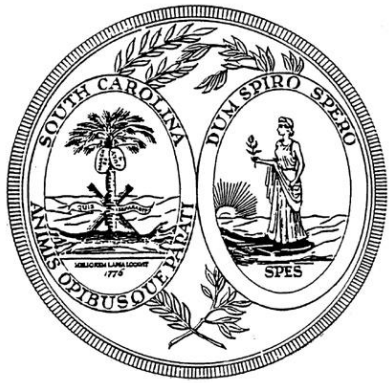
South Carolina Academic Standards and Performance Indicators for Science 2014



Instructional Unit Resource

8th Grade

South Carolina Academic Standards and Performance Indicators for Science 2014
Eighth Grade Science Instructional Unit Resource

As support for implementing the *South Carolina Academic Standards and Performance Indicators for Science 2014*, the standards for Eighth Grade have been grouped into possible units. In the Overview of Units below, the titles for those possible units are listed in columns. Refer to the Overview document to note these unit titles and how Standards, Conceptual Understandings, Performance Indicators, Science and Engineering Practices, and Crosscutting Concepts align. Following the Overview of Units, an Instructional Unit document is provided that delivers guidance and possible resources in teaching our new *South Carolina Academic Standards and Performance Indicators for Science 2014*. The purpose of this document is to provide guidance as to how all the standards in this grade may be grouped into units and how those units might look. Since this document is merely guidance, districts should implement the standards in a manner that addresses the district curriculum and the needs of students. This document is a living document and instructional leaders from around the state will continuously update and expand these resource documents. These documents will be released throughout the 2016-2017 school year with the intentionality of staying ahead of instruction. Teachers should also note that links to the Standards document, A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas, the SEP Support Document, and the Support Document 2.0 are embedded throughout the Instructional Unit format for reference.

Acknowledgments

Jean Baptiste Massieu, famous deaf educator, made a statement that is now considered a French proverb. “Gratitude is the memory of the heart. Indeed, appreciation comes when you feel grateful from the depths of your heart. The head keeps an account of all the benefits you received and gave. But the heart records the feelings of appreciation, humility, and generosity that one feels when someone showers you with kindness.” It is with sincere appreciation that we humbly acknowledge the dedication, hard work and generosity of time provided by teachers and instructional leaders across the state that have made and are continuing to make the Instructional Unit Resources possible.

Grade Eight Overview of Units

Unit 1	Unit 2	Unit 3	
Physical Science: Forces & Motion	Physical Science: Waves	Earth Science: Earth's Place in the Universe	
Standard	**Standard**	**Standard**	
8.P.2	8.P.3	8.E.4	
Conceptual Understanding	**Conceptual Understanding**	**Conceptual Understanding**	**Conceptual Understanding**
8.P.2A	8.P.3A	8.E.4A	8.E.4B
Performance Indicators	**Performance Indicators**	**Performance Indicators**	**Performance Indicators**
8.P.2A.1 8.P.2A.2 8.P.2A.3 8.P.2A.4 8.P.2A.5 8.P.2A.6 8.P.2A.7	8.P.3A.1 8.P.3A.2 8.P.3A.3 8.P.3A.4 8.P.3A.5 8.P.3A.6	8.E.4A.1 8.E.4A.2	8.E.4B.1 8.E.4B.2 8.E.4B.3 8.E.4B.4 8.E.4B.5 8.E.4B.6
Science and Engineering Practices	**Science and Engineering Practices**	**Science and Engineering Practices**	
8.S.1A.2 8.S.1A.3 8.S.1A.4 8.S.1A.5 8.S.1A.6	8.P.1A.2 8.P.1A.4 8.P.1A.6 8.P.1A.8	8.P.1A.2 8.P.1A.4 8.P.1A.6 8.P.1A.7 8.P.1A.8	
CrossCutting Concepts	**CrossCutting Concepts**	**CrossCutting Concepts**	
2, 4, 3,7	1, 2, 6	1, 2, 3, 4	

