**UNIT OVERVIEW**

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| **STAGE ONE: Identify Desired Results** | | | | |
| Established Goals/Standards | 2.1 c, e,g,h,i,  2.2 a, g, h  3.1 a, h, i | Long-Term Transfer Goal | | |
| *At the end of this unit, students will use what they have learned to independently…*  explain different classes of rocks based on their method of formation and interpret the rock cycle chart,  explain the differences between a rock & a mineral and identify an unknown mineral based on it’s physical properties. | | |
| Meaning | | |
| Enduring Understandings  *Students will understand that…*   * Weathering and erosion can impact both local and global environments through the use of real-world examples. * Describe and/or explain with evidence how rocks or rock materials may be transformed from one rock to another | | Essential Questions  *Students will consider such questions as…*  How do scientists work together to solve problems?  Where do rocks come from and can they change?  How can natural processes wear down the earth? |
| Acquisition | | |
| *What knowledge will students learn as part of this unit?*   * Identify and correctly use key vocabulary terms- lithosphere, hydrosphere, atmosphere, crust, mineral, crystal, hardness, Moh’s scale, rock, metamorphic, sedimentary, igneous, luster, cleavage, streak, composition, sediments, weathering, erosion, cementation, compaction, melting, pressure, heat, density, earthquake, convection current * Rocks are composed of minerals * There are three classes of rocks, igneous, sedimentary, and metamorphic classified based on how they were formed | *What skills will students learn as part of this unit?*   * Interpret rock cycle diagram and mineral identification chart * Identify minerals through the use of physical property tests such as streak, hardness, reaction to acid * Read non-fictional text for information while employing reading strategies. * Scientific skills (asking questions, gathering and analyzing data, making predictions, drawing conclusions based on evidence) | |

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| **STAGE TWO: Determine Acceptable Evidence** | |
|  | Assessment Evidence |
| Criteria for to assess understanding: *(This is used to build the scoring tool.)*  Students successfully identify unknown mineral,  Rock cycle rubric | Performance Task focused on Transfer:  Mineral Impossible: Students identify an unknown mineral based on physical properties and mineral identification chart. Students then construct the rock cycle on their own and respond to reflection questions. |
| Other Assessment Evidence:  Reflect Questions – Rocks  Case Study – Erosion and Weathering  Reflect Questions – Erosion and Weathering |

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| T, M, A  *(Code for Transfer, Meaning Making and Acquisition)* | **STAGE THREE: Plan Learning Experiences** | |
| A, M  A, M  A  M, T  M  A, M, T  T  M  M, T  A, T  A  A  M  M  M  T  T  T  T  M, T  T | Learning Events:  Lesson 1: Class introductions, setting of a safe and nurturing classroom environment. Introduction into the big question for “build a boat” challenge.  Lesson 2: Revisit big question. Scholars determine the criteria and constraints of the Learning Set challenge, design a boat, and build it. The class collaborates, discussing each group’s design and compiling a class list of criteria and constraints.  Lesson 3: Using their initial experience and ideas from the class, groups design a better boat. They learn how scientists repeat their tests to optimize results, and keep records of their work, benefit from sharing ideas, and build on the knowledge and findings of others while crediting their work. Reading about these practices gives scholars an understanding of what they should do throughout the Unit as student scientists.  Lesson 4: Revisit previous lesson about the better boat through class discussion. Scholars read about matter, density, and buoyant force, giving them the science knowledge needed to build a better boat. Group notes about density and tools used.  Lesson 5: Revisit previous lesson. Scholars design and test another boat. This time, faced with a new criterion, that the boat carry four hex nuts.  Lesson 6: Scholars look back over their work as a review and see how they are progressing toward an answer to the Big Challenge.  Lesson 7: Introduction to learning set 2. Scholars identify the criteria and constraints they must focus on in their simulations. Several examples of using models in science.  Lesson 8: After being introduced to the usefulness of using models in science, students design procedures for measuring lava flow in their models and then run their models. Recap on graphing. They record their results, share with group members.  Lesson 9: Revisit data from lava flow models, share it with the class, and then together analyze the class data. The class thinks about the importance of using a good procedure in their investigations, and then work together to design a standardized procedure.  Lesson 10: The class applies the standardized procedure to get more reliable results and does an additional model of lava flow with this procedure.  Lesson 11: Review the work they have done in learning set 2 and introduce rocks by connecting lava flow and volcanos to the different types of rocks.  Lesson 12: Identification of minerals that make up rocks. Use of physical property test and mineral identification chart.  Lesson 13: Scholars are introduced to erosion and weathering and how they are different. Erosion and weathering stations.  Lesson 14: Scholars revisit weathering and erosion and what it means for the Basketball-Court Challenge. They also identify the criteria and constraints, adding their ideas to the Project Board.  Lesson 15: To better understand the effects of erosion, scholars read various case studies, showing them real-life examples of how this problem has been solved.  Lesson 16: The class is divided in half to run two simultaneous investigations about slope and particle size with regard to erosion. To share the results, students participate in their first Investigation Expo.  Lesson 17: Scholars are introduced to explanations as an important part of scientific investigation and the PBIS curriculum. After reading a sample explanation from the Boat Challenge, they create their own claim with evidence for the Basketball-Court Challenge.  Lesson 18: Scholars learn about erosion control in the context of real-world scenarios. Design erosion control models and test the model.  Lesson 19: Scholars connect the general erosion control model to their basketball-court solution and design a plan.  Lesson 20: Scholars build and test erosion control models for the basketball-court solution.  Lesson 21: Scholars make final recommendation to the school board about their basketball-court solution using a claim with evidence.  Lesson 22/23: Scholars think about what they have done throughout the unit. Culminating assessment connecting erosion/weathering with the different types of rocks (construct the rock cycle). | Evidence of learning: *(formative assessment)*  Bellwork  Ticket out the door  Graphic organizers  Stop and think questions  Reflect questions  Assessment rubrics  Whole group/small group discussions |