

CLASSROOM ACTIVITY

Language in the Brain

Why is it that humans can speak but chimpanzees, our closest living relatives, cannot? The human brain is uniquely wired to produce language. Untangling this wiring is a major frontier of brain research. Peer into the mental machinery behind language with this feature video, which visits a brain-scanning laboratory, Columbia University's Program for Imaging and Cognitive Sciences, or PICS. Columbia neuroscientist Joy Hirsch and New York University psychologist Gary Marcus explain what researchers have learned about how our brain tackles language—and what's left to learn. To find out about the peculiar medical case that launched this field of research in 1861, read the essay *From Scalpels to Scanners: Studying the Brain's Language System*.

RESEARCH ACTIVITY

Establish Prior Knowledge

Discuss with students how humans communicate and how that communication is different from the way other species communicate. Point out that several areas of the human brain are responsible for processing language. Illustrate this by relating the following pun to students:

A duck walks into a diner, orders a sandwich, and says, "Put it on my bill."

Have students note their own reactions. Discuss with students how they processed what they heard. If necessary, guide students by suggesting they listened to and heard the words, visualized the scenario, processed the information, and responded by either laughing or groaning. Tell students that in the video they are about to see they will learn more about how the brain processes language.

Exploration

Have students view the Feature, read the synopsis and the essay, "From Scalpels to Scanners: Studying the Brain's Language System." Ask students to take notes while they are watching the video about how the scientists in the video gather and analyze data. Have students work in small groups. Assign one of the following brain parts to each group. Have them research the function each plays in language.

- Broca's Area
http://thebrain.mcgill.ca/flash/d/d_10/d_10_cr/d_10_cr_lan/d_10_cr_lan.html - 1
<http://faculty.washington.edu/chudler/lang.html>
- Wernicke's Area
http://thebrain.mcgill.ca/flash/d/d_10/d_10_cr/d_10_cr_lan/d_10_cr_lan.html - 1
<http://faculty.washington.edu/chudler/lang.html>
- Arcuate fasciculus, Visual Cortex, Auditory Cortex
<http://faculty.washington.edu/chudler/lang.html>
http://thebrain.mcgill.ca/flash/d/d_10/d_10_cr/d_10_cr_lan/d_10_cr_lan.html - 1

Wrap-up

Have groups present and discuss their findings.