Lesson Plan (Math)

During the implementation of this lesson, I did not get to everything I would have liked to. This was mainly in part of time management issues, where student concerns and questioning took much longer than expected. Another small reflection piece in this lesson plan is classroom management at the end during out "Snowball Fight", where throwing self-assessment snowballs across the room can get a little chaotic. However, the foldable that students create for themselves is an engaging and fun activity which is also worthwhile for students to study vocabulary and the properties of the angles; and although the snowball activity is difficult for classroom management, I love it because it gets the students up and moving around and having fun while also self-reflecting and assessing themselves about what they need help with. It provides a fun few minutes, self-realization for practice, and formative assessment.

<table>
<tr><td>Grade/ Grade Band: 6th grade</td><td>Topic/Title: 6-6 Angles and Parallel Lines Day 1</td></tr>
<tr><td colspan="2">Brief Class Description (contextual information including number of students, subject, level, IEP/ELL/GT or other special considerations):.
Mod 7/8: There are 19 students in this class. One student has OCD, preferred seating and extra test time and another is permitted extra time on tests. This student is required to have the teacher sign his agenda and communicate important information to parents. Several students in this mod that took an aptitude test for Head and Shoulders earlier in the year and moved up to the next math class. One student did not take Advanced Math 5 and will probably repeat this class in the fall. Students are energetic and enjoy participating but often call out being so eager to answer.
Mod 9: There are 17 students in this class. One student is on a progress chart that must be signed by the teacher. One student is a distraction to others and him/herself, and he must be the warned with administrative contact in order to settle down. It also helps if he/she has something else such as a squishy ball to keep his hands occupied so his mouth isn't. Many classes he/she needs to be caught up with the happenings of class because she/he was not paying attention, these directions come from both the teachers and the students in the classroom. He/she was on a progress plan but was recently taken off of it.
Walkways are hard to get through because the trailer is small.
The technology accessible in the classroom is a projector at the front center of the room which can be accessed through a BCPS device.</td></tr>
<tr><td colspan="2">Brief Lesson Description (Overview/Abstract): Students will be guided through a foldable exploring the angles created by two parallel lines and a transversal, and then practice the same vocabulary with a matching activity.</td></tr>
<tr><td colspan="2">Objective(s): I can use my knowledge of line and angle relationships in order to create a foldable.</td></tr>
<tr><td>Prior Student Knowledge:
Students learned about vertical angles, linear pairs, and supplementary vs complementary angles in the previous lesson.</td><td>Possible Preconceptions/Misconceptions:
Confusing vertical, interior, alternate interior, exterior, alternate exterior, and corresponding angles.
Not understanding that lines must be parallel for these angles to be congruent.
Confusing supplementary angles, complementary angles, and linear pairs.</td></tr>
<tr><td>Common Core Standards:
08.G.A.05 - Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the</td><td>Standards for Mathematical Practices:
Attend to precision.
Model with mathematics.
Look for and make use of structure.</td></tr>
</table>

sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.		
Required materials: Copied Foldable Practice/vocab worksheet Devices (padlet) Stickie notes	**Safety considerations:** na	**Technology Integration/Needs:** Projector Devices (padlet)

ENGAGE: Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions. Include timing/pacing, adaptations (IEP, ELL, culture, other) and transitions.
(10 minutes)(40 minutes remaining)

Task: Projected on the screen will be a drill with the following questions: "What do we know about same side interior angles? Look at the picture for help."
"Find the value of the variable. Justify how you know."
"Are the lines parallel? Justify."
Students will answer these in their drill boxes as a quick review from yesterday's lesson. Then they will be asked "Do you think angles made from parallel lines and a transversal are really that different from two intersecting lines? Why or why not?" as an engagement into today's lesson, which includes vocabulary from the previous lesson. After 2-3 students have answered the engagement question, I will tell them to look at the homework board and copy tonight's homework (as well as read it out loud). I will also have someone read today's objective. Then I will go over the schedule for the next couple of weeks, emphasizing the Quiz next Monday and Lunch help/Early morning help provided in preparation, as well as reminding them that there is a notebook check for Chapter 6.

