**Word Up!**

Name: *Shelley Wirtz*

Grade Level/Subject: *9-12 Plane/Combined Geometry*

Topic: *Vocabulary*

Objectives (P.A.S.S.):
*Process Standard 2: Communication*

1. Use mathematical language and symbols to read and write mathematics and to converse with others.
2. Demonstrate mathematical ideas orally and in writing.
3. Analyze mathematical definitions and discover generalizations through investigations.

Materials: *poster board, markers, glue (tacky glue seemed to work best), pipe cleaners, scissors, tape, textbook, magazines or access to internet and printer*

Instruction

1. Introduction
   
   *I began with the analogy of going to a foreign country where very little English is spoken. “When we arrive, we can pick out a word or two that we have heard before but we don’t understand what’s before or after the word. As time goes on, we understand more and more. Instead of gradually learning the language, you are getting a crash course. We start off by taking a pre-test. I expect you to enjoy this project since it will be hands-on. You will be building vocabulary terms with poster board and pipe cleaners. You will have at least 1 partner and probably 2. This is worth a lot of points so do your best. I will expect to see the term (53x1), the physical representation (53x3) and a real-world example (53x2). You can get the real-world example from the internet, magazine, or take a picture with your digital camera. It will need to be attached to the poster near the physical representation. Someone in your group will be able to spend one day in the library to get these pictures. This is a big project on a tight time frame so think about using your time efficiently and effectively. Remember that one physical representation can represent more than one term but you have to make sure that it is obvious and makes sense.”*

2. Instructional process

*Activity 1: Pre-test w/ word bank*

*Activity 2: Vocabulary Posters*

*Students got into their groups and started on their posters. I did not show them any posters from last year because I wanted them to do their own work and not copy another. I did remind those that were in my class last year about the posters on the ceiling. I explained to them that they would be bending and cutting pipe cleaners into the shape of the vocabulary word and*
labeling it. They would also be finding a picture that represented the word as well. As the students worked, I walked around and individually worked with the groups. I had many discussions with different groups on how one physical representation (pipe cleaner design) could be used for other vocabulary words. Or a magazine picture can have many terms symbolized. We also discussed how the terms could be grouped or organized.

Activity 3: Photo Scavenger Hunt - I showed the pictures I took this summer around campus on the geometry scavenger hunt and had the students determine the terms that were represented by them.

Activity 4: Review of Pre-test and how the language created the picture in our minds.

Activity 5: Post-test w/ word bank

3. Closure
After the post-test, we discussed how our exposure and use of a new language (terms) will keep us from feeling like we are in a foreign country. I also asked them if they felt the project helped them.

Assessment
Pre/Post Tests – They were tested on 47 terms by matching to a word bank.
Poster - term (53x1), the physical representation (53x3) and a real-world example (53x2) for a total of 318 pts.
Observation – I listened to their discussions as I walked around.
Discussion – I interacted with them and asked them questions about how the words were related or how they could combine pictures and many other things.
Participation – I watch how well they worked in their groups.

Modifications/Accommodations
Students were able to work in groups of 2-3. When necessary, I encouraged them the “divide and conquer” – one person made the physical representation, one person looked for the pictures and one person organized and glued the items.

Reflection
I really like this project because of the informality and interaction. The discussions are very rewarding since I can see the students make connections between the terms. When I did this project last year, we only did the physical representation (pipe cleaners) and the term. I really like adding the real-world representation (picture). Do you have any suggestions on other ways to describe the physical representation or the real-world representation?

I was disappointed in a couple of things. First, the students didn’t get as many points on their poster as I was expecting. I think that next year I will put a minimum of how many terms need to be completed each day of the project and grade daily.

Second, I was discouraged with my pre/post test results. Several of the students were disappointed too. They did not like the format of the test. I plan on spending more time on the
definitions because I feel it is important for them to learn to convert the words into an image. They also told me that if I had a picture of the word they would have made a better grade. I think I might do both on the pre/post test next time. I offered a bonus on the post-test by adding a photo from my geometry scavenger hunt. They were to identify as many words as possible in the picture by outlining and labeling.

Not only was I disappointed in the results, I was discouraged with how long it took for the project and little result. Or is 25% average increase worth it? What do you think? I don’t mind spending the time on the project if the results are worth it. So what is a reasonable goal to make it worth my time?

I completely forgot about the writing portion. Currently the only writing we do is our notes at the beginning of the chapter. I have them write the term, the definition, an examples, and then use other words or pictures to help them remember. They hate the last one. They mostly won’t do that and so they don’t get those points. I really like the idea of journaling in math. I want to include it in my lessons but I already stay behind on my grading as it is. I will be researching more about simplifying grading and journaling and all the types. Our students need to write more anyway.

The idea that journaling will “hurt” some students is a creation of our own minds. It’s a learned skill that is no different that learning to multiplying polynomials. I know a lot of students who think multiplying polynomials “hurt”. But if we find fun ways to encourage them to do it, “ya’ll” know the rest.

I really understand the anxiety and apprehension about writing. It is the main reason my work is late. I have fretted over writing this lesson plan. In the real world, I am not required to do these. We list activities and assignments and attach PASS skills to them. I need to step out of my comfort zone more often. I really appreciate this experience and look forward to more opportunities such as this.