**Teachers have the discretion to enhance the selected SEP's and CCC's.*

Grade Eight Overview of Units

Unit 4			Unit 5	
Earth Science: Earth Systems & Resources			Earth Science: Earth's History & Diversity of Life	
Standard			**Standard**	
8.E.5			8.E.6	
Conceptual Understanding	**Conceptual Understanding**	**Conceptual Understanding**	**Conceptual Understanding**	**Conceptual Understanding**
8.E.5A	8.E.5B	8.E.5C	8.E.6A	8.E.6B
Performance Indicators	**Performance Indicators**	**Performance Indicators**	**Performance Indicators**	**Performance Indicators**
8.E.5A.1 8.E.5A.2 8.E.5A.3 8.E.5A.4 8.E.5A.5	8.E.5B.1 8.E.5B.2 8.E.5B.3	8.E.5C.1	8.E.6A.1 8.E.6A.2 8.E.6A.3 8.E.6A.4 8.E.6A.5	8.E.6B.1 8.E.6B.2
Science and Engineering Practices			**Science and Engineering Practices**	
8.P.1A.2 8.P.1A.4 8.P.1A.6 8.P.1A.8 8.S.1B.1			8.P.1A.2 8.P.1A.4 8.P.1A.6 8.P.1A.7 8.P.1A.8 8.S.1B.1	
CrossCutting Concepts			**CrossCutting Concepts**	
1, 2, 3, 4, 6, 7			1, 2, 3, 4, 5, 7	

**Teachers have the discretion to enhance the selected SEP's and CCC's.*

Unit Title
Earth Science: Earth's Place in the Universe
Standard http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf
8.E.4 The student will demonstrate an understanding of the universe and the predictable patterns caused by Earth's movement in the solar system.

Conceptual Understanding
8.E.4A Earth's solar system is part of the Milky Way Galaxy, which is one of many galaxies in the universe. The planet Earth is a tiny part of a vast universe that has developed over a span of time beginning with a period of extreme and rapid expansion.
New Academic Vocabulary **Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/) and further inquiry into the terms can be found there.**
Galaxies (Spiral, Elliptical, & Irregular) Light Year Milky Way
Performance Indicators **Text highlighted below in *orange* and ***italicized/underlined*** shows connections to SEP's**
8.E.4A.1 *Obtain and communicate information* to model the position of the Sun in the universe, the shapes and composition of galaxies, and the measurement unit needed to identify star and galaxy locations 8.E.4A.2 *Construct and analyze* scientific arguments to support claims that the universe began with a period of extreme and rapid expansion using evidence from the composition of stars and gases and the motion of galaxies in the universe.
***Science and Engineering Practices** **Support for the guidance, overviews of learning progressions, and explicit details of each SEP can found in the Science and Engineering Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.**
8.S.1A.7 Construct and analyze scientific arguments to support claims, explanations, or designs using evidence from observations, data, or

informational texts.
8.S.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

***Cross Cutting Concepts** http://www.nap.edu/read/13165/chapter/8

The link above provides support from the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012). The text in blue and *italicized/underlined* below provides a brief explanation for how the specific content ties to the CCC's.

1. Patterns The National Research Council (2012) states that "observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them" (p. 84). *There are predictable patterns caused by the Earth's movement in the solar system. The Earth's solar system is part of the Milky Way Galaxy which is one of many in the universe that have developed over time. The shape and composition of galaxies can be used to classify them as elliptical, spiral, or irregular.*

3. Scale, proportion, and quantity: The National Research Council (2012) states that "in considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure or performance" (p. 84). *Distances in space are so great, scientists use light years to measure distance.*

4. Systems and systems models: The National Research Council (2012) states that "Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering" (p. 84). *The Earth is a part of a solar system that is part of the Milky Way Galaxy, a system that is part of the universe.*

**Teachers have the discretion to enhance the selected SEP's and CCC's.*

Prior Knowledge
● 4.E.3 The student will demonstrate an understanding of the locations, movements, and patterns of stars and objects in the solar system.
Subsequent Knowledge
● H.E.2 The student will demonstrate an understanding of the structure, properties, and history of the observable universe.

Possible Instructional Strategies/Lessons

Strategies and lessons that will enable students to master the standard and/or indicator.

