

WASHINGTON STATE LASER

Alignment of Washington 6-8
Science Standards by EALR/Domain for

SEPUP

Plate Tectonics

November 1, 2010

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Systems ~ SYSF**

Content Standard

The natural and designed world is complex; it is too large and complicated to investigate and comprehend all at once. Scientists and students learn to define small portions for the convenience of investigation. The units of investigation can be referred to as “systems.”

Performance Expectation

- Given a complex societal issue with strong science and technology components (e.g., overfishing, global warming), describe the issue from a systems point of view, highlighting how changes in one part of the system are likely to influence other parts of the system.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 36	Aligned with modifications (see comments)	SG pp D-4-8; TG pp D-1-3; Student Sheet 36.1, 36.2	Teachers need to review background on TG pp. D2-3 to prepare for possible student questions. The activity contains opportunities for the use of term systems, input and output but it requires the intentional use by teachers. The teacher needs to be intentional about analysis in SG p D-8 3.
Activity 36	Aligned as designed	SG pp D-4-8; TG pp D-1-3; Student Sheets 36.1, 36.2	Teacher must be intentional about use of the terms (vocabulary) TG p D-1. Teachers need to emphasize TG D2-3 and analysis in SG p D-8 numbers 1-3.
Activity 49	Aligned with modifications (see comments)	SG pp D-57-61; Student Sheet 49.1	The activity contains opportunities for the use of systems terms but it requires the intentional use by teachers.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQB**

Content Standard

Different kinds of questions suggest different kinds of scientific investigations.

Performance Expectation

- Plan and conduct a scientific investigation (e.g., field study, systematic observation, controlled experiment, model, or simulation) that is appropriate for the question being asked.
- Propose a hypothesis, give a reason for the hypothesis, and explain how the planned investigation will test the hypothesis.
- Work collaboratively with other students to carry out the investigations.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 46	Aligned with modifications (see comments)	SG pp D-48-50	Teachers need to ask students to design a specific testable question based on the background information on the top of p D-48 and explain their reasoning.
Activity 46	Aligned as designed	SG pp D-48-50	Teacher need to emphasize analysis question 3 on p D-50.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQC**

Content Standard

Collecting, analyzing, and displaying data are essential aspects of all investigations.

- Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative.

Performance Expectation

- Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words.
- Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 37	Aligned as designed	SG pp D-9-13	Students are asked to create a data table to collect and analysis data in SG pp D-10-13, Teachers should emphasize the use this data to support answers to questions 1-4 p D-13. No statistical procedures are used.
Activity 41	Aligned as designed	SG pp D-27-29; Student Sheets 41.1, 41.2	Teachers need to emphasize SG p D-29 analysis 3, along with TG student sheet pp D-65 and D-67 to allow student to analyze evidence collected over the history of the Earth.
Activity 42	Aligned as designed	SG pp D-30-31; TG pp D-69-70; Student Sheet 42.1	Teachers need to emphasize SG p D-31 analysis 3. Teachers need to emphasize TG p D-70 Background Information on theory.
Activity 44	Aligned as designed	SG pp D-37-41; Student Sheet 44.1, 44.2	The activity is an integral part of the learning progression students are asked to demonstrate conceptual understanding of standards in Activities 44-48.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQC**

Content Standard

Collecting, analyzing, and displaying data are essential aspects of all investigations.

Performance Expectation

- Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative.
- Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words.
- Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 46	Aligned as designed	SG pp D-48-50	Teachers need to emphasize SG p D-50 analysis questions 1-2.
Activity 49	Aligned as designed	SG pp D-57-61; Student Sheet 49.1	Teachers need to emphasize quantitative expectations for question 2 on SG p D-61 and TG student sheet D-129.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQE**

Content Standard Models are used to represent objects, events, systems, and processes. Models can be used to test hypotheses and better understand phenomena, but they have limitations.

Performance Expectation • Create a model or simulation to represent the behavior of objects, events, systems, or processes. Use the model to explore the relationship between two variables and point out how the model or simulation is similar to or different from the actual phenomenon.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 37	Aligned as designed	SG pp D-9-13	
Activity 40	Aligned as designed	SG pp D-23-26; TG D-47; Transparency 40.1, 40.2; Student Sheet 40.1	
Activity 43	Aligned as designed	SG pp D-32-36; TG pp D-75, D-77 Transparency 43.1	The activity contains many opportunities to discuss how earthquakes are measured, but the Seismograph model will need to be set up and tested prior to use in class. Students are asked to give strengths and weakness of model in question 4 D-36.
Activity 44	Aligned as designed	SG pp D-37-41; Student Sheet 44.1, 44.2	The activity is an integral part of the learning progression students are asked to demonstrate conceptual understanding of standards in Activities 44-48.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQE**

Content Standard Models are used to represent objects, events, systems, and processes. Models can be used to test hypotheses and better understand phenomena, but they have limitations.

