Portales Municipal Schools

CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What is the importance of using scientific method of inquiry in research?	
STRAND I. Scientific Thinking and Practice	**BENCHMARK I. Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and** communicate results.
STANDARD I. Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
1st	**2. Design and conduct scientific investigations that include: testable hypothesis, methods to collect, analyze, and interpret data; results that address hypothesis being investigated; predictions based on results; re-evaluation of hypothesis and additional experimentation as necessary; and error analysis**	**Use of scientific method of inquiry.** **1. Understand basis of scientific investigations.** **2. Re-evaluate previous research, theories, and laws.** **3. Review various types of technology and how they are used to gather information in Global Science.**	**Students will do the following:** ***Choose school appropriate hypothesis to investigate** ***Research and design what a typical experimentation should include** ***Develop charts and graphs with reasonable imaginary data** ***Decide upon a reasonable conclusion, based on previous research and imagination** ***Evaluate the importance of their investigation.** ***Present to rest of class.**	Rubric that includes peer and teacher evaluation of presentation relevancy of subject matter, thoroughness of research, data preparation and correlation to reasonable expected outcomes.	**Textbooks, teacher prepared materials, computer research, and library sources.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What is the origin and structure of Earth?	
STRAND II. The content of Science	**BENCHMARK II. Examine the scientific theories of the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.**
STANDARD III. (Earth and Space Science) Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
1st	**1. Describe the characteristics and the evolution of Earth in terms of the geosphere, the hydrosphere, the atmosphere, and the biosphere.**	**Examine the origin and structure of Earth** **1. Evaluate theories on origin of Earth** **2. Identify layers and their importance** **3. Identify components of different spheres**	**Students will do the following:** **1. Model the formation of Earth through drawing or play dough, showing each of the major steps believed to have taken place.** **2. Model and label composition, thickness, and location of the layers of the geosphere.** **3. Students will chart the components of each of the different spheres.**	Students work will be graded as follows: 1. Accuracy of steps and correct order given as well as appropriate labeling of parts and steps. 2. Accuracy and identification of correct layers 3. Accuracy of placement and thoroughness of comparison and contrast between the different spheres.	**Textbooks, play dough, drawing paper, colored pencils, rulers, etc.**
	5. Explain plate tectonic theory and understand the evidence that supports it.	**Explain Wegener's theories and recent evidence that supports tectonic theories.**	**Students will do worksheets that include the following:** **1. Identifying missing name on map of plates.** **2. Answer questions based on particular plates and their movement.** **3. List the movements and boundary types in plates.**	**Students work will be graded on accuracy and completeness of answers.**	**Textbook, supplemental materials and Saddleback activity sheets page 27 & 28.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What is the difference and importance of the geochemical cycles?	
STRAND II. The content of Science	**BENCHMARK II. Examine the scientific theories on the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.**
STANDARD III. (Earth and Space Science) Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
2nd	**9. Know that Earth's system contains a fixed amount of natural resources that cycle among land, water, the atmosphere, and living things (e.g., carbon and nitrogen cycles, rock cycle, water cycle, groundwater, aquifers**	**Geochemical cycles** **1. Review types, formation and importance of the cycles** **2. Review differences between rocks and minerals, and give uses of minerals.** **3. Review formation, uses, importance of natural resources.** **4. Examine conservation laws, practices, and pollution**	**Students will do the following:** **1. Complete worksheets on cycles from text related materials.** **2. They will choose rocks to be tumbled and make jewelry from finished specimens.** **3. They will complete charts and answer questions on minerals from Saddleback worksheets** **4. Complete text related questions on pollution and laws on worksheets.**	Grades will based on: 1. Correct and complete responses on worksheets. 2. Completion of jewelry and ability to identify material used. 3. All charts will be complete and accurate. 4. Completion and accuracy of worksheets	**Materials to be used:** **1. Text books, workbooks.** **2. Textbooks, teacher provided materials, rocks, polisher, and jewelry fixtures.** **3. Saddleback materials and textbooks.** **4. Text and workbooks.** **1.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What is the difference and importance of the geochemical cycles?	
STRAND II. The content of Science	**BENCHMARK II. Examine the scientific theories on the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.**
STANDARD III. (Earth and Space Science) Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
2nd	**10. Describe the composition and structure of Earth's materials including: *the major rock types (i.e., sedimentary, igneous, metamorphic) and their formation. *natural resources (e.g., minerals, petroleum) and their formation.**	**1. Identify different types of rocks and mineral** **2. Look at magnetic alignment and seafloor spreading.** **3. Identify types of pollution, conservation practices, and laws enacted to protect natural resources**	**1. Complete worksheets on composition, density, and structure of rocks and minerals from Saddleback Ed.** **2. Do exercise in text to calculate age, correlation of types, and alignment of magnetic alignment in seafloor spreading.** **3. They will look at pollution disasters of the past and write responses on impact and potential long term effects.**	1. Correct and completed worksheets. 2. Correct answers and completion. 3. Rubric for finished report including subject relevancy, accuracy of information, and all key components addressed	**2. Saddleback materials and textbooks.** **3. Copies of color pages showing seafloor spreading taken from text, rulers, calculators, and text books.** **Computers, textbooks, and library materials.**

