

## Leadership Project

### Project Summary:

The purpose of this Project is to help guide my fellow teachers and administrators to a reliable and relevant STEM tool, the NASA web site. As our district expands their STEM initiative from Kindergarten to 12<sup>th</sup> grade, the NASA website for Educators will be showcased to help support multiple content areas and grade levels. A sample of a leveled reading activity from NASA will be presented with a technology connection to the NASA online game to help support the reading passage.

### Introduction:

Los Fresnos Consolidated School District is composed of 9 elementary schools, 3 middle schools, and 1 high school split between 2 campuses. We service approximately 8,000 students. The goal of this Leadership Project is to reach out through the district's Digital Learning Academy and offer a Professional Development session to the campus representatives on navigating NASA's platform for educators. The Educators link for K-4, 5-8, and the NASA Education Projects will be explored. The Projects page will show how to help students connect with members outside our community on a variety of projects and/or competitions. A sample lesson will also be given to teachers to highlight integrating Science into Reading. The Digital Learning Academy is an efficient way to communicate with a large number of educators. It is a cohort initiative within our district for administrators and educators to share resources, learn technology from each other, and how it can be applied in the classroom effectively. In turn, members of this cohort will present to their campuses the information they have learned. There are currently 12 representatives from the campuses, a mix of teachers and administrators, and 2 representatives from our district's office of Curriculum and Instruction.

In addition to utilizing the Digital Learning Academy to reach other campuses, I will also present to my first grade coworkers at Laureles Elementary. During our team planning sessions, I will present how to use NASA's platform for K-4 educators to enhance STEM within our grade-level. The NASA Education YouTube Channel, will also be highlighted as a quick and safe way to access appropriate science videos across different TEKS, Texas Education Knowledge Standards. There are 3 additional teachers in my grade-level, and often an administrator is present during our team planning sessions.

## NASA and STEM Agenda

1. Pre- Question Survey
2. What is STEM? Review beliefs
3. Introduction to the NASA website
4. Navigate Educators webpage:
  - a. K-4
  - b. 5-8
  - c. Education Projects
5. Sample Leveled Passages
  - a. K-4 What is Robonaut?
  - b. 5-8 What is Robonaut?
6. Review online links and extensions for What is Robonaut?
  - a. Robonaut 2
  - b. Robonauts on Twitter/Facebook
  - c. Featured Images
  - d. NASA to Launch Human Robot
  - e. Pod casts and Transcripts
  - f. What is Robotics? Article\*\*\* Link to a New leveled passage
7. Review Leveled Passage on line
  - a. What is Robotics?
    - i. K-4
    - ii. 5-8
  - b. Link to NASA Game
    - i. Rover
8. At bottom of Page- Link to more articles
9. Post Survey

## SURVEYS

### Pre-questions Survey List:

By gathering email addresses from those enrolled in the Digital Learning Academy and my coworkers on campus, teachers will be pre-surveyed before the Professional Development using SurveyMonkey. The purpose to gauge their beliefs and familiarity with science, STEM and the NASA website. The questions will be mix of open-ended responses and scaled options. Depending on their responses, adjustments to the pacing of the PD can be determined.

A link to the 10 question survey is : <https://www.surveymonkey.com/r/X26FCBB>

### Post-questions Survey List

Before exiting the PD, teachers will be asked to respond to the post survey on SurveyMonkey to gauge their feedback on content and classroom application.

A link to the 10 question post survey is : <https://www.surveymonkey.com/r/X3NML6F>

## **Next Generation Science Standards (NGSS) and Texas Education Knowledge and Skills (TEKS) for Elementary and Middle School:**

### Elementary (k-5)

#### Engineering

#### K-2-ETS1-1 Engineering Design

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

#### K-2-ETS1-2 Engineering Design

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

#### 3-5-ETS1-1 Engineering Design

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

#### 3-5-ETS1-2 Engineering Design

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

### Science

(3) Scientific investigation and reasoning. The student uses critical thinking and scientific problem solving to make informed decisions. The student is expected to:

(A) analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing; identify and explain a problem and propose a solution

(B) draw or develop a model that represents how something works or looks; and

(C) connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.

### Technology

(1) Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge and develop digital products. The student is expected to:

(A) apply prior knowledge to develop new ideas, products, and processes;

(C) explore virtual environments, simulations, models, and programming languages to enhance learning;

(3) Research and information fluency. The student acquires and evaluates digital content. The student is expected to:

(A) use search strategies to access information to guide inquiry;

(B) use research skills to build a knowledge base regarding a topic, task, or assignment; and

(C) evaluate the usefulness of acquired digital content.

### Reading

(5) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:

(A) establish purpose for reading assigned and self-selected texts with adult assistance;

(B) generate questions about text before, during, and after reading to deepen understanding and gain information with adult assistance;

(C) make and confirm predictions using text features and structures with adult assistance;

(D) create mental images to deepen understanding with adult assistance;

- (E) make connections to personal experiences, ideas in other texts, and society with adult assistance;
  - (F) make inferences and use evidence to support understanding with adult assistance;
  - (G) evaluate details to determine what is most important with adult assistance;
  - (H) synthesize information to create new understanding with adult assistance; and
  - (I) monitor comprehension and make adjustments such as re-reading, using background knowledge, checking for visual cues, and asking questions when understanding breaks down with adult assistance.
- (8) Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to:
- (D) recognize characteristics and structures of informational text, including:
    - (i) the central idea and supporting evidence with adult assistance;
    - (ii) titles and simple graphics to gain information; and

### Middle School (6-8)

#### Engineering

##### MS-ETS1-1 Engineering Design

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

##### MS-ETS1-2 Engineering Design

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

#### Science

(3) Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:

(C) identify advantages and limitations of models such as size, scale, properties, and materials

(D) relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.

#### Technology

(2) Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. The student is expected to:

(A) participate in personal learning networks to collaborate with peers, experts, or others using digital tools such as blogs, wikis, audio/video communication, or other emerging technologies;

(B) communicate effectively with multiple audiences using a variety of media and formats; and

(C) read and discuss examples of technical writing.

(3) Research and information fluency. The student acquires, analyzes, and manages content from digital resources. The student is expected to:

(A) create a research plan to guide inquiry;

(B) discuss and use various search strategies, including keyword(s) and Boolean operators;

(C) select and evaluate various types of digital resources for accuracy and validity;

(6) Technology operations and concepts. The student demonstrates a thorough understanding of technology concepts, systems, and operations. The student is expected to:

(A) define and use current technology terminology appropriately;

(I) discuss the relevance of technology as it applies to college and career readiness, life-long learning, and daily living;

### Reading

(10) Reading/Comprehension of Informational Text/Expository Text. Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding. Students are expected to:

(A) summarize the main ideas and supporting details in text, demonstrating an understanding that a summary does not include opinions;

(B) explain whether facts included in an argument are used for or against an issue;

(C) explain how different organizational patterns (e.g., proposition-and-support, problem-and-solution) develop the main idea and the author's viewpoint; and

(D) synthesize and make logical connections between ideas within a text and across two or three texts representing similar or different genres.

### Resources:

NASA, NASA.gov

[https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what\\_is\\_robotics\\_58.html](https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what_is_robotics_58.html)

<https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-robonaut-58.html>

<https://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-robonaut-k4.html>