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| **Name: Lisa Warstler** | **Date: July 19, 2011** |
| **Content Area: Earth Science** |  **Grade Level(s): 9th** | **Topic(s): Latitude, Longitude** **And direction** |

**Standards (SOL): ES 4c & d**

**Objectives (UKD’s)**

The objective of this lesson is for the students to learn latitude, longitude and compass rose direction and how to use this on a map and to beginning learning about how to use google maps for checking answers

**Materials & Resource:**

Lamented world map, a visa vi pen, sheet of places to be plotted on map using the latitude and longitude of each. Construction paper, scissors, black construction paper.

**Safety Considerations:** No safety equipment needed for this lab. Remind the students about scissor safety.

**Engage – Time Estimate \_\_5 minutes**

Have students to break into groups of 3 or 4. Have one person from each group to get a map a visa vi pen, and two pieces of paper. Have another one from the group to go to a different spot and pickup a black piece of construction paper and scissors. This is to get the students curious about what we are going to do with these items.

**Explore – Time Estimate \_\_20 minutes**

The students will cut the pieces of construction paper into strips. (not the black one yet. They will cut three strips out of the black paper. Next to explain latitude and longitude while using these items, the students will take one set of strips and place them horizontally, ( teacher will show horizontal if necessary) the map they pick up. The students will take the other pieces of construction paper and put them vertically up and down the map. As a class we will discuss latitude and how these lines lay flat and the hemispheres, directions of the lines and the degrees. We will do the same for the longitude lines. As a class we will discuss the prime meridian, international date line and equator. There will be a page they fill in with this information as we go. The students will locate places on the maps they picked up. This will be done with their groups. They will plot these on a paper map that they can keep and bring to class each day to continue adding places to their maps. We will look then on google for the correct latitude and longitude of each place as explained in the next section.

**Explain -- Time Estimate \_\_\_15 to 20 minutes**

This is where the google map comes in to play. I would have the google map of the world on the computer so the students can see it on a screen using a projector. They would give me a place on their sheet and what they put for latitude and longitude coordinates and then put those in and see if they are close to the place they were looking to find. If not we would discuss as a class as to why the answer was not correct and see if they could fix their problem.

**Extend -- Time Estimate \_\_5 to 20 minutes**

Take the students to the computer lab and have them plot points of latitude and longitude on a google map. The students will then move those points back to a paper map in the correct hemispheres, correct directions, and complete the latitude and longitude of the places they are given to find.

Another way to extend the knowledge would be to have them plot two points a day when they come in the room a paper map that is keep in the classroom.

**Evaluate -- Time Estimate \_\_\_15 minutes**

The extension would be one good way to evaluate. Another way would be to give each student in a group of three or four places to plot and they would plot points each day and I will take maps up on Friday’s to check for correctness and then return them the students on Monday.

**Plans for Diversity**

Having the students working together in diverse groups, so the special education students and high and middle level students can help them with reading and helping to find points on the maps. I would review with them using this method at a time that the students did not have to be in the classroom. In self-contained, I would have myself and my assistant moving from group to group and watch for areas of difficulty that the students may need extra help to complete their assignment.

**Connections**

This lesson can be connected to geology, weather, hurricanes, earthquakes, mapping, topography, charts, graphs and evolution in certain aspects.