Integrated Learning Segment

Two week thematic unit for Third Grade: Energy and its Interactions

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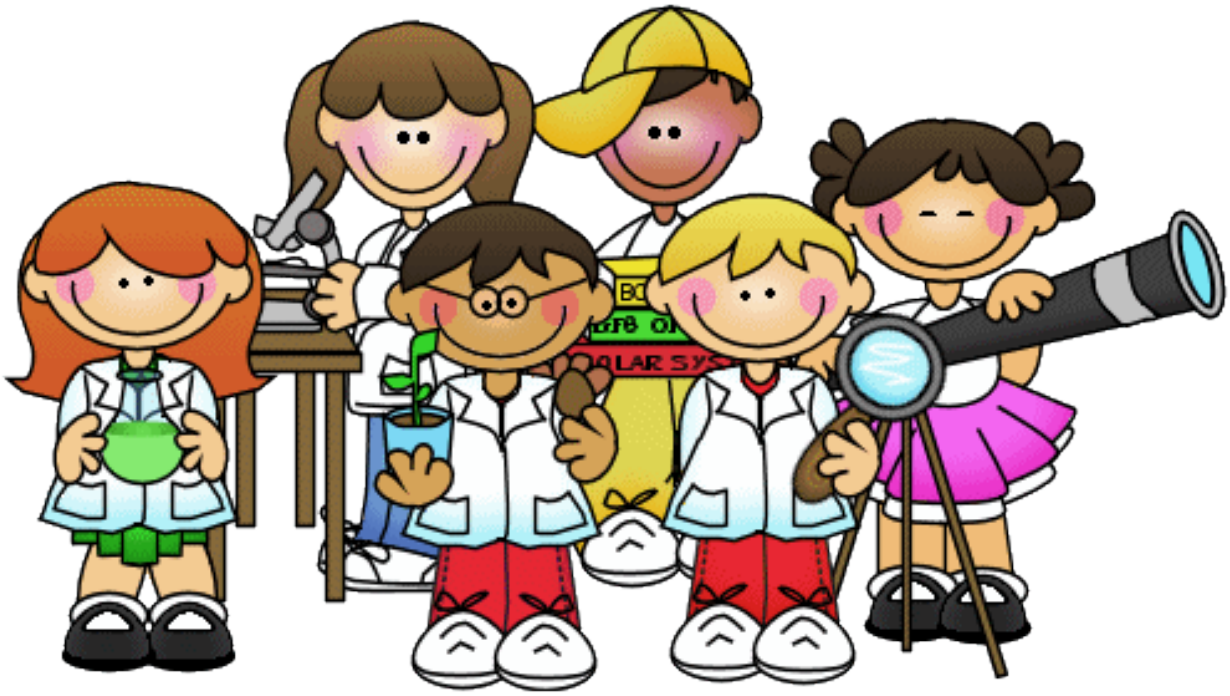
TN Science Standard:

3.PS3



Integrated Learning Segment

Two-Week Thematic Unit for Third Grade

By: Anna Sexton

ECED 4450 Spring 2018 class

Focal Science Standard(s): 3rd Grade: 2018 TN Standard - Physical Science (Matter and Its Interactions). 3.PS3 Energy is present when objects move; describe effects of energy transfer from one object to another. A secondary standard is GLE 0307.11.2 Recognize the relationship between the mass of an object and the force needed to move it.

Theme/Topic: ENERGYAND ITS INTERACTIONS

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Introduction and Rationale (a)

This integrated learning segment is planned over a 2 week unit. This is to ensure comprehension of the main goal of the end of the unit. That main goal is for the students to be able to recognize and describe the effects of energy being transferred to objects. The teacher will be implementing many fun, engaging, and hands on activities that will allow opportunity for inquiry as well as diverse methods of instruction. This is to guarantee that each child is gaining a beneficial learning experience from these two weeks that will allow practice in all subject areas. The activities that are planned for this unit provide opportunity for accommodation and modification. There is opportunity for enhancement and engagement from all domains of children. This is evident through accommodating to the needs of children who need more support and to the children who need more of a challenge. Both domains will be expanding his/her knowledge of energy and its interactions. This unit is appropriate for 3rd grade due to the fact that it is following 3rd grade standards. Moreover, I have implemented activities and lessons that are developmentally appropriate to the grade, age, and ability level for each child.