Instruction: *Teacher instruction* Student Answers **(pacing from the most recent time)**
*"You have another minute or so to finish the drill in your drill box."***(3 minutes)**
"For a participation point, who would like to answer one of the three questions?"
"What do we know about same side interior angles?"
"They are on the same side of a line and they are between the two parallel lines."
"What is the value of x?" (x=14.)
"Are the lines parallel? How do you know?"(They are not because 143+38=181 which means the angles are not supplementary like they would be if the lines were parallel.)
*"All wonderful answers! Great job!"***(3 mins)**
"Now let me ask you a question. Do you think angles made from parallel lines and a transversal are really that different from two intersecting lines?"
"Yea because there are three lines not just two."
"No because the angles we learned about yesterday are still created."
*"I suppose you'll find out, won't you? Please look over at the homework board and copy down the homework if you haven't already; it is the yellow paper you picked up. Someone who is done copying, read the objective for me?"***(2 mins)**
"Fantastic! Thank you. Now everyone look over here at the schedule. The quiz is on Monday! If you are still confused about anything we've learned, please see me at lunch or in the morning, and lunch help for the quiz is on Friday. Redos for the SLC we took are today and Friday."
"Any questions, comments, concerns?"

Transition: "Who wants to make a foldable?!"

Differentiation: Students may choose which drill problem they would like to do. They can also pass if I call

Comment [CT1]: This is what students are learning today, but they read about it for homework.

on them.

EXPLORE/EXPLAIN Cycle(s)
EXPLORE: Include description of student centered tasks with information on timing/pacing, differentiation, material management, grouping, adaptations (IEP, ELL, culture, other), probing or clarifying questions with answers, and transitions.
(15 minutes) (25 minutes remaining)
Task: Most students should have taken 6-6 notes last night, so they should be at least familiar with the vocabulary. It will also be on the Word Wall for them to reference. Then students will participate in a guided exploration by making a foldable about the angles created when a transversal crosses two parallel lines. These angles include vertical, interior, alternate interior, exterior, alternate exterior, and corresponding. The foldable already has the names of the angles created in the correct locations so students can just cut, fold, and fill them with notes about each type of angle.

Instruction:
"Take out the paper you picked up that looks like this (shows foldable paper). *Now one person from each table please get a pair of scissors for you to share."*
*"Take in a few minutes to try and write down what you know already."***(1.5 mins)**
"Which angles are vertical?"
"What makes an angle interior?"
"What makes an angle alternate?"
"What does it mean for something to correspond?"
"Now here is number 3 from your drill again. Please copy it into the foldable. Using vocab, are these lines parallel?"
"There is a specific case for all these angle congruencies to happen. What must be true about the two lines crossing our transversal?" (They must be parallel.) **(10 mins)**

Transition: "Do we need some practice?"

Differentiation: I can give my example foldable to someone who needs it. If a student wants to see a closer model than the one I am doing up front, I have extra foldables I can lend them so they can complete their own.

Instructional Strategies:
Foldable

EXPLAIN (STUDENT CENTERED): Include description of cognitive outcome (concepts and vocabulary), student centered explanation (tasks) with information on timing/pacing, grouping, adaptations (IEP, ELL, culture, other), probing or clarifying questions with answers, and transitions. Also include "look fors" and how this part helps students "bring the pieces together".
(8 minutes with instruction and questions) (17 minutes remaining)
Task: Students will get out their notes and copy (best they can) the problems projected on the board. There is a problem for finding a missing angle and then also one for determining if the two lines shown are parallel based on given angles. Then an answer key will be projected after 6 minutes and if students have any questions they can ask the class. For the first few minutes, students should work individually, then after that they can work quietly in table groups.

Instruction:

Comment [CT2]: (Time Management) 15 minutes was not long enough to go through each type of angle, plus the properties, plus clarify any misconceptions and answer any questions. A better time frame would be 25 minutes, so that students have time for questioning and clarification. For each type of angle, I guided them to figuring out which set of angles on their foldable diagram was which instead of just telling them. This took extra time; although students had read about it the night before these vocabulary words are difficult to distinguish from each other as there are so many.

Comment [CT3]: This is the Given in my InTASC 4 proof.

Comment [CT4]: This is also for students who are absent.

"Projected now is this sheet, please copy 5 and 6 down best you can. Find each of the measures for number 5 and determine if line a is parallel to line b given those two angle measures. Make sure you are justifying your answer with words or math!"
"I will put 4 minutes on the timer and then put up the answer key. If you aren't finished after 4 minutes and don't want to see the answers, don't look up!" **(5 mins)**
"How do we know what these angle measures are? What vocab could you use to justify?"
"How do you know that these lines are parallel? Use vocab, please!"

