SAU 16 SCIENCE LEARNING PROGRESSION
Graduation Competencies

Patterns
Student will demonstrate the ability to support claims and make predictions by observing and describing patterns in natural and human designed phenomena.

Cause and Effect
Students will demonstrate the ability to investigate, explain, and evaluate cause and effect relationships by using evidence to support claims and predictions about the mechanisms that drive those relationships.

Scale, Proportion, and Quantity
Students will demonstrate the ability to recognize proportional relationships as size, time, and energy scales change.

Systems and System Models
Students will demonstrate the ability to investigate and analyze natural or human designed systems by using or developing models.

Energy and Matter in Systems
Students will demonstrate the ability to describe, predict, and evaluate the flow of energy and matter in and between systems.

Structure and Function
Students will demonstrate the ability to use evidence to support claims about the relationship between structure and function of naturally occurring and human designed objects.

Stability and Change of Systems
Students will demonstrate the ability to explain and predict changes over time by investigating and analyzing naturally occurring and human designed systems.

Nature of Science
Students will demonstrate the ability to work collaboratively and individually to integrate scientific methods, engineering practices, and technology to investigate the world around them.

- Defining problems and generating testable questions
- Planning and conducting investigations using a variety of research methods in a various settings
- Analyzing and interpreting data

- Using evidence and reasoning to construct explanations in light of existing theories and previous research
- Using technology and engineering practices to design and build systems
- Relationship between science and society
- Effectively communicate the research processes and conclusions.

Grades K-2 SCIENCE Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	GRADE SPAN COMPETENCIES
Patterns Students will demonstrate the ability to support claims and make predictions by observing and describing patterns in natural and human designed phenomena.	● Students will demonstrate the ability to observe simple patterns in the natural world, (including human), develop questions to investigate, make connections, and support connections with evidence.
Cause and Effect Students will demonstrate the ability to investigate, explain, and evaluate cause and effect relationships by using evidence to support claims and predictions about the mechanisms that drive those relationships.	● Students will demonstrate the ability to investigate and describe cause and effect relationships ● Students will demonstrate the ability to generate observable patterns and explain their thinking with evidence.
Scale, Proportion, and Quantity Students will demonstrate the ability to recognize proportional relationships as size, time, and energy scales change.	● Students will demonstrate the ability to describe and compare objects, situations, or events using relative scale (e.g., bigger and smaller; hotter and colder; faster and slower) and standard and nonstandard measurement tools, units, and attributes when making observations or solving problems.

Systems and System Models Students will demonstrate the ability to investigate and analyze natural or human designed systems by using or developing models.	● Students will demonstrate the ability to describe objects and organisms in terms of their parts. ● Students will demonstrate the ability to explain how the parts of systems work together (e.g., an environment, including the animals and plants) in order to function effectively.
Energy and Matter in Systems Students will demonstrate the ability to describe, predict, and evaluate the flow of energy and matter in and between systems.	● Students will demonstrate the ability to investigate, observe and describe solids, liquids, and gases, and what happens when matter is manipulated (heated, cooled, broken into smaller pieces, put together into larger pieces, or change shape). ● Students will demonstrate the ability to investigate how light, motion, or sound energy affects matter.
Structure and Function Students will demonstrate the ability to use evidence to support claims about the relationship between structure and function of naturally occurring and human designed objects.	● Students will demonstrate the ability to observe, model, and explain how the shape and structures of natural or designed objects are related to their functions.
Stability and Change of Systems Students will demonstrate the ability to explain and predict changes over time, by investigating and analyzing naturally occurring and human designed systems.	● Students will demonstrate the ability to distinguish between changes in natural systems that happen rapidly and changes that happen over time.
Nature of Science Students will demonstrate the ability to work collaboratively and	● Students will demonstrate the ability to work collaboratively and individually to make observations and predictions in order to answer testable questions and use their senses, tools and

individually to integrate scientific methods, engineering practices, and technology, to investigate the world around them.	materials to find possible solutions to simple problems.

Grades 3-5 SCIENCE Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	GRADE LEVEL COMPETENCY
Patterns Students will demonstrate the ability to support claims and make predictions, by observing and describing patterns in natural and human designed phenomena.	● Students will demonstrate the ability to identify, sort, and classify similarities and differences in patterns within natural and designed phenomena in order to use them as evidence to support an explanation.
Cause and Effect Students will demonstrate the ability to investigate, explain, and evaluate cause and effect relationships by using evidence to support claims and predictions about the mechanisms that drive those relationships.	● Students will demonstrate the ability to investigate cause and effect relationships to make predictions, test, and support evidenced-based explanations or claims about change.
Scale, Proportion, and Quantity Students will demonstrate the ability to recognize proportional relationships as size, time, and energy scales change.	● Students will demonstrate the ability to use relative scale and quantity to describe, compare, or represent data in order to answer questions about observable and unobservable phenomena, create investigations, and solve problems. ● Students will demonstrate the ability to use standard units of measure to describe physical

	quantities such as weight, time, temperature, and volume.
Systems and System Models Students will demonstrate the ability to investigate and analyze natural or human designed systems by using or developing models.	● Students will demonstrate the ability to investigate and use models of natural or human-designed systems in order to describe a system, how its parts function together, and how internal and external factors affect the system or its parts.
Energy and Matter in Systems Students will demonstrate the ability to describe, predict, and evaluate the flow of energy and matter in and between systems.	● Students will demonstrate the ability to investigate the properties and conservation of matter. ● Students will demonstrate the ability to investigate how energy can be transferred in various ways between objects. ● Students will demonstrate the ability to investigate and use models to make predictions and support evidence-based explanations about the cycling of matter and flow of energy within and between systems.
Structure and Function Students will demonstrate the ability to use evidence to support claims about the relationship between structure and function of naturally occurring and human designed objects.	● Students will demonstrate the ability to investigate the structure, substructure, and function of natural organisms and human-designed objects in order to analyze relationships and support evidence-based explanations about survival or performance.
Stability and Change of Systems Students will demonstrate the ability to explain and predict changes over time by investigating and analyzing	● Students will demonstrate the ability to investigate natural or designed systems in order to make predictions, analyze, and explain how slow or rapid changes may affect the stability of a system over time.

naturally occurring and human designed systems.	
Nature of Science Students will demonstrate the ability to work collaboratively and individually to integrate scientific methods, engineering practices, and technology to investigate the world around them.	● Students will demonstrate the ability to work collaboratively and individually to generate testable questions or to define problems in terms of a given situation; research, plan, and conduct investigations or apply engineering design practices; analyze and interpret data; and construct and communicate evidence-based explanations or best possible solutions.