The 2-week unit will focus on energy and its interactions, specifically describing and categorizing "…effects of energy transfer from one object to another." (p. 32; TNELDS-4s, 2018). Children will explore energy and learn about how it transfers to other objects. Over the 2 weeks that this unit will be implemented, the students will be using an inquiry-based system to enhance the learning. This is inquiry based due to the fact that the activities are open, guided, and structured inquiry. By the end of the unit, children will be able to describe and recognize the effect energy has when transferred. Over the course of the unit, my approach will use the 5Es as a guide in order to enhance the learning process of energy and its interactions. Using the 5 E's as a guide, the students will be engaged in an interactive unit that provides opportunity to practice the concept of energy and its interactions. Below, I briefly describe how each of the 5Es will be addressed across the unit.

My unit follows inquiry and is inquiry based due to the fact that all my activities include the 5E's. The students will **Engage** by starting with a fun opening game activity on the first day to get children excited about the unit of energy. This activity is fun and engaging to the children as he/she will be searching for all the energy inside a classroom. This will get the students to start thinking about energy and all its forms as we start this unit as he/she will implement learnings from his/her past experiences. After that, we will **Explore** and thereby "Investigate and solve problems" and "Provide experience of the phenomenon or concept" (Primary Connections, 2008) by reading non-fiction texts on the topic, watching videos, playing sports, and exploring and building their own Newton's Cradle. While and after they have built the cradle, they will need to **Explain** by participating in "Small group discussion to generate explanations, compare ideas and relate evidence to explanations" and by "Individual writing, drawing and mapping to clarify ideas and explanations" about their cradle creations. The students will also be interacting in the same procedure for the sports activity where they will be required to explain the diverse interactions of energy. Next, the students will **Elaborate** on the subject of energy and its interactions by practicing the skills that were taught via creating his/her own ping pong shooter, participating in the measuring marbles activity, and through the domino activity. To complete these activities, the students will have to practice the lessons that were taught in order to "develop a deeper and broader understanding of major concepts" (The 5 E's). Last, the students will **Evaluate** his/her learning via projects and work samples. Most of the activities that are implemented over the 2 weeks will have a document sheet that will be an

informal assessment. Through these documents and evaluated performances, the teacher will be able to guide the instruction through the 2 weeks. Furthermore, the teacher will be able to see what students need additional practice with this concept and what students need to move on. This will provide opportunity for the teacher to guide his/her instruction around the needs of the class. The students will be able to self- assess through the work samples also.

Standard/s Addressed, Goals, and Objectives for the Unit (b)

Standards addressed. The primary focal standard is for 3rd grade from the TN-ELDS. The science standard falls within the Physical Properties section, which is involves children being able to "acquire knowledge about the physical properties of the world". 3.PS3 Energy is present when objects move; describe effects of energy transfer from one object to another. A second primary focal standard is GLE 0307.11.2 Recognize the relationship between the mass of an object and the force needed to move it. (p. 32; State Board of Education, 2018).

