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| **Name: Lisa Warstler** | **Date: July 13, 2011** |
| **Content Area: Earth Science** |  **Grade Level(s): 9th** | **Topic(s): Scientific Method** |

**Standards (SOL): ES 1b**

**Objectives (UKD’s) The objective for the students is to become familiar with the scientific method. The scientific method is throughout the year therefore the students need to know this method to conduct scientific experiments.**

**Materials & Resource: paper to make object, paper to write on, directions, and pencil or pen.**

**Safety Considerations: No safety equipment needed for this lab.**

**Engage – Time Estimate \_\_\_10 minutes**

*Have the students make their own Whirly Bird. Then put the students in groups of 3 or 4, depending on how many in the class.*

**Explore – Time Estimate \_\_\_15 minutes**

The students in their groups will talk about whether they believe the whirly birds will go clockwise or counterclockwise. At this point the students will one at a time hold the whirly bird above their head and drop it to see what way it will go.

After they run this experiment and figure out which way they think the whirly bird goes, I will hand them a sheet that has the steps in the scientific method. We will discuss each step. The class will have a chance to ask questions about the scientific method. The students will discuss in their groups what they believe their hypothesis will be and write it on the sheet. Next they will discuss how they tested their hypothesis and write this down. As a whole group the class and leader will discuss what they believe the reason is for the whirly bird going in the direction that it did rotate and what caused this directional rotation. They write information down on the paper the collection of data and analyzing this data. Again as a group the students will state if their hypothesis was correct and draw their final conclusion. As a whole group the leader (teacher) will ask questions and discuss results of the group findings for the directional rotation of the object. This will hope to clear up any misconceptions the students may have about the scientific method and how it works. Discuss the actual rotation of the devise and show them how my whirly bird rotates.

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

The groups of students will come up with some ideas of types of questions they could put into a hypothesis and use the scientific method to experiment and analyze their data to come up with a conclusion that would prove or disprove their hypothesis. We will list several ideas on the board and then the groups will be allowed to test one or more of the questions after they turn 1 or 2 into a hypothesis.

**Evaluate -- Time Estimate \_\_5 minutes**

Hand in their pages they used to write their information on and what their extended experiment showed them and what their data showed them and how they concluded whether their hypothesis was proved or not proved.

**Plans for Diversity**

Since this would be done at the beginning of the year, I would watch and see where the ELL students or special ed. students were having difficulties. I would hope the special education and ELL students would work their way into groups with regular education students. I would help any students that might be having difficulties and help them as I moved around the room. This would be in a co-taught room. In a self –contained class, I would read the direction and explain each step to the students and do more visuals for these students.

**Connections**

I would use the scientific method throughout the year with labs and discuss each time how to use the information they get in a scientific method format.