

The Scientific Inquiry/Research Skill Continuum

Research includes both primary research, which is done through first-hand, direct observation of objects and processes, and secondary research, which is done by reviewing the work and the findings of others.

CONTINUUM FOR SCIENTIFIC INQUIRY/RESEARCH SKILLS*

Beginning → Exploring → Emerging → Competent → Proficient			
Initiating and Planning			
The student:			
asks questions that demonstrate curiosity about the world around him or her	asks questions that could lead to investigations, and chooses one that will be the basis for an investigation	asks questions that could lead to investigations, and formulates a specific question that will be the basis for an investigation	asks questions that arise from practical problems and issues, and formulates a specific question that will be the basis for an investigation
	uses a teacher-prepared organizational system for gathering and organizing information	plans an organizational system for gathering and organizing information, using a variety of graphic organizers (e.g., Venn diagram) and organizational patterns (e.g., cause and effect)	plans an organizational system for gathering and organizing information, using a variety of strategies (e.g., sketchboard outlines of a series of events) and organizational patterns (e.g., order of importance)
	with support, selects print and multimedia resources from those provided by the teacher	independently selects print, multimedia, and electronic resources from those provided by the teacher	independently selects print, multimedia, and electronic resources
Performing and Recording			
The student:			
selects information from prior knowledge, other people, and observations made during his or her explorations	with support, selects information from print and multimedia resources provided by the teacher	selects information from print and multimedia resources that he or she has found independently, and from electronic resources provided by the teacher	selects information from print, multimedia, and electronic resources that he or she has found independently
	records information gathered, using a teacher-prepared organizational system	records information gathered, using a variety of graphic organizers (e.g., Venn diagram) and organizational patterns (e.g., cause and effect)	records information gathered, using a variety of strategies (e.g., sketchboard outlines of a series of events) and organizational patterns (e.g., order of importance)
	matches information to research needs (e.g., differentiates between factual information and information based on opinion)	reviews information for currency and bias	selects sources of information, showing awareness of currency and bias

*A blank box indicates that no inquiry/research skill is expected in the particular category at that level.

Performing and Recording (continued)			
The student:			
acknowledges the use of information sources (e.g., specific people)	references sources by title, author, date	references sources by title, author, date, URL	uses appropriate academic referencing, including publisher, volume, date of document, location and date of interview
Analysing and Interpreting			
The student:			
proposes an answer to the question being investigated, on the basis of information gathered	states a simple conclusion in answer to the question being investigated, on the basis of information gathered	states a conclusion in answer to the question being investigated, on the basis of information gathered	states a conclusion in answer to the question being investigated, on the basis of information gathered
describes steps taken to answer the question	makes a simple evaluation of research procedures used	makes an evaluation of the research procedure used, suggests changes that could be made to it, and gives reasons for the suggested changes	makes an evaluation of the research procedure used, suggests changes that could be made to it, and gives reasons for the suggested changes
	demonstrates understanding that the accuracy and value of information will vary from source to source	considers and compares information from different sources	verifies the validity of and compares information gathered from research
	summarizes the information, using pictures and words	summarizes relevant information, using words, T-charts, pictures	summarizes relevant information, using jot notes, outlines
Communicating			
The student:			
recounts steps and shares results of research orally, in pictures, and/or in written words to answer the question investigated	presents research orally; in charts, graphs, or labelled drawings; and/or in written words to answer the question investigated	presents research orally; in charts, graphs, or diagrams; and/or in written sentences to answer the question investigated	presents research in numeric, symbolic, graphical, and/or linguistic forms of communication to answer the question investigated

The Technological Problem-Solving Skill Continuum

Through technological problem solving, students develop the ability to design solutions to problems. Students create models of new devices or new processes to help address human needs and desires, as well as new knowledge about those devices or processes. When engaged in technological problem solving, students should be given opportunities to be creative in their thinking, rather than merely to find a prescribed answer. Critical aspects of technological problem solving are: careful planning; purposeful selection of tools and materials; testing, retesting, and modifications of a product or process; communicating about the solution; and recommending of changes or improvements.