- The Raisin Bread Universe Scientific arguments can support claims that the universe began with a period of extreme and rapid expansion. Students can use raisin bread dough to observe the changes that occur (there are many quick easy recipes) as the dough expands. Then students will research expansion theory of the universe and in groups compare what they saw happen in the dough to what they researched. http://www.oercommons.org/courses/raisin-bread-universe/view

- Cosmic Times Gallery Walk Students will analyze events in the development of the theory for the origin of the universe. http://cosmictimes.gsfc.nasa.gov/teachers/guide/overview/lessons.html

- NOVA | Stellar Velocity: The Doppler Effect This interactive activity from *NOVA* provides an explanation of how the Doppler effect, a wave phenomenon, helps scientists studying distant galaxies to gauge their speed and their direction of motion in relation to Earth. http://www.pbslearningmedia.org/resource/phy03.sci.phys.energy.doppler/stellar-velocity-the-doppler-effect/

- Parallax Interactive This interactive activity shows how parallax is used to measure the distance of a star or other far away object in the universe. There are some exercises for the students to try as well. http://highered.mheducation.com/olcweb/cgi/pluginpop.cgi?it=swf::800::600::/sites/dl/free/007299181x/78778/Parallax_Nav.swf::Stellar%20Parallax%20Interactive

Resources

- Galaxy generator Watch a small black and white galaxy form with galaxy tuning fork reference. http://www.interactive-earth.com/visualizations/galaxy_generator.htm

Sample Formative Assessment Tasks/Questions

Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)

- Exit slip-Students will have to write down three things they learned from the lesson that day and at least one thing that they are confused about or would like to learn more about.

- Describe the size of the Universe? What is the difference between a Universe and a Galaxy?

- Relate what you know of the Milky Way Galaxy?
- Do you think it is possible for us to travel to another galaxy? Explain why?
- Explain how you could measure the distance to a distant object in the universe.
- Briefly describe the evidence use for the Big Bang Theory.

Unit Title
Earth Science: Earth's Place in the Universe
Standard http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf
8.E.4 The student will demonstrate an understanding of the universe and the predictable patterns caused by Earth's movement in the solar system.

Conceptual Understanding
8.E.4B Earth's solar system consists of the Sun and other objects that are held in orbit around the Sun by its gravitational pull on them. Motions within the Earth-Moon-Sun system have effects that can be observed on Earth.
New Academic Vocabulary **Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/) and further inquiry into the terms can be found there.**

Day	Moon(s)	Spectroscopes	Space Observatories	Satellites
Year	Asteroids	Axis	Tides (Spring & Neap)	Solar Flares
Lunar Movement	Comets	Seasons	Rotation	Solar System
Phases of the Moon	Meteors /Meteorite	Revolution	Planets	Lunar eclipse

Eclipses (Lunar & Solar)	Day	Solar eclipse	Ellipse
Waxing	Space Probes	Waning	Telescopes (refractor, reflector, radio, other)
Photosphere	Corona	Sunspots	Prominences

Performance Indicators

Text highlighted below in *orange* and *italicized/underlined* shows connections to SEP's

8.E.4B.1 *Obtain and communicate information to model and compare* the characteristics and movements of objects in the solar system (including planets, moons, asteroids, comets, and meteors).
8.E.4B.2 *Construct explanations* for how gravity affects the motion of objects in the solar system and tides on Earth.
8.E.4B.3 *Develop and use models* to explain how seasons, caused by the tilt of Earth's axis as it orbits the Sun, affects the length of the day and the amount of heating on Earth's surface.
8.E.4B.4 *Develop and use models* to explain how motions within the Sun-Earth Moon system cause Earth phenomena (including day and year, moon phases, solar and lunar eclipses, and tides).
8.E.4B.5 *Obtain and communicate information* to describe how data from technologies (including telescopes, spectroscopes, satellites, space probes) provide information about objects in the solar system and the universe.
8.E.4B.6 *Analyze and interpret data* from the surface features of the Sun (including photosphere, corona, sunspots, prominences, and solar flares) to predict how these features may affect Earth.

***Science and Engineering Practices**

Support for the guidance, overviews of learning progressions, and explicit details of each SEP can found in the Science and Engineering Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.

8.S.1A.2 Develop, use, and refine models to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.
8.S.1A.4 Analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation, graphing, or statistical analysis) to (1) reveal patterns and construct meaning or (2) support hypotheses, explanations, claims, or

designs.
8.S.1A.6 Construct explanations of phenomena using (1) primary or secondary scientific evidence and models, (2) conclusions from scientific investigations, (3) predictions based on observations and measurements, or (4) data communicated in graphs, tables, or diagrams.
8.S.1A.8 Obtain and evaluate scientific information to (1) answer questions, (2) explain or describe phenomena, (3) develop models, (4) evaluate hypotheses, explanations, claims, or designs or (5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by (1) evaluating grade-appropriate primary or secondary scientific literature, or (2) reporting the results of student experimental investigations.

