

Ohio's Cognitive Demands for Science

As with all other frameworks and cognitive demand systems, Ohio's revised system has overlap between the categories. Recalling Accurate Science is a part of the other three cognitive demands included in Ohio's framework because science knowledge is required for students to demonstrate scientific literacy.

These definitional paragraphs are used to describe the cognitive demand and are the prerequisite conditions that must be met before secondary conditions are considered.

Cognitive Demand	Description
Designing Technological/ Engineering Solutions Using Science Concepts (T)	Requires students to solve science-based engineering or technological problems through application of scientific inquiry. Within given scientific constraints, propose or critique solutions, analyze and interpret technological and engineering problems, use science principles to anticipate effects of technological or engineering design, find solutions using science and engineering or technology, consider consequences and alternatives and/or integrate and synthesize scientific information.
Demonstrating Science Knowledge (D)	Requires students to use scientific inquiry and develop the ability to think and act in ways associated with inquiry, including asking questions, planning and conducting investigations, using appropriate tools and techniques to gather and organize data, thinking critically and logically about relationships between evidence and explanations, constructing and analyzing alternative explanations, and communicating scientific arguments. (Slightly altered from National Science Education Standards) Note: Procedural knowledge (knowing how) is included in Recalling/Identifying Accurate Science.
Interpreting and Communicating Science Concepts (C)	Requires students to use subject-specific conceptual knowledge to interpret and explain events, phenomena, concepts and experiences using grade-appropriate scientific terminology, technological knowledge and mathematical knowledge. Communicate with clarity, focus and organization using rich, investigative scenarios, real-world data and valid scientific information.
Recalling Accurate Science (R)	Requires students to provide accurate statements about scientifically valid facts, concepts and relationships. Recall only requires students to provide a rote response, declarative knowledge or perform routine mathematical task. This cognitive demand refers to students' knowledge of science fact, information, concepts, tools, procedures and basic principles.