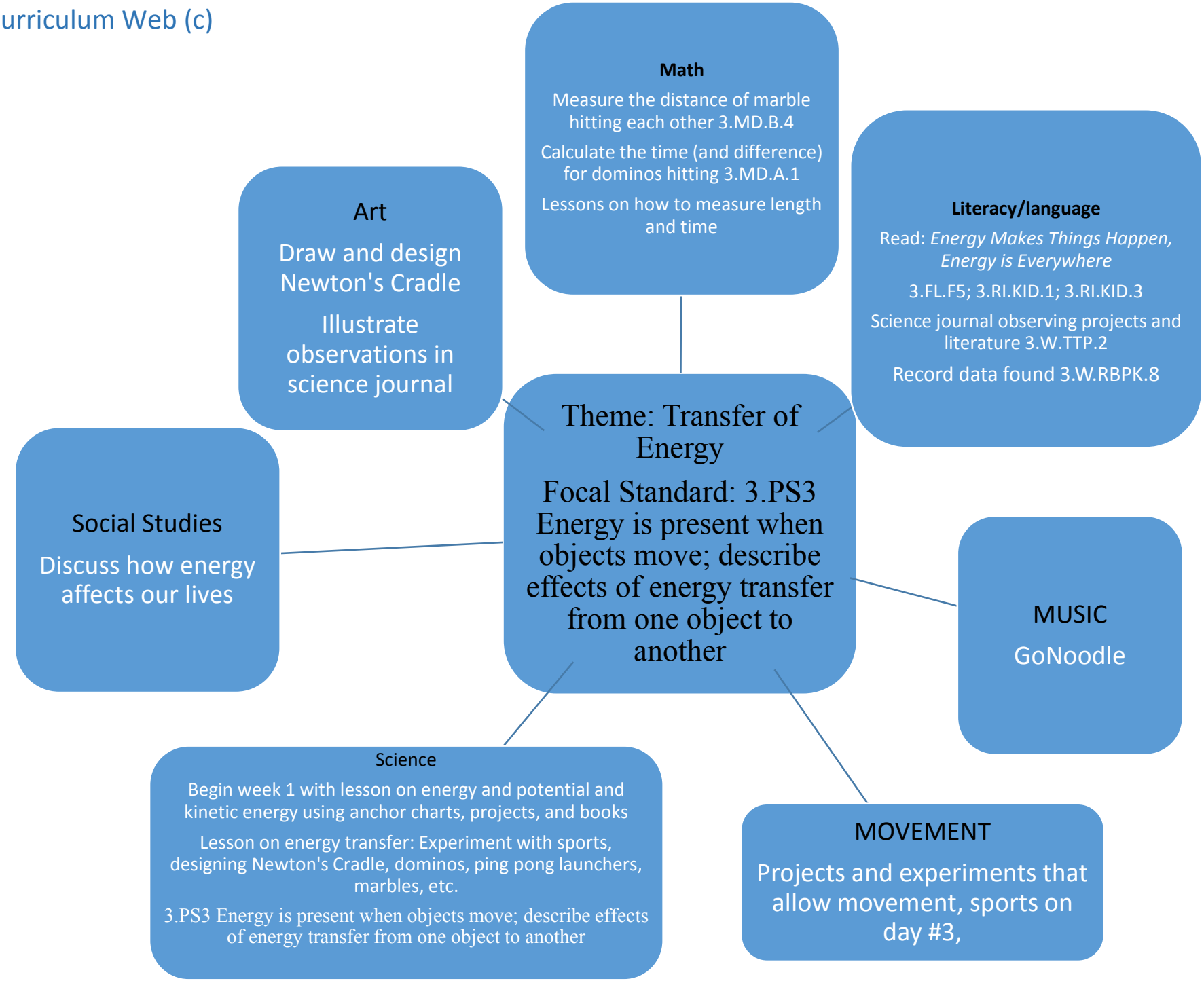
Goals.

1. The goals of this unit are for children to understand the concepts of energy as well as the different effects that energy has when being transformed under certain aspects (ex. Mass, weight, speed, materials, etc.).
2. The students will be able to gain understanding of energy and its interactions through inquiry based activities.

Objectives.

