**Final Project: Grade 4 ESL/Energy Unit**

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**Tiered Unit Plan**

Larger unit, big idea, essential questions: Language of Science: Energy; Overall, students will learn science/energy vocabulary, work cooperatively in a group, and using evidence to construct an explanation relating the speed of an object to the energy of an object (hot wheels car experiments with variables)

GL standard: Use evidence to construct an explanation relating the speed of an object to the energy of an object

Topic of study: Energy

Pre-assessment: Observations during previous lessons

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|  | Grade Level | Below GL | Above GL |
| Critical questions | Can the student use language to *explain the relationship* *between* the speed of an object and the energy of an object using evidence from her experiment? | Can the student use language to *describe* the speed of an object and the energy of an object from her experiment? | Can the student use language to *explain the relationship* *between* the speed of an object and the energy of an object using evidence *from several real-world examples.* |
| Resources | * Posted anchor chart with sentence and word frames * Various photos of potential and kinetic energy | * Individual printed copy of anchor chart with sentence and word frames * List of learned content words (word bank) * Copies of PowerPoints with vocabulary and definitions * Various photos of potential and kinetic energy | * Posted anchor chart with sentence and word frames * Various photos of potential and kinetic energy * Books on energy and speed * Transition words (i.e. in addition, furthermore, also) |
| Means of Assessment | Written *explanation* of evidence from their experiment that proves the relationship between energy and speed. | Written *description* of the speed of the object in their experiment, and the energy they saw in their experiment. | Written *explanation* of evidence from the real-world that proves the relationship between energy and speed. |
| Where Next | Do I know the difference between potential and kinetic energy?  Can I conduct an experiment and use the results in my writing?  Can I *explain* how energy of an object relates to speed of the object? | Do I know the difference between potential and kinetic energy?  Can I conduct an experiment?  Can I *describe* my experiment results? | Do I know the difference between potential and kinetic energy?  Can I conduct an experiment and use the results in my writing?  Can I *explain* how energy of an object relates to speed of the object?  Can I *explain* how energy of objects in the real-world relate to the speed of the object? |

Estimated length of activity (minutes, periods, days): 7 days; 45 minutes each day

**Rationale**: This unit has a heavy focus on the MA Science Practice Standards, rather than the content standards. In addition, this unit is an ESL/Science units and, as a result, integrates explicit language instruction. This tiered unit plan is meant for the first 7 lessons of this 15 lesson unit where our focus is on introducing how to design an experiment, how to integrate science vocabulary into daily “scientist” language and writing, and how to work cooperatively with other “scientists.” At the end of the 7 lessons, we will collect student notebooks to assess students along the above tiered chart. This will provide a checkpoint before the next set of lessons which delve into Light and Thermal Energy. In addition, each of the first 5 co-taught lessons will conclude with a “share out” of student work. This will provide formative assessment as teachers note the quality of student work and whether they met the daily objective.

**Co-Teaching Lesson Plan #1**

Subject Area: *ESL &* *Science*

Grade level: *4th*

Content Standard: *Language of Science - Communicate information, ideas, and concepts necessary for academic success in the content area of science.*

*4-PS3-2 Making observations to show that energy can be transferred from place to place as sound, light, heat, and electric currents.*

Lesson Objective: *Students will be able to discuss the different forms of energy using an increasing amount of adjectives and content vocabulary.*

Essential Question: *How do humans use sources of energy from the natural world to meet their needs?*

Key Vocabulary: *Energy*

Pre-Assessment: *This is the first lesson in a fourth grade unit about energy.*

Materials: *Visuals (PowerPoint with pictures), computer for BrainPop video, toys for the hook (slink, kickball, etc.)*

