

Goal-directed Instructional Design Plan - Earth Science: Plate Tectonics

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1. **A problem or a need** – there must be a problem of practice or an educational need that should be addressed during the lesson.

- The educational need to align students to HSCE requirements of the Earth Sciences. Prerequisite material will be briefly revisited while new concepts and problems will be explored. (E3.p3, E3.3)

2. **A real-world performance** – how the learning objective fit into a real-world activity or need.

- Use the knowledge gained from this unit to understand why earthquakes and volcanoes occur where they do, provide evidence for those processes and eventually predict the likelihood of tectonic activity at specific locations.

3. **An instructional objective** – the objectives are based on the final outcome, activity or test. These objectives will each be different for the four types of knowledge; performing skills, recalling facts, identifying examples of concepts, and applying principles.

- Identifying different types of features associated with plate tectonics
- Explain the concept of continental drift while identifying who contributed to that theory.
- Further explain why tectonic plates move using the concepts of mantle convection and subduction of more dense oceanic plates.
- Apply knowledge of plate tectonics and tectonic features to predict events at different boundaries

4. **A method to help participants learn** – the method to deliver the content; a lesson.

- Earth's history via the position of the continents, how this process occurred, driving forces, features associated with those forces, future predictions. Computer simulations and models learned from CEP 811, classroom simulations and demos.

-1.1 (Feature: adaptable media), 1.3 (Feature: alternative visual), 2.1 (Feature: Hyperlinks for vocabulary and unfamiliar terms), 2.3/2.4 (Barrier: Language adaptations), 3.1-3.3 (Feature: background knowledge and big idea), 4 (Barrier: Multiple means expression/action), 5.1 (Feature: Multiple media), 6.4 (Feature: Pre/Post questionnaire), 7.1 (Feature: Individual choices), 8.3 (Feature: Group work and Presentations)

5. **A set of essential content** – the basic ideas and skills that will allow the learner to complete the task or understand the content.

- Ideas and concepts associated with continental drift, seafloor spreading, paleomagnetism, mantle convection and mechanisms, divergent/convergent/transform boundaries, rift valleys, subduction

- 3.1-3.3 (Feature: background knowledge and big idea), 4 (Barrier: multiple means of expression/action)

6. **An evaluation consisting of a test or observation** – an assessment, observation or product showing that the objectives can be accomplished in the real-world setting.

- A final assessment, in the form of a traditional test (sorry!)
- Successful completion of computer simulation and identification programs
- Illustrative models showing several of the key features and mechanisms

- 5.2 (Feature: Alternative evaluation)

● Motivation:

- Meaningfulness – content and activities must have meaning for the learner obtain some form of understanding of the forces of nature and the ability to understand the processes behind tectonic disasters
- Pleasant consequences – the effects that achieving the goal will have on the learner students will be able to better understand why tectonic forces shape development of cultures and commerce, and will be able to realize what might happen to certain areas in the near future
- Novelty – an attention-getting, humorous or curious manner that relates to the useful information in your lesson
 - Introduction of Japanese Earthquake and Tsunami, coinciding with Volcanoes of Hawaii indicating a mass plate movement.
 - Shock and awe videos/clips of areas with specific tectonic activity

● Socialization - a strong motivator for student learning

- ???? - Discussion forums via moodle, or blog
- Collaborative collections of answers and ideas shared as a class - 8.3 (Feature: Group work and Presentations)

● Audience – For what audience are you designing this lesson? Consider the following:

- Age - Mostly 9th graders
- Skill level (including technology skills) - Varied skill levels and experience
- Prerequisite knowledge (including technology background) - Basic computer skills, background knowledge of some ES concepts (taught as prerequisites)

● **Technology Needs** – the computers, software, programs (such as Angel or other CMS's) printers, equipment, Internet access, time in the computer lab will be needed to successfully complete your technology-rich lesson.

- PowerPoint, computers and computer lab time, printers, moodle(?), internet, ES tutorial disks,