Portales Municipal Schools

CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What is the importance of and threats to our groundwater system?	
STRAND II. The content of Science	**BENCHMARK II. Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interconnections.**
STANDARD III. (Earth And Space Science) Understand the structure of Earth, the solar system and the universe, the interconnections among them, and the processes and interactions of Earth's systems.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
2nd	**Explain how the availability of groundwater through aquifers can fluctuate based on multiple factors (i.e., rate of use, rate of replenishment, surface changes and changes in temperature).**	**1. Identify source and pathways of groundwater.** **2. Examine methods of testing quality of groundwater.** **3. Identify methods of controlling and conserving groundwater.**	**Students will do the following:** **1. Students will look at pathway of water in Karst topography setting as we have in New Mexico and write 2 paragraphs on findings.** **2. Students will test different samples of water for hardness and chlorine content.** **3. Students will complete text related worksheets on flood control, pollution, and graphing of water consumption.**	Grades will be based on: 1. Components of lab reports as based on Schaefer method and relevancy. **2. Completed chart of test results from 3 samples of water.** **3. Completion and accuracy of worksheets**	**1. Classroom diagram, computer research, textbooks.** **2. Water test kits, three samples of water, teacher prepared chart for test results.** **3. Saddleback Ed. worksheets and textbook.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: What types of energy are involved in Earth's systems and what are the effects of their interactions?

STRAND II. The content of Science	**BENCHMARK II. Examine the scientific theories, of the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.**

STANDARD III. (Earth and Space Science) Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
3rd	**6. Know that the Earth's systems are driven by internal (i.e., radioactive decay and gravitational energy) and external (i.e., the sun) sources of energy.** **7. Describe convection as the mechanism for moving heat energy from deep within Earth to the surface and discuss how this process results in plate tectonics, including: geological manifestations (e.g., earthquakes, volcanoes, mountain building) that occur at plate boundaries; impact of plate motions on societies and the environment (e.g., earthquakes and volcanoes)**	**1. Understand the processes, types, and results of radioactive decay.** 2. Understand the processes and affect of gravitational energy. 4. Identify the forms energy from the sun can take and influence on Earth's systems. 5. Identify geological manifestations (i.e., volcanoes, earthquakes, mountain building) and their causes, measurement methods, affects, and future implications. 1. Explain the causes of plate motion and relate to manifestations such as earthquakes and volcanoes to plate activity.	**Students will do the following:** **1. Chart different forms of radiation, rates of decay for different materials, and list devices used to detect radiation.** **2. Calculate and chart gravity on different bodies in space.** **3. Complete text related workbook pages on sun's energy.** **4. Model Earthquakes with paper villages and cords; Construct and erupt a volcano; model mountain building with play dough; Complete worksheets on intensity, processes and current research,** **1. Complete workbook pages identifying the results and actions of plate motions.** **2. Draw plates on a balloon, with equator and longitude and latitude lines and relate to original positions in a paragraph summary of historical movements.**	Grades based on the following: 1. Completion and accuracy of completed work **2. Chart with comparison and contrast of at least three different bodies in space, (planets, moon, Earth, etc)** **3. Accuracy and completeness of information.** **4. Rubric for constructions of Earthquakes and Volcanoes, and the actions involved put into play. Accuracy and completeness of worksheets** **1. Accuracy and completeness.** **2. Rubric with components to be shown on balloon and addressed in summary.**	**1. Textbooks, Saddleback ed., and supplemental materials.** **2. Textbooks, teacher prepared charts** **3. Textbooks and workbooks.** **4. Teacher prepared Rubric, textbook, butcher paper, construction paper, scissors, play dough, lengths of cord, paper Mache, newspaper, paint, plant material (from train supplies), vinegar, boxes, foil, baking powder, and food color.** **1. Textbook and workbook.** **2. Teacher prepared rubric, textbook, balloons, markers, ruler and string.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: How is the geologic history of Earth determined?	
STRAND II. The content of science	**BENCHMARK II. Examine the scientific theories of the origin, structure, energy, and evolution of earth and its atmosphere and their interconnections.**
STANDARD III. (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions among them.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
3rd	**4. Understand the changes in Earth's past and the investigative methods used to determine geologic time, including: rock sequences, relative dating, fossil correlation, and radiometric dating; geologic time scale, historic changes in life forms, and the evidence for absolute ages (e.g., radiometric methods, tree rings, and paleomagnetism)**	**1. Analyze methods and types of radiometric dating.** **2. Compare and contrast divisions of time.** **3. Identify changes in life forms and explain process of fossil correlation.**	**1. Students will chart different forms of radiometric dating and the accuracy of the time frames they are designed to identify. They will also calculate carbon-14 decay over various amounts of half-lives.** **2. Students will complete geologic time scale and worksheets on fossil index, and eras.** **3. Students will complete worksheets on types of fossils and on where they are found, and review process of matching fossils with layers of rock in which they are found. Students will review recent discoveries on computers and write 3 paragraph reports.**	1. Grades will be based on accuracy and completion of chart and worksheet. **2. Grades will be based on accuracy and completion of time scale and worksheets.** **3. Grades will be based on accuracy and completion on worksheets, and rubric on reports that includes relevancy, proper time period fossil refers to and organization of thought.**	**1. Teacher prepared chart, computers, textbook, and Saddleback ed. materials.** **2. Textbooks, workbooks, and Saddleback worksheets.** **3. Textbooks, workbooks, Saddleback ed., teacher prepared rubric, and computers.**