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| **Lesson** | **Co-teaching Approach**  **(can select more than one)** | **Time** | **General Education Teacher** | **Special Service Provider**  **(ESL Teacher)** | **Considerations**  (may include adaptations, differentiation, accommodations, and student-specific needs) |
| **Beginning:**  (may include: Opening; Warm Up; Review; Anticipatory Set) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **10 minutes** | 1. **Explain objective and briefly explain activity with guidelines and rules (students will be exploring movement with various toys placed in stations for hook)** 2. **As students play with toys at each station, makes sure that stations are respecting the rules and communicating respectfully.** | 1. **Will post the question “What has to happen for the object to move” and explain that students will answer this question before moving to the next toy station. Will provide sentence frame.** 2. **Will guide discussions at each group using sentence frames.** 3. **Quickly gathers students together at the end of the hook so students can share out their thought and discussions around movement.** | **Lower level ESL students may need additional support such as knowing the names of the various toys.**  **They can be provided with a visual word bank to help build that tier 1 vocabulary that will be needed in this lesson.** |
| **Middle:**  (may include: Instruction; Checking for Understanding; Independent or Group Practice) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **30-40 minutes** | **Leads a station that shows a Brainpop content video on energy sources. Throughout the video she pauses it to ask questions such as “What did all the ways to create energy have in common?” The purpose of this station is to guide students into noticing the connection to movement. Before the groups switch, she makes a connection to the introductory activity.** | **Leads a vocabulary station that focuses on the word “energy”. Defines it as “makes change possible”. Gives various examples with visuals (ex. energy moves cars down the road” with a car moving visual). Go through the 7 steps process for teaching a vocabulary.** | **Independent station where students can choose one activity from a menu that they must complete.**  **Consideration: Some students, especially ELL students, may think of energy only in terms of hyperactivity (ex. “You have a lot of energy today!”)**  **Grouping is homogenous so that teachers are able to adjust and differentiate for each group.** |
| **End:**  (may include: Closing, Assessments, Extension of the Lesson) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes** | **The general education and ESL teacher will take turns choosing students to share out the work they completed from the menu during the independent station. Students may present their wonder boards, present their songs, discuss what they learned from the text, or present their illustrated “energy” poster.** | **The general education and ESL teacher will take turns choosing students to share out the work they completed from the menu during the independent station. Students may present their wonder boards, present their songs, discuss what they learned from the text, or present their illustrated “energy” poster.** | **Teachers could “warn” the students ahead of time that they will be sharing their independent work with the class to hold students accountable for being productive while at the independent station.**  **If there is a low level ELL student that is scared to present in front of the whole class, switch this to an alternative co-teaching style so that there is a smaller group and teacher support which may help them feel more comfortable.** |

**Energy Lesson 1 Menu**

For station 3, choose one of the following activities to complete. Circle the activity you choose to do.

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| 1. Read a short text on energy and prepare a presentation for the class about what you learned. | 1. Create an illustrated poster with everyday examples of energy. |
| 1. Create your own wonder board using anchor chart paper and markers, to write your lingering questions about energy. | 1. Create a song or rap that teaches the meaning of energy and provides examples. |

**Rationale**: I decided to use the station teaching approach for the bulk of this lesson because where it is an introductory lesson I thought it would be helpful for them to have exposure to a few different ways to think about energy. I also thought that opening the unit with an engaging hook, quick stations that use technology, and an independent menu station would build excitement for the upcoming unit. Since this is a foundational lesson, I chose to group the students homogenously so that teachers can differentiate to meet each group’s specific needs.

I taught this lesson prior to starting this class so I am not able to implement the new and improved co-teaching version of the lesson yet. I think the use of stations will increase student engagement, and students will be excited to own their learning through the use of choice off of a menu during the independent station. Bottom of Form

**Co-Teaching Lesson Plan #2**

Subject Area: *ESL & Science*

Grade level: *4th*

Content Standard: *Language of Science - Communicate information, ideas, and concepts necessary for academic success in the content area of science.*

*4-PS3-2 Making observations to show that energy can be transferred from place to place as sound, light, heat, and electric currents.*

Lesson Objective: *Students will be able to discuss the different forms of energy using an increasing amount of adjectives and content vocabulary (i.e. kinetic energy, potential energy)*

Essential Question: *How do humans use sources of energy from the natural world to meet their needs?*

Key Vocabulary: *Potential Energy; Kinetic Energy*

Pre-Assessment: *This is the second lesson in a fourth grade unit about energy. Students should be able to define “energy” from the previous day*

