

Don't Overreact!

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Grade Level 9th – 12th Grade

Course Chemistry, Physical Science

What is in a phenomenon-driven three-dimensional (3D) instructional set? These science resources use phenomena to facilitate engaging and meaningful learning, instruction, and formative assessment. Each resource set contains a guiding document and three other types of documents: an Instructional Task (IT), a corresponding formative Assessment Task (AT), and a corresponding Pattern Analysis of Student Thinking (PAST). These resources are not intended to be a complete lesson plan. Three-dimensional learning is not limited to one specific type of lesson format and is compatible with most lesson plan models. The IT proposes two or more possible phenomena that could be used to drive an instructional sequence addressing a specific OAS-S standard. It also provides suggestions for engaging students with the phenomena through meaningful learning experiences in three dimensions. The AT focuses on a phenomenon-associated scenario. It contains one or more tasks designed to give students opportunities to show their thinking and provide evidence-based explanations about the disciplinary core ideas (DCIs) using crosscutting concepts and scientific practices for that standard. The PAST document is directly associated with the AT. It describes the intended purpose of each part of the AT and includes relevant student response themes to help teachers identify patterns of student thinking. It also provides guidance and insight into how to interpret student responses and possible instructional moves for facilitating student understanding of a specific DCI concept. Individual teachers can use the PAST as a tool to construct a rubric for the AT.

Performance Expectation (PE)

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.

Disciplinary Core Ideas (DCI)

Structure and Properties of Matter

Each atom has a charged substructure consisting of a nucleus, which is made of protons and neutrons surrounded by electrons.

The periodic table orders elements horizontally by the number of protons in the atom's nucleus and places those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states.

Resource Attachments

Phenomenon-Based Instructional Task

- Guide to using a Phenomenon-Driven Three Dimensional Instructional Set 3-6-19—Don't Overreact.pdf
- HS-PS1-1 IT Periodic Table Trends—Don't Overreact.pdf

Formative Assessment Task

- HS-PS1-1 AT Periodic Table Trends—Don't Overreact.pdf
- HS-PS1-1 Handout for AT Simple Periodic Table of the Elements—Don't Overreact.pdf
- HS-PS1-1 Handout for AT The Reactivity Series of Metals—Don't Overreact.pdf

Pattern Analysis of Student Thinking (PAST)

- HS-PS1-1 PAST Periodic Table Trends—Don't Overreact.pdf