

SCIENCE LONG TERM TRANSFER GOALS

Transfer goals highlight the effective uses of understanding, knowledge, and skill that we seek in the long run; i.e., what we want students to be able to do when they confront new challenges – both in and outside of school.

Students will be able to independently use their learning to:

1. Approach science as a reliable and tentative way of knowing and explaining the natural world and designed world.
2. Weigh evidence and use scientific approaches to ask questions, investigate, and make informed decisions.
3. Make and use observations to analyze relationships and patterns in order to explain phenomena, develop models, and make predictions.
4. Evaluate systems, in order to connect how form determines function and how any change to one component affects the entire system.
5. Explain how the natural and designed worlds are interrelated and the application of scientific knowledge and technology can have beneficial, detrimental, or unintended consequences.

EARTH AND SPACE SCIENCE BIG IDEAS AND ESSENTIAL QUESTIONS

BIG IDEAS <i>Declarative statements describe concepts that transcend grade levels. Big Ideas are essential to provide focus on specific content for all students.</i>	ESSENTIAL QUESTIONS <i>Questions are specifically linked to the Big Ideas. They should frame student inquiry, promote critical thinking, and assist in learning transfer.</i>
Big Idea 1: The universe is composed of a variety of different objects, which are organized into systems, each of which develops according to accepted physical processes and laws.	<i>What is the universe, and what is Earth's place in it?</i>
Big Idea 2: Earth is a complex and dynamic set of interconnected systems (e.g. geosphere, hydrosphere, atmosphere, biosphere) that interact over a wide range of temporal and spatial scales.	<i>How and why is Earth constantly changing?</i>
Big Idea 3: The Earth's surface processes affect and are affected by human activities.	<i>How do Earth's processes and human activities affect each other?</i>

LIFE SCIENCE BIG IDEAS AND ESSENTIAL QUESTIONS

BIG IDEAS	ESSENTIAL QUESTIONS
Big Idea 1:	<i>How do organisms live, grow, respond to their environment, and reproduce?</i>

All organisms are made of cells and can be characterized by common aspects of their structure and functioning.	
Big Idea 2: Organisms grow, reproduce, and perpetuate their species by obtaining necessary resources through interdependent relationships with other organisms and the physical environment.	<i>How and why do organisms interact with their environment and what are the effects of these interactions?</i>
Big Idea 3: Heredity refers to specific mechanisms by which characteristics or traits are passed from one generation to the next via genes, and explains why offspring resemble, but are not identical to, their parents.	<i>How are the characteristics of one generation passed to the next? How can individuals of the same species and even siblings have different characteristics?</i>
Big Idea 4: Biological evolution explains both the unity and diversity of species and provides a unifying principle for the history and diversity of life on Earth.	<i>How can there be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms?</i>
PHYSICAL SCIENCE BIG IDEAS AND ESSENTIAL QUESTIONS	
BIG IDEAS	ESSENTIAL QUESTIONS
Big Idea 1: Matter can be understood in terms of the types of atoms present and the interactions both between and within atoms.	<i>How can one explain the structure, properties, and interactions of matter?</i>
Big Idea 2: All forces between objects arise from a few types of interactions: gravity, electromagnetism, and the strong and weak nuclear interactions.	<i>How can one explain and predict interactions between objects within systems?</i>
Big Idea 3: Interactions of objects or systems of objects can be predicted and explained using the concept of transfer of energy from one object or system of objects to another.	<i>How is energy transferred and conserved?</i>
Big Idea 4: Waves are a repeating pattern of motion that transfers energy from place to place without overall displacement of matter.	<i>How are waves used to transfer energy and information?</i>