Materials: *Visuals (PowerPoint with pictures), dominoes, cars/ramps*

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| **Lesson** | **Co-teaching Approach**  **(can select more than one)** | **Time** | **General Education Teacher** | **Special Service Provider**  **(ESL Teacher)** | **Considerations**  (may include adaptations, differentiation, accommodations, and student-specific needs) |
| **Beginning:**  (may include: Opening; Warm Up; Review; Anticipatory Set) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **10 minutes** | 1. **Explain objective and briefly explain structure of day (station expectations)** 2. **Review previous day’s vocabulary (energy) and have students review what they learned yesterday.** | 1. **Give direct instruction on “Kinetic Energy” and “Potential Energy” using visuals in PowerPoint** 2. **Discuss norms of “working like a scientist” (i.e. how to cooperate and work as a group).** | **Lower level ESL students may need additional support during the whole group beginning lesson such as a hard copy of the PowerPoint visuals and a personal word bank to collect their words.** |
| **Middle:**  (may include: Instruction; Checking for Understanding; Independent or Group Practice) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **30-40 minutes** | **Leads a station where students set up and carry out a dominoes experiment. Students line up the dominoes and then knock them down. The teacher will support students in using the sentence frame “\_\_\_\_\_\_\_\_ energy changed into \_\_\_\_\_\_\_ energy when \_\_\_\_\_\_\_\_\_\_” to discuss and write their experiment results.** | **Leads a car observation station where students observe a car going down a ramp. Then, students describe what they noticed using the sentence frames below. After, they write about their experiment. Throughout the process, the teacher scaffolds how the students work together and focuses on cooperation and working “like a scientist.”**  **Sentence frames:**  **I noticed that \_\_\_\_\_\_.**  **I predict that \_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_.**  **I think that \_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_.**  **I wonder why \_\_\_\_\_\_\_\_\_.**  **I agree/disagree with you because \_\_\_\_\_\_\_\_\_\_\_\_\_.** | **Independent station:**   1. **Kinetic/Potential Energy picture sort with supporting sentence frames for lower proficiency level ELs.**   **Grouping is heterogeneous so that teachers are able to support conversations and cooperation among the group members.** |
| **End:**  (may include: Closing, Assessments, Extension of the Lesson) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes** | **The general education and ESL teacher will take turns choosing students to share out the work they completed from the various stations.** | **The general education and ESL teacher will take turns choosing students to share out the work they completed from the various stations.** | **Teachers could “warn” the students ahead of time that they will be sharing their independent work with the class to hold students accountable for being productive while at the independent station.** |

**Rationale**: For this lesson, I used the station teaching approach because I wanted the students to both interact with the new vocabulary, and build cooperation skills with guidance from a teacher. The independent station allows students to practice both content and communication as they work with a team to sort the types of energy. I chose heterogeneous groupings so that students could practice learning from peers and develop patience as they interact with students of different skill levels

Since I taught the lesson prior to this course, I have not used the co-teaching strategies yet. When I taught this lesson, it was more linear (i.e. first everyone observes, then everyone does the picture sort, etc.) and students had a hard time cooperating with peers and staying engaged throughout the lesson. However, I think that student engagement will be increased immensely through the stations and students will have guided practice for working cooperatively.

**Co-Teaching Lesson Plan #3**

Subject Area: *ESL & Science*

Grade level: *4*

Content Standard: *Language of Science - Communicate information, ideas, and concepts necessary for academic success in the content area of science.*

*4-PS3-1 Using evidence to construct an explanation relating the speed of an object to the energy of that object.*

Lesson Objective: *Students will describe their science design and experiment using sequence words*

Essential Question: *How can we use the language of science to inform others about the engineering*

*process?*

Key Vocabulary: *Ramp, Car, distance, increase, potential energy, kinetic energy*

Pre-Assessment: *Observations during whole group; Notes from previous lesson*

Materials: *Science notebooks; Hot Wheels ramps; Hot Wheels cars; pencils; prearranged groups*

