

Pushing Science's Limits in Sign Language

Lexicon

Imagine trying to learn biology without ever using the word “organism.” Or studying to become a botanist when the only way of referring to photosynthesis is to spell the word out, letter by painstaking letter. Words like “organism” and “photosynthesis” — to say nothing of more obscure and harder-to-spell terms — have no single widely accepted equivalent in sign language. This means that deaf students and their teachers and interpreters must improvise, making it that much harder for the students to excel in science and pursue careers in it.

“Often times, it would involve a lot of finger-spelling and a lot of improvisation,” said Matthew Schwerin, a physicist with the Food and Drug Administration who is deaf, of his years in school. “For the majority of scientific terms,” Mr. Schwerin and his interpreter for the day would “try to find a correct sign for the term, and if nothing was pre-existing, we would come up with a sign that was agreeable with both parties.”

Now thanks to the Internet — particularly the boom in online video — resources for deaf students seeking science-related signs are easier to find and share. Crowdsourcing projects in both American Sign Language and British Sign Language are under way at several universities, enabling people who are deaf to coalesce around signs for commonly used terms.

This year, one of those resources, the Scottish Sensory Centre’s British Sign Language Glossary Project, added 116 new signs for physics and engineering terms, including signs for “light-year,” “mass” and “X-ray”. The researchers spent more than a year soliciting ideas from deaf science workers, circulating lists of potential signs and ultimately gathering for “an intense weekend” of final voting, said Audrey Cameron, science adviser for the project.

Ideally, the standardization of signs will make it easier for deaf students to keep pace with their hearing classmates during lectures. But the problem doesn’t end at graduation. In fact, it only intensifies as new discoveries add unfamiliar terms to the scientific lexicon. “I’ve had numerous meetings where I couldn’t participate properly because the interpreters were not able to understand the jargon and they did not know any scientific signs,” Cameron said.

Since at least the 1970s, deaf scientists have tried to address the lack of uniformity by gathering common signs for scientific terms in printed manuals and on videotapes. The problem has always been getting deaf students and their interpreters to adopt them. Often, at science conferences, “local interpreters that we never met before would often use different signs for the same terms, leading to confusion,” said Caroline Solomon, a biology professor at Gallaudet University.



Microbiology, the study of microscopic life



Light year, a unit of distance defined by how far light can travel in one year

Gallaudet has tried to take a democratic approach to the problem: it collaborates on a wiki-style website dedicated to “enabling American Sign Language to grow in science, technology, engineering and mathematics” that was set up in 2009. Anyone can submit, critique and vote for science signs, which are demonstrated in short videos. The idea is to let those who are hearing-impaired and learning science decide which new signs should become standard. So far the crowdsourcing approach seems to be effective, at least at Gallaudet.

Surprisingly, some deaf students say that relying on sign language gives them an advantage over hearing students. Because it is acted out, with everything from facial expressions to speed of motion available as tools to convey meaning, and because it is in many ways less stringent than written language, sign language can illustrate difficult scientific principles better than traditional languages can.

“There’s often a lot of confusion in early years of physics between mass and weight” for hearing students, because the two concepts are so similar, said Dr. Solomon. But because mass has no universally accepted sign, interpreters are free to create hand motions that illustrate its meaning specifically in opposition to weight. For example: “If I wanted to indicate mass, I would probably hold up a balled fist,” said Kate Lacey, an interpreter at George Washington University who often works with science students. “Then, to indicate weight, I’d drop that fist toward the floor.” The implication is that weight represents gravity’s effect on mass, which is about as clear a definition as one is likely to find.

Such elegant personifications of tricky scientific concepts leave some deaf students feeling sorry for those who rely on their ears. “One of my students was telling me recently that she can’t imagine the difficulty that hearing instructors must have in describing concepts through spoken English, because of the restrictions of spoken language,” Dr. Braun said.

- This is an edited version of an article written by Douglas Quenqua from the New York Times.

Find the word from the text that best fits the definition provided.

- | | |
|--|--|
| 1. Done with great care and thoroughness | 5. difficult language marked by specific and/or long words |
| 2. relatively unknown | 6. state of being consistent |
| 3. an increase in activity or popularity | 7. created or established |
| 4. to unite for a common end or goal | 8. strict, exact, or inflexible |

