## World of Difference

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It's come a long way from a pad and a pencil. From instant messaging to video chats and two-way pagers, technology has made leaps and bounds in the way deaf people can communicate with the hearing world.

"With e-mail, I suddenly had full access to information being communicated and/or shared, which allowed me to more fully participate in the exchange of ideas in the work place," wrote Charles McFadden, a senior software engineer at Lockheed Martin, in an e-mail.

Until about 1995, McFadden, who lost his hearing at age 4, had to rely on co-workers and company bulletins to receive messages and news other people got through voicemail.

"I had very limited access to those messages," he wrote.

Whether it's video phones, text messaging or real-time speech to text captioning, technology has helped level the playing field for deaf and hearing impaired people, according to Alan Hurwitz the dean of the National Technical Institute for the Deaf, at the Rochester Institute of Technology in New York.

"The biggest problem for deaf people is the fact that most of them use sign language for communication," said Iris Boshes, director of the Deaf-Hearing Communication Centre in Swarthmore. "If English is not their first language, that's hard. Even with text to text, it's English."

Almost 20 million deaf and hearing-impaired people live in the United States, according to the National Center for Health Statistics, which is run by the Centers for Disease Control and Prevention. The number of people who are completely deaf is much smaller, though no exact figures or a local breakdown were available.

English literacy among those who are born deaf continues to be a challenge, said Amy Goldman, associate director of the Institute on Disabilities at Temple University. Though captioning helps deaf people, it assumes they know English.

"American Sign Language is a different language. It has its own grammar, its own words, the order of words is different," she said.

Goldman coordinates Pennsylvania's Assistive Technology Lending Library, a state-funded resource that lets people try out technology that makes life easier for people with disabilities. This can include amplified phones, or phones with extra-large keypads, for use by people with a wide range of disabilities.

There's Audi See, often used in classrooms, where the teacher wears a headset with a tiny camera that focuses on her lips and face. A little TV on the deaf or hearing impaired student's desk, allowing him to follow along with the lecture by reading the teacher's lips and facial expressions.

Another technology, called Interpretype, is the evolution of the pen and paper, the way deaf or speech-disabled people have traditionally communicated with those unversed in American Sign Language. It consists of two machines that look much like laptops, with full keyboards and small screens. Instead of speaking and listening, you type and read.

"One of our librarians is deaf, and she and hearing patrons type back and forth to communicate, just as our hearing registrar types

back and forth with deaf students." Hurwitz wrote.

Advances in everyday technology may have lessened the need for specialized things like text telephones.

"In the old days, people would have to go and get a special phone. Now they are using e-mail and text messaging," Goldman said. "In the old days, you knew you had an incoming phone call because it rang. That's not good for deaf people."

Now, you've got vibrating cell phones - something that used to be specially made for those who are deaf or hearing impaired, she added.

Though there has been a lot of technical advances, it's usually the poorest and most vulnerable people who are left behind, Boshes said. Not everyone has high-speed Internet, for example, and this is a must for video chats.

When McFadden took his job at Lockheed Martin, the company's efforts to accommodate deaf employees didn't influence his decision to work there, he wrote, adding there were no promises made, nor did he demand them.

"Over time, I think the company became more accommodating because it was the right thing to do," he wrote. "I'm sure the passing of [the Americans with Disabilities Act] in 1990 had some effect. I'd also like to think it is because they saw the value they were receiving from their deaf employees."

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