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| **Lesson** | **Co-teaching Approach**  **(can select more than one)** | **Time** | **General Education Teacher** | **Special Service Provider** | **Considerations**  (may include adaptations, differentiation, accommodations, and student-specific needs) |
| **Beginning:**  (may include: Opening; Warm Up; Review; Anticipatory Set) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 mins** | **Review expectations of “working like a scientist” from previous day. Have students share out what they learned yesterday (potential and kinetic energy). Introduce today’s objective.** | **Teach vocab with realia (if applicable)**   * **Track** * **Car** * **Distance** * **Increase** | **Lower level ELs will need additional repetition of content words and may need to hold realia for extra support.** |
| **Middle:**  (may include: Instruction; Checking for Understanding; Independent or Group Practice) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **30-40 minutes** | **Direct instruction on the components of Science experiment and show a model of student work.**   * **Question** * **Materials** * **Design** * **Labels within design** * **Listing steps** * **Results** | **Teach lesson on using sequence words and how to *describe* a procedure using full sentences. To do this, review sequence words (first, next, then, after, last). Then, teach grammatical components of a full sentence. After, have students analyze a model of a descriptive paragraph with full sentences using sequence words** | **Lower level ELs will need support of basic sentence structure in English. Mid- and high-level ELs will need scaffolding at the sentence and discourse (paragraph) level to appropriately structure their writing.**  **Independent Station**  **Watch 2 BrainPop videos:**   * **Types of energy** * **Parts of a science experiment**   **Begin planning experiment using pictures** |
| **End:**  (may include: Closing, Assessments, Extension of the Lesson) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes** | **Take turns calling on students to share out their written work from the day, especially from the independent station.** | **Take turns calling on students to share out their written work from the day, especially from the independent station.** |  |

**Rationale:** The objective of this lesson lends itself well to station teaching. The objective has both language components (i.e. writing in full sentences; writing a full cohesive paragraph), and content components (i.e. steps to conducting a science experiment). For these stations, I split the students into homogeneous groups based on English Language Proficiency. In that way, I could teach necessary language structures to lower proficiency students, push mid-proficiency students’ language, and meet the need of native English speakers. In addition, the general education teacher can ensure that she is appropriately instructing students on how to conduct a science experiment. The independent station provides other modes of instruction for those students who have different preferences for learning.

I have not yet taught this lesson because this unit was earlier in the year. However, when I taught this lesson previously as a whole group lesson, many students were either unable to produce expected work, or were bored. I am excited to try station teaching for this lesson and, as a result, meet the needs of all students.

**Co-Teaching Lesson Plan #4**

Subject Area: *ESL & Science*

Grade level: *4th*

Content Standard: *4-PS3-1 Using evidence to construct an explanation relating the speed of an object to the energy of that object.*

Lesson Objective: *Students will use evidence to construct an explanation relating the speed of an object to the energy of an object.*

Essential Question: *What happens to the distance your car travels as you increase the height of the ramp?*

Key Vocabulary: *Variable, ramp, distance, measure, data, trial*

Pre-Assessment: *Use observations from yesterday’s lesson*

Materials: *thick textbooks, hot wheels cars, clipboard/cardboard for ramp, vocabulary PowerPoint*

