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

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| 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-ESS2-2.** Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.**MS-PS2-2.** Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object. |
| **Dimension** | **Classroom Connection** |
| **Science and Engineering Practice** Planning and Carrying Out Investigations:Plan an investigation individually and collaboratively, and in the design: Identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.Developing and Using Models:Develop and/or use a model to predict and/or describe phenomena. | Students used a mini-model of a landslide to plan and conduct an investigation about the impact of water on landslides. Students develop initial models to explain why landslides occur. They use evidence from data they collected in multiple investigations to revise their models at the end of the lesson. |
| **Disciplinary Core Idea** **ESS2.A: Earth’s Materials and Systems**The planet’s systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth’s history and will determine its future.**PS2.A: Forces and Motion**The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion. | Students used the concept of force to explain how landslides change surface features of the Earth quickly or over longer periods of time. They developed initial and final models based on relevant evidence from data collected in their investigation. |
| **Crosscutting Concept**Stability and Change:Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales, including the atomic scale. | During their investigation about the stability of different types of debris, students discovered that materials with the largest sized particles fall at a lower slope than materials with smaller sized particles. During the investigation about the impact of water on the stability of the different types of debris, students discovered that as the amount of precipitation increases, the likelihood of a landslide occurring at a lower slope increased for each material. |