***Cross Cutting Concepts**

Text below provides a brief explanation of how the specific concept ties to the CCC's.

1. Patterns: The National Research Council (2012) states that "observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them" (p. 84). *There are predictable patterns caused by the Earth's movement in the solar system. The Earth's solar system is part of the Milky Way Galaxy which is one of many in the universe that have developed over time. The shape and composition of galaxies can be used to classify them as elliptical, spiral, or irregular.*

2. Cause and effect: The National Research Council (2012) states that "events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts" (p. 84). *Tides and planetary orbits are caused by the pull of gravity.*

4. Systems and systems models: The National Research Council (2012) states that "Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering" (p. 84). *Models can be used to explain how motions within the Sun-Earth-Moon systems cause Earth phenomena.*

**Teachers have the discretion to enhance the selected SEP's and CCC's.*

Prior Knowledge

- 1.E.3 The student will demonstrate an understanding of the patterns of the Sun and the Moon and the Sun's effect on Earth.
- 4.E.3 The student will demonstrate an understanding of the locations, movements, and patterns of stars and objects in the solar system.

Subsequent Knowledge

- H.P.2D.2 Use mathematical and computational thinking to predict the relationships among the masses of two objects, the attractive

gravitational force between them, and the distance between them (Newton's Law of Universal Gravitation, F=Gm1m2/r2).

- H.E.2 The student will demonstrate an understanding of the structure, properties, and history of the observable universe.

Possible Instructional Strategies/Lessons

Strategies and lessons that will enable students to master the standard and/or indicator.

- Part 3: Gravity in Space Pages 13-14 of this large lesson plan allows students to construct explanations about the role of gravity in the motion of objects in the Universe. Resource is located at www.jodrellbank.net/wp-content/uploads/2014/10/**Gravity-Lesson-Plan**.docx

- Seasons on Earth Lesson for modeling the cause of seasons on Earth. Resource is located at: http://www.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.lp_seasons/seasons-on-earth/

- How to Build a Telescope Lesson constructing small inexpensive telescopes to model how they work. Resource is located at: http://www.space.com/24114-how-to-build-a-telescope-science-fair-projects.html

- The Outer Planets Students will be able to obtain information to create a Venn diagram comparing two planets of their choice that are not Earth. They will then develop models describing the differences in their motion from Earth. If either of their planets is a candidate for colonization they will explain why or why not. Research required. The resource can be located at http://lasp.colorado.edu/education/outerplanets/orbit_simulator/

- The Sun's Layers and Features Students will be able to create a model of the sun and explain its components, including the Sun's structure, layers and surface features (sunspots, solar flares and prominences). This resource is located at http://www.cpalms.org/Public/PreviewResourceLesson/Preview/75684

- Moon and Moon Phases Model the phases of the moon. This resource is located at Lesson Plan - OSU Astronomy

Resources

- Solar System Teacher Guide Includes Lesson Plans, Students Readers, and more. http://www.msnucleus.org/membership/html/jh/earth/solarsystem/jhsolar.pdf

- Dr. Bailer's Science Lessons Teacher resource for lesson on seasons, tides, interactions and more. http://www.missdoctorbailer.com/resources_8th_grade.cfm?subpage=1744246

- Moon Phases Animation illustrating phases of the moon. Phases can be views from earth, sun, and moon. http://astro.unl.edu/classaction/animations/lunarcycles/moonphases.html

- Reasons for Seasons Animation for seasons (season simulator) https://www.learner.org/jnorth/tm/ReasonsBack.html

- What causes tides? Watch the tidal bulge as it moves around the earth to create our tides. http://www.pbs.org/wgbh/nova/earth/what-causes-the-tides.html

Sample Formative Assessment Tasks/Questions

Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc (http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)

Sample Formative Assessment Tasks:

- Three-minute Pause: Students get a chance to stop, reflect on the concepts and ideas that have just been introduced, make connections to prior knowledge or experience, and seek clarification.
  I changed my attitude about…..
  I became more aware about…..
  I was surprised about…..
  I felt….
  I related to…..
  I emphasized…..

Sample Formative Assessment Questions:

- Explain why it is hotter near the equator of the Earth than near the North Pole.

- Why have only a few people ever seen a total solar eclipse?

- How do the Moon's phases depend on the relative position of the Sun, Moon, and Earth?

- How do sunspots, solar flares, and prominences, each, affect Earth?