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| **Lesson** | **Co-teaching Approach**  **(can select more than one)** | **Time** | **General Education Teacher** | **Special Service Provider** | **Considerations**  (may include adaptations, differentiation, accommodations, and student-specific needs) |
| **Beginning:**  (may include: Opening; Warm Up; Review; Anticipatory Set) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes** | Introduces the day’s objective and essential question. | Explains how we will reach the day’s objectives; the plan for the day. (conduct 3 trials with different number of books so the height of the ramp is changed)  Introduce the term “trial” to the whole class. | An image of our plan for the day should be projected for ELL and visual students (could be a picture from a previous year’s experiment so they are able to visualize what the day’s experiment will look like.)  This lesson will likely take 2-3 days to complete. |
| **Middle:**  (may include: Instruction; Checking for Understanding; Independent or Group Practice) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes**  **5 min.**  **10 min.**  **10 min.**  **15 min.**  **5 min.** | Demonstrate and Discuss (teacher will demonstrate 3 trials of putting a car down a ramp but will change multiple variables. Students observe then discuss the question “What was different about my two trials? Did those changes affect the distance the car travelled?”  Introduce the term variable.  Instruct on the importance of only changing one variable at a time by having students think back to the teacher demonstration and discuss how multiple variables could affect the results.  Students will make a plan for their experiment with a partner by writing in their Science notebooks. As they plan some questions to consider are posted that will help them to make sure they are only changing one variable (the height of the ramp)  Students will conduct their experiment with their partner. As they experiment they are tracking their data on a table and a graph.  Before coming back as a whole class, partnerships consider and discuss, “how does changing the height of the ramp affect the distance the car travelled? Students should be referring back to their data to guide their discussions. | Demonstrate and Discuss with sentence frames and word bank.  Introduce the term variable with the use of a visual and allow students to discuss the visual with a sentence frame.  Repeat demonstration with a student helper changing two variables (ex. Height of ramp and forcefulness of push). Think aloud that I noticed that the car went further but I am not sure if it is due to the height of the ramp or because of how the car was pushed. Lead students into discussing, “What can I do next time so that I will know why the distance changed?” Use sentence frames for support.  Students make a plan for their experiment by drawing a detailed sketch with labels in their Science notebooks. Questions with visuals are posted for partnerships to discuss so they can be sure they will only change one variable (the height of the ramp)  Students will conduct their experiment with their partner. As they do so, sentence frames are posted to facilitate discussion. As they experiment they are tracking data on a table.  Students discuss with a partner “how does changing the height of the ramp affect the distance the car travelled?” There will be a sentence frame with visuals for words like “height” and “distance” to guide their discussion. | **Split students into two groups. ELL students and other students with language needs should be with the ESL teacher, as their side will be more supported with language. The rest of the students should be split evenly so that both sides have students with high language abilities as well as high content abilities. Grouping is mostly heterogenous with the exception that all the ELL and language needs students are together.**  **SDIs for ELL students include visuals, word banks, and sentence frames/sentence starters.** |
| **End:**  (may include: Closing, Assessments, Extension of the Lesson) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5-10 minutes** | **Assists by making sure students are on task.** | **Instructs students to individually write their response to the essential question, “what happens to the distance your car travels when you increase the height of the ramp?” Encourage students to refer to the sentence starter and word bank posted on the board if need be.** | **Lower level ELL students may benefit from having additional time to talk out what they want to write before writing it. They could also draw a sketch if they are having trouble describing it in words.** |

Rationale: I chose to spend the bulk of the lesson in a parallel teaching approach because I thought the smaller group size would be very beneficial for this lesson. For example, during the part where the teacher is demonstrating why changing multiple variables is harmful, it will be easier for students to see the demo in a small group and there is a better chance that there will be a stronger discussion with more active participants. Additionally, this lesson needs to be completed in a certain sequence so it would have been very challenging to do the lesson in a stations format.

This is a lesson that I taught prior to taking this course, so I have not yet tried it with a co-teaching approach though I look forward to trying it next year. When I taught it whole group this year, the students were engaged in the experiment however they were not as engaged in the discussions. I think that through breaking the students into smaller groups using the parallel teaching technique, students will be more willing to share their thoughts with the group which will facilitate more discussion. Bottom of Form

**Co-Teaching Lesson Plan #5**

Subject Area: *ESL & Science*

Grade level: *4th*

Content Standard: *4-PS3-1 Using evidence to construct an explanation relating the speed of an object to the energy of that object.*

Lesson Objective: *We will design an experiment in our science notebooks. We will explain our experiment using science words such as* ***variable*** *and* ***trial.***

Essential Question: *What can you change in your design to change the* ***energy*** *your cars have and change the* ***distance*** *the cars travel?*

Key Vocabulary: *variable, trial, kinetic energy, potential energy*

Pre-Assessment: *Use observations of student discussions from previous lesson.*

Materials: *meter sticks, Science notebooks, toy cars, thick books, cardboard/clip board, materials of student choice*

