



SCIENCE DISSECTED

Inquiry in the Science Classroom

The Nevada Science Standards, revised and approved in Spring 2005, devotes its first strand to Scientific Inquiry. Scientific Inquiry is the process by which humans systematically examine the natural world through observing, reasoning, and using insight, energy, skill, and creativity. We make and test explanations of nature by observing, experimenting, and creating models. These models can be either theoretical or mathematical. Other humans constantly review and examine these scientific explanations and evidence. Integral to scientific inquiry are questioning, responding to criticism and communicating (Nevada Science Standards, 2005).

The *National Science Education Standards* define scientific inquiry as “the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work” (NSTA Position Statement, 2004). When students are engaged in scientific inquiry, they are doing science.

How can secondary science teachers incorporate scientific inquiry into their classroom programs? Below are the indicators to determine if students are engaging in scientific inquiry (Beerer and Bodzin, 2003):

- Provide opportunities for learners to engage with a scientifically oriented question.
- Engage learners in planning investigations to gather evidence in response to questions.
- Help learners prioritize evidence allowing them to draw conclusions and/or develop and evaluate explanations addressing scientific questions.
- Have learners formulate conclusions and/or explanations from evidence to addressing scientific questions.
- Encourage learners to evaluate their conclusions and/or explanations in light of alternative conclusions/explanations, particularly those reflecting scientific understanding.
- Ensure that learners communicate and justify their proposed conclusions and/or explanations.

Basic Skills of Scientific Inquiry

- ◆ Observing
- ◆ Classifying
- ◆ Communicating
- ◆ Measuring
- ◆ Predicting
- ◆ Hypothesizing
- ◆ Inferring
- ◆ Defining, controlling, and manipulating variables in experimentation
- ◆ Designing, constructing and interpreting models
- ◆ Interpreting, analyzing and evaluating data

SCIENTIFIC INQUIRY provides teachers with the opportunity to develop student abilities and to enrich student understanding of science. As students focus on the processes of performing investigations, they develop the ability to ask questions, investigate aspects of the world around them and use their observations to construct reasonable explanations for the question posed.

NSTAs Position Statement for Scientific Inquiry, <http://www.nsta.org/about/positions/inquiry.aspx>

Archived Issues of Science Dissected, <http://www.rpd.net/link.news.php?type=sciencedis>

Written by: Joan Taylor