- Suppose that two new planets have been discovered. Planet Q is located between Venus and Earth and is about the same size as Venus and Earth. Planet Z is located between Saturn and Jupiter and is about the same size as Saturn. a.) Based on knowledge of our solar system, describe three differences in conditions one would expect to find on Planets Q and Z. b.) Explain why one would expect to find these conditions on each of the planets.

- Explain how the Moon creates tides on Earth. Define *tide* in the explanation.

- Explain how gravity keeps the planets in orbit around the Sun.

References

Annenberg Learner. (n.d.). Journey North: Reasons for Seasons--Exploring the Astronomy of Spring. Retrieved August 24, 2016 https://www.learner.org/jnorth/tm/ReasonsBack.html

Assessment Strategies. (n.d.). Retrieved August 24, 2016, from http://woub.org/etseo/spacedout/video3/strategies.php?iframe=true

Bailer, D, (2016). Earth, sun. moon. Retrieved Aug 14th from http://www.missdoctorbailer.com/resources_8th_grade.cfm?subpage=1744246

Bank, J. (2016). Gravity lesson plans. Retrieved Aug 14th from www.jodrellbank.net/wp-content/uploads/2014/10/Gravity-Lesson-Plan.docx

Bennett J., Donahue M., Schneider, & Voit M. (2012). The Cosmic Perspective. 4th ed. San Francisco: Pearson Education, Inc., 2007.

Blueford, J. (2000). Solar system. Retrieved Aug 14th from http://www.msnucleus.org/membership/html/jh/earth/solarsystem/jhsolar.pdf

CPALMS. (2016). The Sun's layers and features. Retrieved Aug 24th from http://www.cpalms.org/Public/PreviewResourceLesson/Preview/75684

NASA, (2013). Cosmic times gallery walk. Retrieved Aug 11th, 2016 from http://cosmictimes.gsfc.nasa.gov/teachers/guide/overview/lessons.html#jigsaw.

NASA, (1993). Cosmic Times Raisin Bread Universe. Retrieved Aug 21st, 2016 from http://www.oercommons.org/courses/raisin-bread-universe/view

NASA, (2013). Tools to study tornadoes and galaxies. Retrieved Aug 11th, 2016 from http://cosmictimes.gsfc.nasa.gov/teachers/downloads/lessons/1965/Tornados_and_Galaxies.pdf.

National Research Council (U.S.). Committee on a Conceptual Framework for New K-12 Science Education Standards., & ebrary, I. (2012). *Framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, D.C.: National Academies Press.

Nova- Stellar Velocity: The Doppler Effect Science Interactive PBS Learning Media. (n.d.). Retrieved August 12, 2016 http://www.pbslearningmedia.org/resource/phy03.sci.phys.energy.doppler/stellar-velocity-the-doppler-effect/

PBS. (n.d.). Seasons on earth. Retrieved Aug 14th from http://www.pbslearningmedia.org/resource/ess05.sci.ess.earthsys.lp_seasons/seasons-on-earth/.

PBS. (N.d.). What causes tides? Retrieved Aug 14th from http://www.pbs.org/wgbh/nova/earth/what-causes-the-tides.html.

Redd, N. (2013, December 30). How to Build a Telescope | Science Fair Projects. Retrieved August 24, 2016, from http://www.space.com/24114-how-to-build-a-telescope-science-fair-projects.html

Schlesinger, K. (2015). Moon phases with flashlight. University of Ohio. Retrieved on Aug24th from https://www.bing.com/search?q=moon%20phases%20with%20flashlight%20lesson%20plans&qs=n&form=QBRE&pq=moon%20phases%20with%20flashlight%20lesson%20pla&sc=0-38&sp=-1&sk=&cvid=CBA0EC03A9454E30ABAA98BEFA0BE2CF

South Carolina Department of Education. (2014). South Carolina Academic Standards and Performance Indicators for Science 2014. [PDF document]. Retrieved July 13, 2016, from http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf

Stellar Parallax Interactive. (n.d.). Retrieved August 24, 2016, from http://highered.mheducation.com/olcweb/cgi/pluginpop.cgi?it=swf::800::600::/sites/dl/free/007299181x/78778/Parallax_Nav.swf::Stellar Parallax Interactive

Three Views Simulator. (n.d.). Retrieved August 24, 2016 http://astro.unl.edu/classaction/animations/lunarcycles/moonphases.html