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| **Lesson** | **Co-teaching Approach**  **(can select more than one)** | **Time** | **General Education Teacher** | **Special Service Provider** | **Considerations**  (may include adaptations, differentiation, accommodations, and student-specific needs) |
| **Beginning:**  (may include: Opening; Warm Up; Review; Anticipatory Set) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5 minutes**  **10 minutes** | **Splits students into two groups for parallel teaching.**  **Once split into two large groups, review the days objective.**  **Ask students to brainstorm ideas about how they can change the potential or kinetic energy in their car. Use the question, “What can you change in your design to change the energy your cars have and change the distance the cars travel?”**  **Students share their ideas in groups of 3.** | **Review the day’s objective and check for student understanding of the objective by having students tell a partner what our goal is for the day.**  **Use a visual reminder of our previous day’s work (perhaps have a photo or 3 actual ramps of different heights on display). Briefly review how yesterday we all had changed the same variable to see if it would affect the potential and kinetic energy. Today we will be choosing our own variable to change that will affect the energy of the car.**  **Ask students to brainstorm ideas about how they can change the potential or kinetic energy of the car. Have some tactile materials around with a label (especially if there are newcomer ELLs). Students share their ideas in groups of 3.** | **Plan on this lesson taking 45 minutes.**  **Groups for parallel teaching are intentional-all ELL students are with the special service provider (ESL teacher) as well as any other students with language difficulties. There should also be some high language and content students in the group to serve as models.**  **Groups of 3 for planning and experimenting should be heterogeneous.** |
| **Middle:**  (may include: Instruction; Checking for Understanding; Independent or Group Practice) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **5-10 minutes**  **20 minutes**  **5 minutes** | **The groups of 3 share out their ideas with the rest of the group while the teacher charts all ideas.**  **The teacher reminds students that scientists only change one variable at a time.**  **Ask groups of 3 to discuss again regarding which variable from the list they want to change.**  **Once they choose a variable, they will complete a planning their experiment packet where they will sketch their plan, list supplies, detailed procedure, and plan for recording the data.**  **As they make their plans the teacher should check in with each group to ensure they are only changing one variable. The teacher should also tell student groups that they will be presenting their experiment results to the class, so they should start to plan how they would like to do that.**  **Each group briefly presents their experiment to the rest of the groups. The rest of the groups provide feedback.** | **As groups share out their ideas, they use a posted sentence frame (“We can increase the energy and distance by\_\_\_\_\_\_\_\_\_\_”. I think this will increase the distance because\_\_\_\_\_\_\_\_\_\_\_\_”)**  **The teacher reminds students that scientists only change one variable at a time.**  **Ask groups of 3 to discuss again regarding which variable from the list they want to change. Post the sentence starter, “One variable we should change is \_\_\_\_\_\_\_\_\_\_\_. I think this will increase the energy because \_\_\_\_\_\_\_\_\_\_\_\_\_\_”**  **Guide students through the planning packet by reading each prompt, and writing a sentence starter underneath each. Have the sentence starters projected as students start planning.**  **Each group should briefly present their experiments to the rest of the group. Sequence word sentence starters will be posted along with a word bank.** | **Depending on time, encourage listeners to respond with “I agree/respectfully disagree with you because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”**  **In fourth grade students sometimes don’t realize they are changing more than one variable at a time. It’s common in this experiment that they are so focused on making the car go far, that they will want to try that in different ways so emphasizing only one variable at a time is important. Make sure they are considering things such as how hard they push the car, which car they use, etc.** |
| **End:**  (may include: Closing, Assessments, Extension of the Lesson) | **One Teach, One Support**  **Parallel**  **Alternative**  **Station**  **Team** | **3 minutes** | **Leads the class in an objectives review. Refer back to the posted objectives and ask students to give a thumbs up if they think they have accomplished the objective.** | **Once the objective review is over, let students know that tomorrow we will be conducting our experiments. Encourage students** |  |

**Rationale**: I decided to use the parallel teaching approach because this is a lesson that involves a lot of discussion, and I feel as though the smaller group size will facilitate discussion, especially for the ELL students. Also, by splitting the class in half it will help for the whole group presentation times to go a little more quickly which will keep the momentum of the lesson going strong. By splitting the classroom in half it will be easier for the teachers to work with each student group on their planning packets. All of the ELL students will go with the ESL teacher, but otherwise the split will be heterogeneous. The small groups of students that plan and experiment together will also be pre-planned heterogeneous groupings. The planning packet will be the assessment to see if they are able to plan an experiment that only changes one variable. The accommodations provided to ELL students consist of sentence starters/sentence frames/, labels, word banks, and visuals.

I was not able to implement the co-teaching version of this lesson as I have already taught it prior to this course. However, I think the change to parallel teaching will be positive. The smaller group sizes will allow for deeper discussion and more frequent teacher check-ins with groups. Bottom of Form