Josiah Tobin/ Geometry/ 10-23-12

I. **Topic:** Section 3.5: Using Properties of Parallel Lines.

II. **Objectives/Standards:**

a) Given the class lesson and examples on properties of parallel lines TSWBAT accurately solve 4 of the 5 guided practice problems with the class as a whole and their partners on using properties of parallel lines in proofs (Standard 2.4.11.A, 2.9.11.A, 2.4.G.A, G.1.3.2.1, 2.3.G.C)

b) Given the class lesson and guided practice problems on proving parallel lines TSWBAT correctly complete 10 of the 12 in class problems next day on using properties of parallel lines in proofs. (Standard 2.4.11.A, 2.9.11.A, 2.4.G.A, G.1.3.2.1, 2.3.G.C)

III. **Teaching Procedures**

(5 min.)1. **Introduction:**

A. Anticipatory Set: I will begin class by posing the following to my students. State whether the following statement is sometimes, always, or never true: Through a point not on a line you can construct a parallel line. I will instruct my students to hold up the #1 for sometimes, #2 for always, and #3 for never. Then I will ask the students if they know how we could prove this statement by construction, aka using a straightedge and a compass. I will then show them on the board how to prove this statement by construction, asking students how they think I should do each step and offering the appropriate questions to guide them to discover the correct construction.

(20 min) 2. **Development**

A great deal of this lesson will be looking at how we can use properties of parallel lines in real life situation, and so I will begin the development of this lesson by looking at a situation with a rowing team and the relationship of their oars on each side. Slide 4 builds off of this idea and examines three of the oars to decide if all three would be parallel. I have constructed the slide so that together as a class we can reason through and develop each step without the assistance of the book or anything else. This way the students will be lead to discover the proof rather than simply zoning out of class and copying down the necessary steps.

On slide 5 we will formally state the theorem we just proved and then we will give another theorem dealing with a way to prove that lines are parallel. I will have the students use inductive reasoning, a skill they learned in the previous chapter, to fill in the blanks on this second proof. On slide 6 we will work through a way to formally prove

this via a flow proof. So once again I will call on various students to walk me through each step of this proof. When necessary I will provide appropriate questions to guide them towards the answer without coming flat out and giving them the answer.

On slide 7 we will look at an example dealing with why steps are parallel. For this example I will call on a student to try to explain this to me without a formal proof. This proof is essentially completed in two steps so I will most likely call on two individuals. Slide 8 we will be looking at a formal proof which will be done in the form of a flow proof applying the two theorems we had just learned. This will also be a good proof that will build off of an idea that they learned in the first chapter of this class. By this point in the lesson I will definitely make an attempt to call on those that seem slightly confused or just have been doing poorly in this class.

If there is enough time left in the class we will look at slide 9 which is an awesome problem dealing with light entering and bending in glass. There will be a proof for this situation which we will go through step by step.

(10 min) 3. **Guided & Independent Practice:**

A. For number 1 of the guided practice problems, I will have the students share their two answers with their partner. Then I will call on someone to tell the entire class the answer.

B. For numbers 2-5 I will question verbally. It will be critical to give appropriate wait time for these four guided practice problems.

(5 min) 4. **Closure:**

A. To close the class I will pull up slide 11 which is similar to how we began class. They will have to apply their knowledge their picked up during the lesson to answer three questions via audience participation. Hold up the #1 for sometimes, #2 for always, and #3 for never. Two lines that are parallel to the same line are parallel to each other. In a plane, two lines that are perpendicular to the same line are parallel to each other. Two noncoplanar lines that are perpendicular to the same line are parallel to each other.

IV. Materials:

A. McDougal Little (2001), Geometry

B. Whiteboard and Markers

C. Projector and Laptop

V. Modifications:

A. For the Learning Support students the interactive style of the lesson will allow myself to gauge their progress more immediately.

B. For the Nonreaders/ Struggling Readers all of the work completed by myself on the board will help them to feel more comfortable in following along with the lesson.

C. For the Emotional Support students the opportunity to work with partners and the positive feedback I will provide will hopefully improve their emotional state.

D. For the English Language Learners the visual depiction and reinforcement of key vocab at the beginning and end of lesson will offer a great base knowledge.

VI. Evaluations:

1. Formative- Evaluation of the students will occur as I gain feedback and input from them through each step of the lesson progression including the anticipatory set, development, guided practice, independent practice, and closure. Questioning will be key and as I circulate through the classroom and have students go up to the board to show and explain their work I will have a solid understanding of how my class is processing the information. Specifically, their answers to the guided and independent practice problems will allow me to see if they meet the learning objectives.

2. Summative- The summative evaluation will be done through a unit test that includes concepts they demonstrated here such as their understanding of points, lines, and planes.

VII. Reflection

1. Did the students seem to be actively engaged in the lesson? How well did they do on the guided and independent problems?

2. How well did I manage this classroom? Did they enjoy working with their partners or did it cause more chaos? What changes would I make to this lesson and to my teaching if I were given the opportunity to teach it again?