Performance Expectation • Create a model or simulation to represent the behavior of objects, events, systems, or processes. Use the model to explore the relationship between two variables and point out how the model or simulation is similar to or different from the actual phenomenon.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 46	Aligned as designed	SG pp D-48-50	
Activity 47	Aligned as designed	SG pp D-51-53; Student Sheet 47.1	
Activity 48	Aligned as designed	SG pp D-54-56; Student Sheet 48.1	

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQF**

Content Standard It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.

- Generate a scientific conclusion from an investigation using inferential logic, and clearly distinguish between results (e.g., evidence) and conclusions (e.g., explanation).
- Describe the differences between an objective summary of the findings and an inference made from the findings.

Performance Expectation

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 37	Aligned as designed	SG p D-13	The teacher needs to be intentional about discussing the relationship between results and conclusions as student complete analysis questions 1-4 p D-13.
Activity 46	Aligned as designed	SG pp D-48-50	Teachers need to emphasize SG p D-50 analysis questions 3-4.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQH**

Content Standard

Science advances through openness to new ideas, honesty, and legitimate skepticism. Asking thoughtful questions, querying other scientists' explanations, and evaluating one's own thinking in response to the ideas of others are abilities of scientific inquiry.

Performance Expectation

- Recognize flaws in scientific claims, such as uncontrolled variables, over generalizations from limited data, and experimenter bias.
- Listen actively and respectfully to research reports by other students. Critique their presentations respectfully, using logical argument and evidence.
- Engage in reflection and self-evaluation.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 49	Aligned with modifications (see comments)	SG pp D-57-61; Student Sheet 49.1	Teachers need to emphasize quantitative expectations for question 2 on SG p D-61 and TG student sheet D-129. Students are asked to present their scientific report to the class.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Inquiry ~ INQI**

Content Standard Scientists and engineers have ethical codes governing animal experiments, research in natural ecosystems, and studies that involve human subjects.

Performance Expectation • Demonstrate ethical concerns and precautions in response to scenarios of scientific investigations involving animal experiments, research in natural ecosystems, and studies that involve human subjects.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 36	Aligned as designed	SG pp D-4-8; Student Worksheet 36.1, 36.2	Teachers need to emphasize SG p D-8 analysis 1-4.
Activity 49	Aligned as designed	SG pp D-57-61; Student Sheet 49.1	Teachers need to emphasize quantitative expectations for questions 2-3 on SG p D-61 and TG student sheet D-129.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Application ~ APPC**

Content Standard Science and technology are interdependent. Science drives technology by demanding better instruments and suggesting ideas for new designs. Technology drives science by providing instruments and research methods.

Performance Expectation • Give examples to illustrate how scientists have helped solve technological problems (e.g., how the science of biology has helped sustain fisheries) and how engineers have aided science (e.g., designing telescopes to discover distant planets).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 43	Aligned as designed	SG pp D-32-36; TG pp. D-75, D-77 Transparency 43.1	
Activity 47	Aligned as designed	SG pp D-51-53; Student Sheet 47.1	The activity contains many opportunities to discuss the use of technology to show how plates move and over long periods of geological time.
Activity 48	Aligned as designed	SG pp D-54-56; Student Sheet 48.1	

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Application ~ APPE**

Content Standard Scientists and engineers often work together to generate creative solutions to problems and decide which ones are most promising.

Performance Expectation • Collaborate with other students to generate creative solutions to a problem, and apply methods for making tradeoffs to choose the best solution.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 36	Aligned as designed	SG pp D-4-8; Student Sheet 36.1, 36.2	Teachers need to emphasize analysis questions 1-3 in SG p D-8 along with evidence used to make decisions about trade-offs.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES2E**

Content Standard The solid Earth is composed of a relatively thin crust, a dense metallic core, and a layer called the mantle between the crust and core that is very hot and partially melted.

Performance Expectation • Sketch and label the major layers of Earth, showing the approximate relative thickness and consistency of the crust, core, and mantle.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 38	Aligned as designed	SG pp D-14-19; TG p D-19; Student Sheet 38.1, 38.21a, 38.2b	Teacher must be intentional about use of the terms (vocabulary) found within the standard as identified in TG p D-19.
Activity 44	Aligned as designed	SG pp D-37-41; Student Sheet 44.1, 44.2	The activity is an integral part of the learning progression students are asked to demonstrate conceptual understanding of standards in Activities 44-48. Teachers need to ask students to explain previous Activity 36 and 40 to meet this standard.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES2F**

Content Standard The crust is composed of huge crustal plates on the scale of continents and oceans which move centimeters per year, pushed by convection in the upper mantle, causing earthquakes, volcanoes, and mountains.

