

Crosscutting Concepts and Abilities

Science is an active process that involves thinking in systems, asking and answering questions through *investigations*, and applying science and technology to solve real-world problems. As illustrated in the chart below, these crosscutting concepts and abilities increase in complexity, depth, and range as students mature from one grade band to the next.

Cross-cutting	EALR 1 Systems	EALR 2 Inquiry	EALR 3 Application
The Big Ideas of Science	...is a way of thinking that makes it possible to analyze and understand complex phenomena.	... is a process of asking and answering questions about the natural world that forms the bedrock of science.	...is about the interaction between science and technology, and how both can help solve real-world problems.
Grades 9-12	Predictability and Feedback	Conducting Analyses and Thinking Logically	Science, Technology, and Society
	Create realistic models with feedback loops, and recognize that all models are limited in their predictive power.	Expand and refine skills and abilities of inquiry to gain a deeper understanding of natural phenomena.	Transfer and apply abilities in science and technological design to develop solutions to societal issues.
Grades 6-8	Inputs, Outputs, Boundaries & Flows	Questioning and Investigating	Science, Technology, and Problem Solving
	Look at a complex situation and see how it can be analyzed as a system with boundaries, inputs, outputs, and flows.	Investigate an answerable question through valid experimental techniques. Conclusions are based on evidence and are repeatable.	Work with other members of a team to apply the full process of technological design and relevant science concepts to solving a problem.
Grades 4-5	Complex Systems	Planning Investigations	Different Technologies
	Analyze a system in terms of subsystems functions as well as inputs and outputs.	Plan different kinds of <i>investigations</i> , including field studies, systematic observations, models, and controlled experiments.	Define technologies and the technological design process to understand the use of technology in different cultures and career fields.
Grades 2-3	Role of Each Part in a System	Conducting Investigations	Solving Problems
	See how parts of objects, plants, and animals are connected and work together.	Carry out <i>investigations</i> by using instruments, observing, recording, and drawing evidence-based conclusions.	Develop a solution to a problem by using a simplified technological design process. Investigate the use of tools.
Grades K-1	Part-Whole Relationships	Making Observations	Tools and Materials
	Identify parts of living and non-living systems.	Answer questions by explaining observations of the natural world.	Use simple tools and materials to solve problems in creative ways.