1. The objectives of this unit are for the students to notice, observe, and identify the different causes of energy transformation to have different effects.
2. Students will explain the meaning of kinetic and potential energy with 80% accuracy
3. Students will be able to explain the meaning of energy transfer.
4. Students will accurately identify an object with kinetic energy with 80% accuracy
5. Students will accurately identify an object with potential energy with 80% accuracy.
6. Students will be able to predict what will happen to the other balls when one ball on Newton's cradle is picked up and let go.
7. Students will be able to explain why the balls in the middle of the cradle do not move.
8. Students will begin to notice the relationship between the mass of an object.
9. The students will be able to describe the different interactions energy has through sports activities.
10. The students will be able to predict what will happen to the different objects when the starter marble hits the objects.
11. The students will be able to describe the different effects that happen with the starter marble interacts with the other objects.
12. The students will be able to explain why there are different interactions with the objects.
13. The students will be able to correctly measure the distance traveled during the measuring marbles activity.
14. The students will be able to correctly determine the measured time with 95% accuracy.
15. The students will be able to correctly measure the time of the dominos hitting one another.
16. The students will be able to determine the difference in the measured time with 95% accuracy.
17. The students will be able to comprehend and discuss the key details that were read in *Energy Makes Things Happen* and *Energy is Everywhere.*
18. The students will be able to explain, describe, and define what has happened in the energy activities through the science journal with 80% accuracy.

A Curriculum Web (c)



Title and Description of Learning Experiences (d)

Overview

The teacher will start with the instruction on energy. This is to ensure that the students have full comprehension of what energy is before the class starts learning about the interactions that energy has. This will be completed through instruction and Energy Detectives activity. Next, the teacher will continue the instruction with potential and kinetic energy. This concept must be met before the students will be able to understand how energy is transformed. The teacher will be completing this by instructing the students through anchor charts and reading of informational and expository texts on forms of energy. Then, the teacher will continue on with instruction by introducing transfer of energy. This will be completed through the Newton's Cradle and marble activity. Lastly, the teacher will finish the unit by instructing the students on energy and its interactions. This will be completed through the measuring marbles and ping pong shooters activities. All of the activities are integrated between science, math, and ELA to ensure full interdependence is present.

Calendar

Week 1 of 2

Schedule	Monday	Tuesday	Wednesday	Thursday	Friday
Free Play/Center/ Arrival	GoNoodle		GoNoodle		GoNoodle
Welcome/Whole Group books	Energy Detectives (Engage)	Read "Energy is Everywhere" and create Mind Map with class (move this time to after 2nd small group)	Watch YouTube video on potential and kinetic energy Discuss and instruct potential and kinetic energy	Read "Energy Makes Things Happen" Discuss and instruct how energy is transferred	Finish lesson on energy being transferred and begin creating own Newton's Cradle
Small Group					
Outdoor Learning/Gross Motor			Sports		
Free Play/Outside Departure	Science journal entry	Science journal entry	Science journal entry	Science journal entry	Science journal entry

* *Complete lesson plan*

Week 2 of 2

Schedule	Monday	Tuesday	Wednesday	Thursday	Friday
Free Play/Center/ Arrival	GoNoodle		GoNoodle		GoNoodle
Welcome/Whole Group books	Finish Newton's Cradle	Marble activity	Review of measuring time and Domino activity	Review of measuring and Measuring marbles activity	Ping Pong Launchers activity
Small Group					
Outdoor Learning/Gross Motor					
Free Play/Center/ Departure	Science journal entry	Science journal entry	Science journal entry	Science journal entry	Science journal entry

* *Complete lesson plan*

Titles and Descriptions

Week 1

Day 1

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy and its interactions instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Energy Detectives (Energy Detectives (3 Activities)) (The 5 E's)

The first activity will **Engage** children by interacting and learning about energy. The teacher will provide activities centered around the concept of energy for the first half of week #1. The first activity that will **Engage** the children is "Energy Detectives." During this activity, students will identify the different forms of energy that he/she can find inside the classroom. This will engage the students in the learning of energy as they are looking for the different forms in the environment. This game like element will enhance the learning as the students are able to interact and engage in the topic of energy. The different forms of energy have been introduced in a separate unit, so this will act as a review. For the students who need more support, the teacher can accommodate by allowing these students to work with another student. For the students who need more of a challenge, the teacher can allow these students to define the forms of energy that he/she found.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the "Energy Detectives" activity that took place this same day. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction. This activity provides opportunity to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be documented. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 2

Whole Group: Discuss "Energy is Everywhere" and create Mind Map with class. (Young, 2006) (The 5 E's)

