Connecting to the *Next Generation Science Standards* (NGSS Lead States 2013)

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| Standard  MS-ESS1 Earth’s Place in the Universe  The chart below makes one set of connections between the instruction outlined in this article and the *NGSS*.  Other valid connections are likely; however, space restrictions prevent us from listing all possibilities.  **Performance Expectation**  MS-ESS1-1: Develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. | |
| **Dimensions** | **Classroom Connections** |
| **Science and Engineering Practices**  Developing and Using Models:  Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena.  Engaging in Argument from Evidence:  Respectfully provide and receive critiques about one’s explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail | Students collaboratively used a baseball (Moon), globe (Earth), and lamp (Sun) to create a model to explain why the shadow cast on the Earth from the Great American Eclipse moved from west to east across the United States, which is opposite to the way the sun and the moon are normally seen moving through the sky.  Students collaboratively built an argument to support the idea that the interactions within the Sun-Earth-Moon system can explain why the shadow from the Great American Eclipse moved from west to east across the United States. |
| **Disciplinary Core Ideas**  ESS1.A The Universe and Its Stars:  Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models | Students collaboratively used their understanding of Earth’s orbit around the Sun and the Moon’s orbit around the Earth to develop a model to explain why the shadow of the Great American Eclipse moved from west to east across the United States. |
| **Crosscutting Concepts**  Systems and System Models:    Models can be used to represent systems and their interactions – such as inputs, processes, and outputs – and energy, matter, and information flows within systems. | Students collaboratively used their understanding of the Sun-Earth-Moon system to develop a model to explain why the shadow of the Great American Eclipse moved from west to east across the United States. |