

**Michelle Richardson**  
**Engaging Context Data Integration**

**1. Data Source:**

*Provide a title for the data and the specific link for access. (added several, since I may use them alone or together during future STEM activities)*

Potential data sources include:

a. Military:

1. Lab TV <https://www.youtube.com/watch?v=YyToyDKLoEs>
2. Warfighters Nutrition Guide  
<https://www.hprc-online.org/page/nutrition/warfighter-nutrition-guide>

b. Space:

1. Food For Thought: Eating in Space Educators Guide  
([https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Food\\_For\\_Thought.html](https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Food_For_Thought.html))
2. Smithsonian National Air and Space Museum  
(<https://airandspace.si.edu/exhibitions/apollo-to-the-moon/online/astronaut-life/food-in-space.cfm> )
3. Eating in Space  
([https://www.nasa.gov/audience/foreducators/stem-on-station/ditl\\_eating](https://www.nasa.gov/audience/foreducators/stem-on-station/ditl_eating))

**2. Lesson Enhancement:**

***How does the data enhance your topic/lesson/unit?***

I work for the military and my primary goal is to provide the soldier with safe, nutritious high quality foods. Because NASA has the same challenges with feeding astronauts I also work on several projects for space feeding.

Though I listed several data sources the one I thought was interesting and will enhance my topic is the “Food for thought” ([https://www.nasa.gov/pdf/591741main\\_Food-For-Thought.pdf](https://www.nasa.gov/pdf/591741main_Food-For-Thought.pdf) ). This will enhance my topic (food science and nutrition) because it not only provides hands on food and nutrition activities but it also provides information on how the activities align to the national curriculum standards for mathematics, science and technology (the standards cited may not be the updated standards but the requirements for the updated standards can be incorporated into the STEM activity).

Using the standards aligned data will encourage students to ask questions (develop hypothesis); design and conduct experiments; apply math to real world issues and challenges; generate and analysis data; and make conclusion and suggest options for future efforts.

***What new objectives can you address?***

The new objectives that can be address for my topic include:

- a. Observation and identification needs of living organisms: specifically humans, and microorganisms.
- b. Actively participate in discussions, listen to other ideas, and ask and answer relevant questions related to food science and technology.
- c. Collect, record and share food science data to make informed decisions.
- d. Understand food scientific concepts.

***How does it change the teaching/learning?***

I do several STEM activities for both k-12 and colleges. My STEM activities consist of me providing an overview of military and space feeding. I allow students to hold/taste some of the foods and ask questions. Because the topic is very interesting the participants are usually engaged, however the little time I spent in this STEM class made me realize that the teaching/learning style (monologue) I previously used is not ideal. In the future, my delivery will be changed to ensure my objectives are addressed and align with the national standards.

**3. Using Data:**

***What is your opinion about using data in the classroom, either collected by student-observation or from another source?***

Data is very important and should be used in the classroom. Data that comes from STEM activities, whether it is collected by student-observation or other sources aids in understanding scientific methods, develops skills needed for reasoning, fosters decision making. It can teach students that not all decisions and conclusions are based on personal opinions or popularity.

**4. Visual Presentation:**

***What is your rationale for the use of the data source?***

The data sources listed above is geared towards students, i.e. it takes some of the complex food and nutrition science and makes it more understandable. It gives a historical perspective and current requirements for military and space feeding.

***Clearly explain how the data can be used to integrate across STEM content areas?***

The Lab TV <https://www.youtube.com/watch?v=YyToyDKLoEs> data source focuses on several food science and technology topics. Food science is a multidisciplinary field that integrates science sub-disciplines (chemistry, physical, microbiology, biology, engineering, and technology). This data source can be used to integrate across all STEM content areas.

**5. Interdisciplinary STEM:**

***How can the use of this data help to integrate across STEM content and/or pedagogy?***

The Lab TV video focuses on *hurdle technology* which is a combination of several preservation methods to destroy microorganisms resulting in high quality safe foods. The

integration approach will probably be interdisciplinary. Through this approach, students are expected to understand the relationship between the different sub-disciplines and their usage in the real world. Some of the sub disciplines used in hurdle technology will aid in understanding food science and technology concepts. Sub disciplines are listed below.

**Biology** - *Foodborne illnesses*: (science standards)

**Chemistry** - *Temperature*: Measurement and data (mathematics standards)

**Material science** - *Packaging*: (technology standards)

**Chemistry** - *pH and water activity*: (science and mathematics standards)

**Microbiology**: Structure and function of living organisms (science standards)

**Engineering**: Food processing (technology standards)