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CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS: How does our weather and atmosphere interact?	
STRAND II. The content of Science.	**BENCHMARK II. Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interactions.**
STANDARD III. (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe and the interconnections among them, and the processes and interactions of Earth's systems.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
4th	**8. Describe the patterns and relationships in the circulation of air and water driven by the sun's radiant energy, including: pattern s in weather systems related to the transfer of energy; differences between climate and weather; global climate, global warming, and the greenhouse effect; El Nino, La Nina, and other climatic trends.**	**1. Identify the relationship between weather and the atmosphere.** **2. Explain and differentiate between the patterns in air and water circulation.** **3. Evaluate the difference between climate and weather.** **4. Identify types of weather conditions and causes, as well as intensity and scales used to measure severity.**			**1. Textbooks, workbooks, and Saddleback ed. materials.** **2. Textbook, butcher paper colored pencils, and tape.** **3. Textbooks and paper.** **4. Workbooks, textbooks, Saddleback ed., teacher prepared lab sheets, and devices for measuring wind and pressure, (to be obtained by next year by teacher)**

Portales Municipal Schools

CURRICULUM MAP

Subject:	Global Science	**2009**	**Grade Level**

ESSENTIAL QUESTIONS:	
STRAND II. The content of Science.	**BENCHMARK II. Examine the scientific theories of the origin, structure, energy and evolution of Earth and its atmosphere, and their interactions.**
STANDARD III. (Earth and Space Science): Understand the structure of Earth, the solar system, and the universe and the interconnections among them, and the processes and interactions of Earth's systems.	

9 weeks	**PERFORMANCE STANDARD**	**CONCEPTS/SKILLS Review/Extend previously introduced skill unless noted** **I = Introduce** **R= Review AND Extend** **M = Master**	**STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES**	**ASSESSMENTS**	**STUDENT MATERIALS AND RESOURCES**
	11. Explain how layers of the atmosphere (e.g., ozone, ionosphere) change naturally and artificially.	**1. Identify the effects the ozone layer has on Earth's atmosphere.** **2. Identify the different zones of atmosphere and the temperature and pressure ranges of each.** **3. List types of pollution problems, greenhouse effect, and current concerns over global warming**	1.Students will complete workbook pages, and then research the current scientific views on internet and write a brief 2 paragraph summary on what they find and their own personal opinion. 2 .Students will complete workbook pages on layers of atmosphere. 3. Students will complete workbook pages and worksheets on greenhouse gases and effect. The students will research and write a 2 paragraph summary on current concerns on global warming, including their personal opinion on the risk	1.Grades will be based on accuracy and completeness of workbook pages. 2.Grades based on accuracy and completeness of workbook pages. 3. Workbook pages and worksheets will be graded on accuracy and completeness. Summaries will be graded on accuracy, organization, and criteria set forth in brief rubric.	**1. Textbooks, workbooks, and teacher prepared rubrics.** **2. Workbook and textbooks.**