TREYNOR COMMUNITY SCHOOL DISTRICT
CURRICULUM FRAMEWORK

Subject: **Science**
Course: **Grade 5 Science**
Grade Level(s): **5**
Prerequisites: **None**

Course Description: In fifth-grade science, students formulate answers to questions such as: "When matter changes, does its weight change? Can new substances be created by combining other substances? How does matter cycle through ecosystems? How do shadows or relative lengths of day and night change from day to day? How does the appearance of some stars change in different seasons?" By studying systems, the fifth graders learn that objects and organisms do not exist in isolation and are connected to, interact with, and are influenced by each other.

Examples of Fifth Graders' Work at School:

- Use and represent data to study the relationships between objects in the solar system and the impact of those relationships on patterns of events as seen from Earth.
- Develop models to describe how matter and energy cycle through plants and animals, and the ecosystems within which they live.
- Apply math skills and understanding of scale to measure volume and recognize the need for units that express quantities of weight, time, temperature, and other variables during investigations of properties and interactions of matter
- Independently maintain science journals to record observations, thoughts, ideas, and models by creating diagrams, representing data and observations with plots and tables, and support these with written text.

Content Standards: In order that our students may achieve the maximum benefit from their talents and abilities, the fifth graders of the Treynor Community School who demonstrate understanding can . . .

I. Physical Science

1. Matter and Its Interactions

1) Develop a model to describe that matter is made of particles too small to be seen
2) Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
3) Make observations and measurements to identify materials based on their properties.
4) Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
5)

2. **Motion and Stability: Forces and Interactions**
    1) Support an argument that the gravitational force exerted by Earth on objects is directed down.
3. **Energy**
    1) Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

II. Life Science

1. **From Molecules to Organisms: Structures and Processes**
    1) Support an argument that plants get the materials they need for growth chiefly from air and water.
2. **Ecosystems: Interactions, Energy, and Dynamics**
    1) Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

III. Earth and Space Science

1. **Earth's Place in the Universe**
    1) Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.
    2) Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
2. **Earth's Systems**
    1) Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
    2) Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
3. **Earth and Human Activity**
    1) Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
    2) Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

IV. Engineering, Technology, and Application of Science

1. **Engineering Design**
    1) Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
    2) 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.
    3) Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.