Compatibility (HAC) rating of the phone. Each of the major carriers is supposed to have a certain number of phones that are HAC rated, which means that they are less prone to interference. There is the "M," *microphone*, rating which gauges how strong the phone is. A high M rating means that when held up to the ear, the signal is relatively loud. There is also the "T," *telecoil*, rating, which shows how strong the T-coil signal is. A high T rating means that a robust signal is received. M4 and T4 are the highest ratings; M3 and T3 may be acceptable.



Categories include: accessibility, audiology, classroom tools, hearing testing, listening therapy, media players, personal amplifier, sign language, sound level meters, speech/language, and telecommunication. Take a few minutes to check out the listing and see if anything meets your needs. This list is ever-changing so be sure to come back often.



The list can be accessed at <http://bit.ly/Apps4HL>.

If all of these suggestions seem overwhelming, here are some quick suggestions for navigational support:

- Talk with your audiologist.
- Check out recognized organizations through their websites and conferences:
  - Alexander Graham Bell Association (<http://listeningandspokenlanguage.org>)
  - Association of Late Deafened Adults (<http://alda.org>)
  - DeafNation (<http://deafnation.com>)
  - Hearing Loss Association of America ([www.hearingloss.org](http://www.hearingloss.org))
  - National Association of the Deaf ([www.nad.org](http://www.nad.org))

Hearing aids, cochlear implants, captioning, text messages, and other technology have come a long way since they were first introduced. Some devices allow access to sounds that were impossible to hear before. Some enable understanding of sound through distance. Some allow sound to be made visual. Deaf and hard of hearing individuals of all ages can use the power of the Internet and digital technology. For deaf and hard of hearing students, access through technology will only increase and improve. As professionals involved with their lives, we can only guide and support them—and then watch as they take over. The future belongs to them.



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