Transition: "Okay but when will we ever use this in real life?" (Teacher says this)

Differentiation: I can give my copy of the problems to someone who needs them. Students can also pass if I call on them and they do not want to answer, or they can bump the question to someone else if they are having trouble.

ELABORATE: Include description of applications and extensions tasks with information on timing/pacing, differentiation, grouping, adaptations (IEP, ELL, culture, other), probing or clarifying questions with answers, and transitions.
(10 minutes) (7 minutes remaining)
Task: Students will get on their devices to Padlet and post one real life example of parallel lines or why accuracy of parallel lines is important (city streets, architecture, etc). After a couple minutes of posting, I will ask 2-3 students which post they find most interesting and why.

Instruction:
"Get out your devices and follow this link to a Padlet when I say GO. On this padlet please post at least one way you can think that angles and lines are in real life. Remember if I see a post I don't like, I can delete it. GO." **(6 mins)**
"Does anyone see a post they like or find interesting that they want to share?" **(3 mins)**

Transition: "Do we understand Angles and Lines?"

Instructional Strategies:
Padlet
Relatability
Technology

COGNITIVE CLOSURE (aligned with objective(s):
Reminder: A learning ticket is not considered a cognitive closure by itself.
(7 minutes)

Task: Students will do a Snowball activity where they write what they need the most practice with or are the most confused about Chapter 6 on a sheet of paper. Then they crumple the sheet of paper into a ball and throw it across the room. Students pick up a ball that landed near them and volunteer to share with the class what is on the sheet they picked up. This is a way to formatively assess students and gauge what they still need help with.

Instruction:
"Please take out a blank separate sheet of paper and write one thing that you are still confused about or

Comment [CT5]: Time Management: It took a long time for students to copy the diagram when they should be practicing. In the future I should have half sheets ready for them so that they do not have to copy the diagrams, therefore the students can get straight to practice/extension. Doing this will cut down a lot of time taken for this during implementation.

Comment [CT6]: Time Management: During implementation there was not enough time for this, but even if I had a few more minutes I could have simply pulled up the padlet myself and had students raise their hands to share examples of real life/importance. Then I could type them up with the name of the student who said it, and it would still be engaging and fun.

Comment [CT7]: Classroom Management: Students get very excited about throwing paper, so this activity can get a little bit chaotic. At the time this was fine, since we had the little bit of time and the students could get up and move around, but in the future caution should be taken. Also, consequences should be served for students who play trash basketball with their snowballs.

need to practice."

"Now crumple it into a ball!"

"Depending on your location, throw your ball to the other side of the room."

"Please pick up a ball that landed near you and read what is written to yourself."

"Who would like to share what is on their paper?" **(7 mins)**

Instructional Strategies:

Thumbs up/down

Muddiest Point

Snowball

EVALUATE:

Diagnostic Assessment(s): The drill is a way for me to gauge what they read last night and what they remember from the lesson yesterday. Then the engagement question will allow me to assess what they are thinking about today's topic.

Formative Assessment(s): The closure is a way for me to know what students still need help/practice with. The Padlet is also an assessment of how students can apply the lesson to real life.

Summative Assessment(s): Chapter 6 Unit Test 3/2/2018

Timing/Pacing Adjustments (Slinky Time): Include a plan for how to adjust instruction if tasks take longer/shorter than anticipated:
If time is running out, the Padlet can be skipped. (-7 mins) If there is more time than predicted, students may stay on the Padlet and post questions they have about the lesson, so that other students can answer (reply to the post). (+5 mins)

Vertical

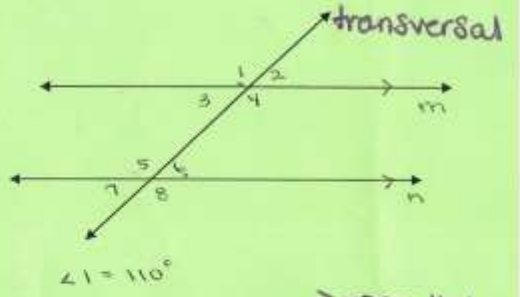
Interior

Alt int

Exterior

Alt ext

Corres



> - parallel