TEMPLATE FOR CMaP PROJECT

Each participant who participated in the CMaP workshop signed an agreement to conduct a CMaP project and write up. This template is provided to you as a guide for the CMaP project you agreed to conduct with your students.

Please complete a detailed write-up of your CMaP project using this template. Use the kind of language and detail so other teachers can take your project to conduct in their classrooms. An archive of CMaP projects will be made available for Utah educators.

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Project Title: Rock Types
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Class: Computer Lab

Project Description	All students from 3rd to 5th grade will be venturing on a great technology adventure using ArcGIS and GPS devices/services t find 2 different types of rocks under two main categories of roc (**Igneous** and **Sedimentary**). The chart below shows the rocks they will find and identify using a GPS device. Then creating a with their waypoints from the GPS device (using BaseCamp software) and create a data sheet of information on what they gather from their rock findings (using Google Drive). **Igneous rock:** **Basalt (/bəˈsɔːlt/, /ˈbæsɒlt/, /ˈbæsɔːlt/, or /ˈbeɪsɔːlt/)**[1][2][3] is a common extrusive igneous (volcanic) rock formed from the rap cooling of basaltic lava exposed at or very near the surface of a planet or moon. AND **Obsidian** is a naturally occurring volcanic glass formed as an extrusive igneous rock. **Sedimentary rocks:** **Sandstone – a** sedimentary rock defined by its grain size AND

	Gypsum *All of these rocks are located in different Southern Utah areas.
Community Issue or Problem Selected -How project evolved?	**Rocks Tell the Story of the Earth:** "The Earth is made of rock, from the tallest mountains to the flo of the deepest ocean. Thousands of different types of rocks and minerals have been found on Earth. Most rocks at the Earth's surface are formed from only eight elements (oxygen, silicon, aluminum, iron, magnesium, calcium, potassium, and sodium), these elements are combined in a number of ways to make rock that are very different." "Rocks are continually changing. Wind and water wear them down and carry bits of rock away; the tiny particles accumulate a lake or ocean and harden into rock again. The oldest rock that has ever been found is more than 3.9 billion years old. The Eart itself is at least 4.5 billion years old, but rocks from the beginni of Earth's history have changed so much from their original forn that they have become new kinds of rock. By studying how rocl form and change, scientists have built a solid understanding of t Earth we live on and its long history."
Community Partner(s)	Give classroom teacher the option of conducting a field trip to t local BLM office to view raised relief maps of the Southern Uta area, listen to rock information given by a BLM agent etc.
Project Objectives	1. To learn about the four different types of rocks (see chart below) and areas where to find them. Use ArcGIS/BaseCamp to create a map and add pushpin points to indicate where to find these types of rocks. 2. Use the Garmin 2.0 to find 2 different types of rocks under each main category of rocks (using **Igneous** and **Sedimentary** categories). Take a field trip or hide the rocks on the school grounds (in a ty

	of environment the type of rock would be found). This way the student would get a similar experience of where the rock would formed. 3. Document the type of rock. 4. Create a story map of our data (if there is time).
Utah Core Standards/Objectives	**Objective SCIENCE:** Identify basic properties of minerals and rocks. 1. Describe the differences between minerals and rocks. 2. Observe rocks using a magnifying glass and draw shapes and colors of the minerals. 3. Sort rocks by appearance according to the three basic types: sedimentary, igneous and metamorphic (e.g., sedimentary-round-appearing mineral and rock particles that are cemented together, often in layers; igneous-with or without observable crystals that are not in layers, with or without air holes or glass like; metamorphic -crystals/minerals, often in layers). 4. Classify common rocks found in Utah as sedimentary (i.e., sandstone, conglomerate, shale), igneous (i.e., basalt, granite, obsidian, pumice) and metamorphic (i.e., marble, gneiss, schist).” (Information found on UEN.org.)
Essential Question(s) -Spatial Issue	How can we tell how old an area is where we are finding certain types of rocks (where you live)? Answer: By identifying rocks. How to identify the type of rock and its name/kind? Answer: Using pictures or real life examples of the 4 kinds of rocks. Identify and summarize two types of rocks under **Igneou** and **Sedimentary** rocks.

Assessments (rubrics, scoring guides)	N/A
Project Products	GPS unit OR units http://cmap.maps.arcgis.com Google Maps Google Drive BaseCamp software Computers
Project Timeline (include a step by step Procedures)	2 weeks
Resources Needed	GPS unit or units, electronic maps, computers, teachers cooperation and time.
Skills Required	Learning attitudes Basic GPS/software instruction Basic computer skills
Project Team Member Roles	**Teacher(s):** 3rd, 4th and 5th grade teachers to contact the computer lab teacher. Discuss the days and times when they will be studying this topic in their classrooms. Computer lab teacher: Implement the assignment during the computer time. **Students:** Complete the assignment outlined above and below. **Partner(s):** BLM
Celebration/Presentation	The Students get to choose and keep one of the pieces of rock they identified.

Project Evaluation	Have the students do a detailed online survey of what the studer learned etc
Project Bibliography	Online books about rocks OR online student friendly science sit Examples of two online sites: http://www.mineralogy4kids.org/ http://www.rocksforkids.com/
Plans for Future CMaP Activities	Continue (or) start with story mapping.

Optional:
-Lesson Plans
-Student Artifacts
-Publicity