Three-Dimensional (3D) Learning Trail
in Practice A Segments (2021 TEKS Alignment)

The new 2021 Science TEKS informs the 3D learning process across two new strands:
- Scientific and Engineering Practices (SEPs) and
- Recurring Themes and Concepts (RTCs).

So, what are the implications for Science instruction?

- The overall impact of the new Science TEKS standards is a shift in pedagogy to mirror inquiry-based learning ignited by exploration to explanation.
- Emphasis is on what 3D learning is and how it is implemented. This is achieved by the following two objectives:

   1. Strategically and systematically integrate scientific and engineering practices (SEPs), recurring themes and concepts (RTCs), and grade-level content as outlined in the TEKS.
   2. Anchor the learning in phenomena and engineering problems as the key lever for driving learning and student mastery of content knowledge and skills.

The Practice A segment of each TREK moves students through a series of points along the 3D learning trail as they work to **master content through the exploration of model investigations anchored in phenomena**. 5th grade Science TEKS are noted, for our current STAAR prep digital version is for said grade level. However, the process is very similar across grades levels K-8. The knowledge and skills (KS) as well as the student expectations for the SEPs and RTCs integrated at each point are noted.

Point 1 — ## Anchor Learning in Phenomena (KS 5.1)

+ Observe and/or read information about phenomena (SEP TEKS 5.1A)
+ Find patterns (RTC TEKS 5.5A)
+ Ask questions (SEP TEKS 5.1A)
+ Develop explanations about phenomena (SEP TEKS 5.3A) using systems models (SEP TEKS 5.1G and RTC TEKS 5.5D) and/or mathematical calculations (SEP TEKS 5.2C)
   + Identify components of the system model
   + Use connections between parts of the system to describe and make predictions about the phenomena
   + Identify and describe a scientific cause
   + Determine how to test the model (SEP TEKS 5.1B)
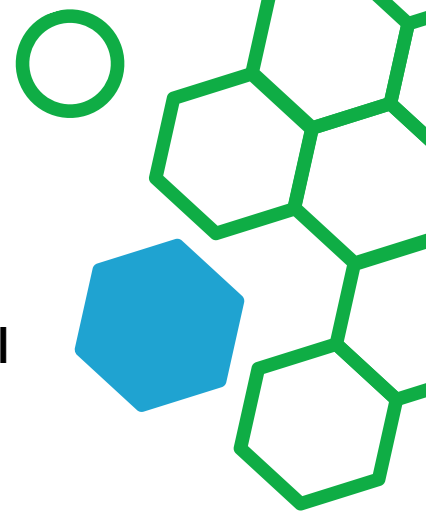
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Point 2 **Plan and Conduct Investigations (KS 5.1)**

+ Determine how to test the model (SEP TEKS 5.1B)
+ Establish the cause (RTC TEKS 5.5B)
+ Identify variables
+ Develop a procedure
+ Identify tools and materials
+ Demonstrate safe practices and use safety equipment (SEP TEKS 5.1C)
+ Use tools to observe, measure, test and analyze information (SEP TEKS 5.1D)
+ Collect evidence (SEP TEKS 5.1E)
+ Construct organizers used to collect data (SEP TEKS 5.1F)

Point 3 **Analyze and Interpret Data (KS 5.2)**

+ Analyze data (SEP TEKS 5.2B)
    + Identify significant features, patterns or sources of error (RTC TEKS 5.5A)
    + Use mathematical calculations (SEP TEKS 5.2C)
+ Identify advantages and limitations of models (SEP TEKS 5.2A)
+ Evaluate experimental designs (SEP TEKS 5.2D)

Point 4 **Develop and Communicate Explanations and Findings (KS 5.3)**

+ Claim-Evidence-Reasoning model (SEP TEKS 5.3A)
+ Communicate explanations in a variety of settings and formats (SEP TEKS 5.3B)
+ Listen to others' explanations (SEP TEKS 5.3C)
+ Engage in respectful scientific discussion (SEP TEKS 5.3C)