The second activity is a MIND MAP that will be created in each child's science journal. A mind map is another name for graphic organizer where the central theme and focus is energy. The students will be creating separate points that support the idea of energy. The students will be identifying the different forms of energy, different ways we use energy, and what he/she knows about energy. We will discuss the essentials of energy, what we use it for, and the different

forms prior to the students creating the map in his/her journals. After they finish the MIND MAP, the students will be formed into groups where the group will read "Energy is Everywhere". This will allow the students to get enhanced in the learning process of energy and where we can find it. The students will take notes and add new information to his/her MIND MAP. The teacher will allow each group to present his/her MIND MAP so that the students can **Evaluate** his/her own work and learn through peer interaction and so that the teacher can **Evaluate** the work sample as well as the students' knowledge of the topic through explaining it. For the students who need additional support, the teacher can allow these students to work with him/her in a small group instruction. For the students who need more of a challenge, the teacher can create a sheet of higher order questions that relate to the book that the students will be required to answer. This activity integrates science and ELA as the students are Elaborating his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the book. "Energy is Everywhere" activity. This is a form of informal assessment that the teacher will collect to guide his/her instruction. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This activity provides opportunity to **Explain** what has been read about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 3

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Watch YouTube video on potential and kinetic energy. Discuss and instruct potential and kinetic energy (Swaby, 2018) (The 5 E's)

The third activity will be introducing the concept of potential and kinetic energy which ties to transfer of energy. The teacher will show a video from YouTube: https://www.youtube.com/watch?v=uCmo9a8k5lQ. This video is developmentally appropriate to the age and grade level of the students in the classroom. I know this because it is child friendly and simple enough for the children to understand through the examples shown in the video. For example, the video uses cartoons, simple vocabulary, and activities that are common to young children to discuss the concept of potential and kinetic energy. During the video, there are questions that are asked. The teacher can pause the video and allow the students to discuss the

answers. This will allow the teacher to evaluate the responses which will guide the instruction for formative instruction. After the video, the teacher will create an anchor chart so that the students can give definitions, examples, and reasoning behind potential and kinetic energy. The students will be **Elaborating** his/her knowledge about energy through this activity. The teacher will ask each student to write an example of potential energy on a sticky note and kinetic energy on a sticky note. Then the students will put the sticky notes on the corresponding sides of the chart labeled POTENTIAL KINETIC. The teacher will use this as a formative assessment tool. For the students who need additional support, the teacher can provide more time for the students to answer the questions that were asked. To the students who need more of a challenge, the teacher can provide higher order questions to be asked. This activity integrates science and ELA as the students are Elaborating his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Outdoor Learning/ Gross Motor: Sports (Stratford, 2018) (The 5 E's)

The class will go outside and take part in sporting events so that the students can see that energy transformation is in our everyday lives using potential and kinetic energy. The teacher will provide materials like soccer balls, footballs, baseballs, etc. so that the students can take part in open inquiry. After the students have been playing for a while, the teacher can instruct the students to identify the potential and kinetic energy that is being used. Now, it is a guided inquiry activity where the students will be applying the information that was taught to an activity. The teacher can go around to the students and ask questions that will guide thinking and discussion on the topic of energy and transferring energy. This activity provides opportunity for the students to **Explore** the topic of energy and its interactions. This also provides opportunity for the teacher to integrate social studies as the students are recognizing how energy is in our lives every day.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the video and instruction of potential and kinetic energy that was discussed this day. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. It also provides opportunity for the teacher to **Evaluate** the learners' progress. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 4

Whole Group: Read "Energy Makes Things Happen". Discuss and instruct how energy is transferred (Bradley & Meisel, 2003)(The 5 E's)

