

PRIMARY SOURCES IN SCIENCE

By Hilary Mac Austin and Kathleen Thompson

Most people, when they think of primary sources, think of history. Teachers today are being asked to use primary source material to teach, not only history, but the natural and social sciences. In history, primary sources are clues to our past. In the natural and social sciences, primary sources are clues to what the world around us is like and how it works. They show your students places most of them will never go and people they will never meet. And in the process, they help your students make personal connections with a very large world.

Primary sources can be one of three types of material: physical evidence, records, and accounts. In history, physical evidence includes clothing, toys, and tools. Records include photographs, financial statements, and census forms. Accounts include letters, diaries, and oral histories.

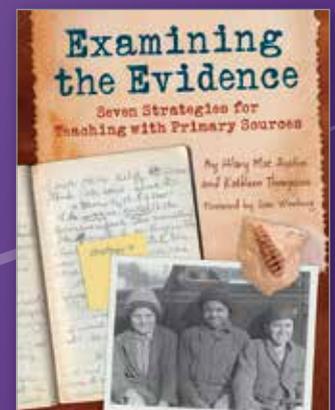
In the natural sciences, the whole world falls into the category of physical evidence primary sources. A rare orchid in the Everglades or a weed growing outside the door to your school is physical evidence in botany. A cliff face in the Grand Canyon or a rock on your school playground is physical evidence in geology. The DNA of a long-extinct mammoth is physical evidence in biology, and so are your students. Observing and investigating physical “primary sources” can be a wonderful way for students to exercise their thinking skills, whether they’re planting a seed and watching it grow into a sunflower or creating a sundial in the dirt or tracing their own outlines on a large sheet of paper on the floor.

Technically, however, a primary source in the sciences is defined as a record of someone’s observation of the natural or human world. This could include a planned experiment by a laboratory scientist, such as a chemist or biologist. It could be weather information, such as written records of daily temperatures and precipitation. Most interestingly, for younger students, it can be images.

Even when students are far below the reading level needed to read and analyze scientific texts, they can develop skills of observation and analysis working with photographs and later use those skills with text. Our book, *Examining the Evidence: Seven Strategies for Teaching with Primary Sources*, goes into detail about how you can teach your students to approach and explore primary source images and text in all subject areas.

You already use images of space, of weather events, of microscopic beings, of animals. And all of these are primary sources that have the potential for teaching not only the subject at hand but also critical thinking skills such as observation, analysis, inference, and evaluation. In the end, the critical thinking skills practiced in the exploration of a source may be of at least as much importance as the facts of science. They form the basis of the scientific method, the understanding of which produces a scientist.

Hilary Mac Austin and Kathleen Thompson are the authors of *Examining the Evidence: Seven Strategies for Teaching with Primary Sources*, 2014, Capstone Professional.



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