Helpful Information for Planning a Flagstaff Festival of Science Classroom Presenters

We hope that this information will be useful to you as you prepare for your classroom presentation. Our community is so fortunate to have you as a resource and to share your knowledge for our K-12 students.

- We have provided a broad conceptual overview of the new Arizona Science Standards. The design of the new standards is to integrate science and engineering practices with larger cross cutting ideas (see bullet below) through disciplinary core content. We hope that within the broad umbrella of these concepts you can design your presentation to cover both your research and the standards teachers must address.
- Cross cutting ideas include patterns; cause and effect; structure and function; systems and system models; stability and change; scale, proportion, and quantity; energy and matter
- Teachers have less liberty tochooseoutsidetopicsastheymustadheretostateacademicstandards
- Feel free to choose multiple grade levels as many standards overlap

I. Suggested Structure for Presentations

- ☐ 10-15 Minutes - introduction
- ☐ 20 Minutes - activity
- ☐ 5-10 Closure and questions
- ☐ PowerPoints are a great supplement.

II. Class Times

- ☐ K-5: 35 – 40 minutes
- ☐ 6-12: 40- 50 minutes

III. Arizona Science Standards Overview

(http://www.azed.gov/standards-practices/k-12standards/standards-science/)

INCREASING SOPHISTICATION OF STUDENT THINKING →

K-2	3-4	5-6	7-8	9-12
Life Science				
K - Students develop an understanding that the world is comprised of living and non-living things. They investigate the relationship between structure and function in living things; plants and animals use specialized parts to help them meet their needs and survive.	3 - Students develop an understanding of the flow of energy in a system beginning with the Sun to and among organisms They also understand that plants and animals (including humans) have specialized internal and external structures and can respond to stimuli to increase survival.	5 - Students develop an understanding of patterns and how genetic information is passed from generation to generation. They also develop the understanding of how genetic information and environmental features impact the survival of an organism.	7 - Students develop an understanding of the structure and function of cells.	Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms
1 - Students develop an understanding that the Earth has supported, and continues to support, a large variety of organisms. These organisms can be distinguished by their physical characteristics, life cycles, and their	4 - Students develop an understanding of the diversity of past and present organisms, factors impacting organism diversity, and evidence of change of organisms over time.	6 - Students develop an understanding of how energy from the Sun is transferred through ecosystems.	8 - Students develop an understanding of patterns and how genetic information is passed from generation to generation. They also develop the understanding of how traits within populations	The unity and diversity of organisms, living and extinct, is the result of evolution.

K-2	3-4	5-6	7-8	9-12
different resource needs for survival. Different types of organisms live where there are different earth resources such as food, air, and water.			change over time.	
2 - Students develop an understanding that life on Earth depends on energy from the Sun or energy from other organisms to survive.				Organisms are organized on a cellular basis and have a finite life span.
				Genetic information is passed down from one generation of organisms to another
Physical Science				
K - Students explore how their senses can detect light, sound, and vibration and how technology can be used to extend their senses.	3 - Students develop an understanding of the sources, properties, and characteristics of energy along with the relationship between energy transfer and the human body.	5 - Students develop an understanding that changes can occur to matter/objects on Earth or in space, but both energy and matter follow the pattern of being conserved during those changes.	7 - Students will explore how cause and effect take place within and between a wide variety of force and motion systems from forces on individual objects to the forces that shape our Earth.	All matter on the Universe is made of very small particles
1 - Students develop an understanding of the effects of forces and waves, and how they can impact or be impacted by objects near and far away. They explore the relationships between sound and vibrating materials, as well as light and materials including the ability of sound and light to travel from place to place.	4 - Students develop an understanding of how Earth's resources can be transformed into different forms of energy. Students develop a better understanding of electricity and magnetism.	6 - Students develop an understanding of forces and energy and how energy can transfer from one object to another or be converted from one form to another. They also develop an understanding of the nature of matter.	8 - Students apply stability and change to explore chemical properties of matter and chemical reactions to further understand energy and matter.	Objects can affect other objects at a distance.
2 - Students develop an understanding of observable properties of matter and how changes in energy (heating or cooling) can affect matter or materials.				Changing the movement of an object requires a net force to be acting on it.
				The total amount of energy in a closed system is always the same but can be transferred from one energy store to another during an event.

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Earth & Space Science				
K - Students develop an understanding of patterns to understand changes in local weather, seasonal cycles, and daylight.	3 - Students develop an understanding of how the Sun provides light and energy for the Earth systems.	5 - Students develop an understanding of the how forces (gravity) in space cause observable patterns due to the position of the Earth, Sun, Moon, and stars.	7 - Students develop an understanding of the how forces (gravity) in space cause observable patterns due to the position of the Earth, Sun, Moon, and stars.	The composition of the Earth and its atmosphere and the natural and human processes occurring within them shape the Earth's surface and its climate
1 - Students develop an understanding that organisms depend on earth materials and other living organisms for survival.	4 - Students develop an understanding of the different Earth systems and how they interact with each other. They understand how geological systems change and shape the Earth and the evidence that is used to understand these changes. They also understand how weather, climate, and human interactions can impact the environment.	6 - Students develop an understanding of the scale and properties of objects in the solar system and how forces (gravity) and energy cause observable patterns in the Sun-Earth-Moon system	8 - Students explore natural and human-induced cause-and-effect changes in Earth systems over time.	The Earth and our solar system are a very small part of one of many galaxies within the Universe.
2 - Students develop an understanding of the distribution and role of water and wind in weather, shaping the land, and where organisms live. Wind and water can also change environments, and students learn humans and other organisms can change environments too. Students develop an understanding of changing patterns in the sky including the position of Sun, Moon, and stars, and the apparent shape of the Moon				

If you have any ideas that are unique to what is listed, please contact Jillian Worssam (jworssam@fusd1.org), FFOS Education Committee Chair, and we will help you determine which grade level works best!