



# Talk to the Hand

## Communicating through Glove Movements



San Diego, CA (SSC Pacific, Navy) – Complex missions involving a large number of troops or teams may benefit from an alternative form of communication when in dangerous, dark, or noisy environments. A glove is being developed to translate a hand's symbolic gestures into messages. The messages can be transmitted and received by the gloves. People can communicate across language barriers. Deaf and hearing people may also be able to pick up and transmit American Sign Language using the glove.

*"The language barrier is cast aside—and we're able to communicate more efficiently with icons and visual images."*

**Emily Medina, research scientist**

### Framework

Middle School

### Standards

- STL - 3.E ➤ Systems developed for one setting may be applied to another.
- STL - 6.F ➤ Social priorities are reflected in technological devices.
- STL - 17.H ➤ Communication systems transfer information from human to human and machine to human.
- STL - 17.K ➤ Symbols are used in a common language.

### Content Illustrated

- Creativity and innovation are demonstrated through the use of accelerometers, commonly found in video games and smart phones, and by the development of a new leetspeak (an alternative alphabet).



# Content



## Life Science

- ▶ Humans can develop novel ways to communicate.

## Earth & Space Science

- ▶ One use of the glove is to help astronaut teams. Missions are being planned to land 30 people, who must work together, on the moon.

## Physical Science

- ▶ The glove interprets the motion of six sensors and converts that information into messages.

## Technology

- ▶ The glove is an example of a communication technology that uses accelerometer technology. An accelerometer is a sensor that measures movement. Accelerometers are integral to the Nintendo Wii (game) remote control device. The Wii uses one accelerometer, while the glove uses six—one placed on each finger and one at the center of the hand.
- ▶ The glove can recognize hand positions, such as the “thumbs-up” sign. It will send and receive messages via hand gestures.
- ▶ The glove is designed to be used in environments where you can’t hear or see. In such environments, you can receive haptic feedback—messages conveyed through sense of touch, perhaps as vibrations.
- ▶ The system would also allow people to communicate who don’t all speak the same national language, or who are deaf. Scientists are developing a leetspeak - which can be considered a “chat language” for the glove. It uses shortened words and adds pictures and symbols.

## Guiding Questions

*To think about as you watch:*

- ▶ What kinds of problems do you think the glove was designed to overcome? How would the glove help?
- ▶ What are important things for groups to be able to communicate to each other in a dangerous situation?

## Suggested Activities

- ▶ Watch this webisode as a resource for a unit on communication technology.
- ▶ What other industries and technologies use accelerometers?

## Keywords

accelerometer, American Sign Language, compass, haptic, head’s-up display, icon, leetspeak, level, microphone, sensors, symbolic gestures

- ▶ *Talk to the Hand* can be found online at [www.ndep.us/Talk-to-the-Hand](http://www.ndep.us/Talk-to-the-Hand). Visit [www.ndep.us/LabTV](http://www.ndep.us/LabTV) for a list of process skills modeled in webisodes.