

To help students comprehend the nature of science in a way that allows them to be able to write about the content, teachers need to present problem-based activities that allow collaboration, discussion, and the generation of ideas. Such activities will provide students with material from which they may compose science-based writings. Hug, Krajcik, and Marx (2005) suggest offering project-based activities that incorporate innovative learning technologies such as the use of the Internet, probes, modeling tools, and visualization software. Such activities prompt students to ask more meaningful and worthwhile questions and guide them as they find new information.

With this kind of foundation, students will have material from which they may extract content for science writing. Clearly, a writer of science must be able to ask questions, seek answers, and make connections to other knowledge. An environment that promotes inquiry sets the stage for science writing. In each of the following examples we identify instruction and instructional routines that support students in becoming proficient at sharing their scientific knowledge through written communication. Each of the routines can be applied to all grade levels and areas of science. In Table 4.2 we identify both the NGSS and CCSS that support problem-based analysis in the next instructional scenario of eighth graders as they design a WebQuest.

WEBQUEST: COLLECTING DATA FOR WRITING

Table 4.2

Addressing CCSS for Writing and NGSS in an Eighth-Grade Classroom

Crosscutting Concepts: PS1.A: Structure and Properties of Matter; PS1.B: Chemical Reactions

Core Ideas: Analyzing and Interpreting Data

Lesson Purpose: To identify if a chemical reaction has occurred when two substances interact.

Focus Strategy: WebQuest

NGSS

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

CCSS

Writing Standards

Grade 8 Anchor Standard 10: Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.