A Model of the Three Dimensions of Science Learning


**Disciplinary Core Ideas**

- **CONTENT**
  - Life Sciences
  - Physical Sciences
  - Earth and Space Sciences
  - Engineering, Technology, and Applications of Science

**Disciplinary Core Ideas (DCIs)**

- DCIs without CCCs and SEPs
  - Is a collection of scientific content without an understanding of how science is done or connected to or framed within unifying themes

**Cross Cutting Concepts (CCCs)**

- Science content with connections to unifying themes, but without the ability to explore or further scientific knowledge

- CCCs without SEPs and DCIs
  - The CCCs alone are unifying themes that lack disciplinary content or an understanding of how science is conducted

**Scientific and Engineering Practices (SEPs)**

- SEPs without CCCs and DCIs
  - Is the scientific process without connections to specific content or connections to unifying themes

**Example Performance Expectations (PEs):**

- **2-PS1-1.** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

- **5-PS1-1.** Develop a model to describe that matter is made of particles too small to be seen.

- **MS-PS1-1.** Develop models to describe the atomic composition of simple molecules and extended structures.

- **HS-PS1-1.** Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

**References:**