Performance Expectation

- Draw a labeled diagram showing how convection in the upper mantle drives movement of crustal plates.
- Describe what may happen when plate boundaries meet (e.g., earthquakes, tsunamis, faults, mountain building), with examples from the Pacific Northwest.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 44	Aligned as designed	SG pp D-37-41; Student Sheet 44.1, 44.2	The activity is an integral part of the learning progression students are asked to demonstrate conceptual understanding of standards in Activities 44-48.
Activity 45	Aligned as designed	SG pp D-42-47; TG pp D-95-97; Student Sheet 45.1	Teacher must be intentional about use of the terms (vocabulary) in TG p D-95.
Activity 46	Aligned as designed	SG pp D-48-50; TG p D-103	Teacher must be intentional about use of the terms (vocabulary) in TG p D-103. Teachers need to emphasize SG p D-50 analysis questions 3-4.
Activity 47	Aligned as designed	SG pp D-51-53; Student Sheet 47.1	

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES2F**

Content Standard The crust is composed of huge crustal plates on the scale of continents and oceans which move centimeters per year, pushed by convection in the upper mantle, causing earthquakes, volcanoes, and mountains.

Performance Expectation

- Draw a labeled diagram showing how convection in the upper mantle drives movement of crustal plates.
- Describe what may happen when plate boundaries meet (e.g., earthquakes, tsunamis, faults, mountain building), with examples from the Pacific Northwest.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 48	Aligned as designed	SG pp D-54-56; Student Sheet 48.1	

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES2G**

Content Standard Land forms are created by processes that build up structures and processes that break down and carry away material through erosion and weathering.

Performance Expectation • Explain how a given land form (e.g., mountain) has been shaped by processes that build up structures (e.g., uplift) and by processes that break down and carry away material (e.g., weathering and erosion).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 45	Aligned as designed	SG pp D-42-47; TG pp D-95-97; Student Sheet 54.1	Teacher must be intentional about use of the terms (vocabulary) in TG p D-95.
Activity 47	Aligned as designed	SG pp D-51-53; Student Sheet 47.1	
Activity 48	Aligned as designed	SG pp D-54-56; Student Sheet 48.1	

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES3A**

Content Standard Our understanding of Earth history is based on the assumption that processes we see today are similar to those that occurred in the past.

Performance Expectation • Describe Earth processes that we can observe and measure today (e.g., rate of sedimentation, movement of crustal plates, and changes in composition of the atmosphere) that provide clues to Earth’s past.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 41	Aligned as designed	SG pp D-27-29; TG p D-59, Student Sheet 41.1, 41.2	Teachers need to emphasize student sheet p D-67 in TG and analysis question 3 in SG p D-29.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES3B**

Content Standard Thousands of layers of sedimentary rock provide evidence that allows us to determine the age of Earth's changing surface and to estimate the age of fossils found in the rocks.

Performance Expectation • Explain how the age of land forms can be estimated by studying the number and thickness of rock layers, as well as fossils found within rock layers.

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 39	Aligned as designed	SG pp D-20-22; TG p D-31; Transparency 39.1, 39.2, 39.3; Student Sheet 39.1, 39.2	The unit contains many opportunities to address the standards but the teacher must be intentional in using the building on the understanding of the term fossil as learned in prior lessons. Students will not know about sedimentary rock formation until completing 6-8 ES2H.
Activity 41	Aligned as designed	SG pp D-27-29; TG p D-59; Student Sheet 41.1, 41.2	The activity is an integral part of a learning progression and references activity 40.

**Alignment of Washington 6-8 Science Standards with
SEPUP Plate Tectonics
Earth Science ~ ES3D**

Content Standard Earth has been shaped by many natural catastrophes, including earthquakes, volcanic eruptions, glaciers, floods, storms, tsunamis, and the impacts of asteroids.

Performance Expectation • Interpret current land forms of the Pacific Northwest as evidence of past geologic events (e.g., Mount St. Helen's and Crater Lake provide evidence of volcanism, the Channeled Scablands provides evidence of floods that resulted from melting of glaciers).

Lesson Number	Alignment	Evidence of Alignment	AlignmentComments
Activity 43	Aligned as designed	SG pp D-32-36; TG pp D-75, D-77; Transparency 43.1	
Activity 45	Aligned as designed	SG pp D-42-47; TG pp D-95-97; Student Sheet 54.1	Teacher must be intentional about use of the terms (vocabulary) in TG p D-95.
Activity 47	Aligned as designed	SG pp D-51-53; Student Sheet 47.1	
Activity 48	Aligned as designed	SG pp D-54-56; Student Sheet 48.1	