

## **Our Solar System**

I teach in a fourth grade classroom. When it comes to science lessons I pretty much have the leeway to do whatever I want, but with limited resources. The unit I taught focused on the solar system, specifically the Earth, Moon, Sun and the Inner and Outer planets. With this unit there were opportunities for a variety of hands-on activities for the students to further their learning. I started the unit by introducing the moon observations activity where the students would observe pattern of the moon every night over the course of two weeks to help them understand the different phases of the moon. The activity I am going to do with you today is another activity that helped the students connect their learning. At first I tried to complete this activity in pairs, but not only were resources limited the students had difficulty making the connection between the conversions and measuring. Therefore I adjusted my plans and we did the lab activity together as a class. Although I am sure you can complete this activity in pairs, due to time we will do it together as a class. First I need someone to complete the conversion from Earth AU to cm.

### **What happened?**

- Overall, I felt my lesson and unit went very well. The lesson before this activity talked about the order of the planets and their orbits. There also was an activity that went along with this where nine students would line up outside and each student was a different planet. The student who was the sun would stand still and the other students would walk around the sun or “orbit” the sun. This activity was supposed to show that the student who represented Mercury made it around the fastest. But as I’m sure you can imagine it turned into sheer chaos trying to order the students around at the same pace while staying in their own path. Therefore I think with this activity they actually were able to see the distances and understand that the planets closer to the sun orbit faster than the planets further from the sun.
- During this lesson specifically, I focused on making sure the students understand the direct relationship between distance from the sun and orbit speed. After we completed the activity and while we were adding each planet to the string, I asked the students what planet right now is the furthest from the sun, and what can you tell me about how they orbit the sun in comparison to the other planets already on the string. As I continued to ask the students these questions, I began to realize that students comprehended the connection as oppose to the last activity. When we were done with the lab, I had two students hold the string at each end, one was where the sun was and one stood where Neptune was and I had the student who was Neptune start walking in a circle to represent Neptune’s orbit. Before he even made it half way around the orbit, I had students raising their hands saying they could tell me in their own words what was happening in our visual scale model. One student responded with “Ms. M, so Earth is closer to the sun than Neptune,

therefore our orbit is faster than Neptune's orbit." I realized that not only did they understand the relationship between the orbit and the distances they were able to put it in their own words and connect to real life or Earth's orbit.

### **Analysis of your Teaching:**

- Two things that I think went well in my planning and teaching was I was very familiar with this subject matter and I was able to use real life examples through out the unit. In our SME 301 course, I'm sure you all remember taking that class; even though I didn't know it then I actually used a lot of those activities and knowledge from that class in my unit discussions and learning. I was very comfortable with the unit topic and therefore was able to explain the information in more detail than other topic areas. Another thing I felt went well was connecting the students learning to real life examples. Specifically, the students were able to observe the moon phases over a two-week period and therefore they could visually see the different phases themselves instead of just trying to read it from the book and assume what they would look like.
- Two things that I need to work on in my planning and teaching is time management and a wide-range of assessments. When it came to these different lab activities, I became so involved in finding more about the students learning which in a way is a positive, I lost track of time and had to extend this lesson a week longer then planned. Because of different time constraints and switching classrooms for Science, we only plan for three days of Science, and that's if everything goes as planned. Therefore although it's important to constantly be exploring our students learning and student questions, it is also important to stay on task because of the already shortened opportunities for science instruction. Another thing that I would like to work on would be having a more variety when it came to my assessments. I assessed my students with concept maps at the beginning and at the end of the unit, and then worksheets and short, verbal assessments through out the unit but I would like to have more variety next time, maybe even set aside time for one on one interviews.

### **Modifications to Instructional Approach:**

- Overall, I think my lesson included the important model elements from the 5E model. One thing I wish I had included in my original instruction would be to ask questions before the activity specifically about their prior knowledge about planet orbits and where the planets are located in the solar system. The concept maps showed me what the students knew about planets but nothing about their orbits and I feel it would have been beneficial to know their understanding of planets orbits before I complete this activity.
- One thing I changed once I got into teaching was the approach for this activity. In the teacher's guide it asked the students to pair off and complete the activity together using a piece of string. Well I tried this and

the students had difficulty completing the conversions and correctly measuring out the distances. Therefore, I brought in a large piece of rope therefore the students could see the different colors drawn on the rope and we could walk through it together. I called on different students to complete the conversion, which helped with their math skills, and if the student completed the conversion correctly they were able to come up in front of the class and measure out the distance and draw it out on the rope. This got all the students involved because they wanted to come up and pick the marker color and draw the different planets on our class model.

**Analysis of your own learning:**

- One thing I learned about myself as a science teacher is that I am more apt to explore new ideas and activities when I know more about the topic. Because I had prior knowledge about this subject area, the students were able to guide their own learning and I had more activity opportunities to bring to the unit. Therefore, the overall unit was more successful.
- In the same light, I learned that I need to prepare myself for the topics that I do not have a lot of background knowledge about, therefore the students can have the same opportunities to guide their own learning as they did for this unit. As a teacher we are constantly learning, and I realized that I, also, need to do some learning on my own to overall benefit the students learning experiences.