The fourth activity will be a read aloud to the book "Energy Makes Things Happen" where the children will be introduced to the concept of energy being transferred. There are examples in the book where the author writes about energy being transferred in our everyday life. The teacher will read the story with the children and have an open discussion with the whole

group where he/she will ask the students to point out the examples given about energy being transferred. The teacher will then ask the students to think of other examples where we transfer energy, and for the students to identify the potential and kinetic energy in each given example. This will allow the teacher to **Evaluate** the learners through discussion via anecdotal notes. The teacher will use the examples given by the students and write them on the anchor chart. The teacher will teach a lesson on the transfer of energy and introduce the Newton's Cradle to show as an example of energy being transferred. This will provide opportunity for the children to **Explore** the interaction of energy as the students will be allowed to play and experiment with the Newton's Cradle. The teacher will inform the students that he/she will be creating his/her own Newton's Cradle tomorrow and the next day. For the students who need additional support, the teacher can provide more time for the students to answer the questions that were asked. To the students who need more of a challenge, the teacher can provide higher order questions to be asked. This activity integrates science and reading as the students are learning about energy while practicing reading skills. The ELA standard that goes with this activity is 3.FL.F.5 Read with sufficient accuracy and fluency to support comprehension.; 3.RI.KID.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as a basis for the answers.; .RI.KID.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. This also provides opportunity for the teacher to integrate social studies as the students are recognizing how energy is in our lives every day.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the book "Energy Makes things Happen" as well as the Newton's Cradle. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 5

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Finish lesson on energy being transferred and begin creating own Newton's Cradle (Parker, 2018) (The 5 E's)

The fifth activity will be focusing on the concept of transferring energy. The teacher will finish the lesson of energy being transferred by explaining the benefits it has in our lives. The

teacher will provide examples and allow the children to **Elaborate** on this topic of how energy interactions benefit our lives. The teacher will bring in a Newton's Cradle and allow the children to experiment with it and explore the abilities it has. Since we will be starting the lesson of transferring energy, this is a great way to get children **Engaged** in what transfer of energy really is and what it can do. Also, the students will be able to see that potential and kinetic energy is taking place in this activity with the marbles. The teacher can provide opportunity for the students to identify what is potential and kinetic energy during the activity in order to **Evaluate** the responses via anecdotal notes. After each child has experimented with the Newton's Cradle, we will start the lesson then break into partners for the activity. Before the students begin building his/her Newton's Cradle, the students will design the cradle that he/she will be creating through drawing to integrate art. During the activity, the teacher will provide the materials but allow the children to have opportunity for inquiry based practice where he/she will be designing his/her own Newton's Cradle to however, he/she wants. This is also engineering activity as the students will be having to experiment his/her own structure that will be built. The goal is for the students to create his/her own Newton's Cradle that illustrates how energy is transferred using potential and kinetic energy. This will allow opportunity for the students to **Elaborate** and **Explore** the interactions of energy. This activity will take longer than one day so this will be taking place the next day also. I will give each partner the materials needed to create his/her own Newton's Cradle. I will leave the original one in front of the class so that the students can use that as a model and guide. I will allow inquiry to take place as each child is able to design his/her own structure. The students will find out on his/her own if the structure is strong enough to hold the balls at the end of the strings. This will enhance the learning since the students are having to use higher order thinking to design a structure that is strong enough which allows the students to experiment with engineering aspect of the project. The students will build the structures the first day then continue on with the rest of the project the next day. The teacher will be asking the students questions that will assess his/her learning of energy being transferred. The students will have to explain what is happening with each ball that is hitting the others as well as why it is happening. Each child will have to opportunity to get in front of the class and present his/her cradle and explain why he/she made it that way. Each child will also have to explain the transfer of energy that is happening between the balls in order for **Evaluation** to be present.

Departure: Science Journal Entry(The 5 E's)

During this activity, the students will be writing about the Newton's Cradle activity that took place this same day. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Week 2

Day 6

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Continue lesson on energy being transferred and Finish Newton's Cradle (Parker, 2018) (The 5 E's)

The sixth activity is the same as the 5th activity yet it is the next day. The students will build the structures the first day then continue on with the rest of the project the next day. The teacher will be asking the students questions that will **Evaluate** his/her learning of energy being transferred. The students will have to explain what is happening with each ball that is hitting the others as well as why it is happening. Each child will have to opportunity to get in front of the class and present his/her cradle and **Explain** why he/she made it that way. Each child will also have to **Explain** the transfer of energy that is happening between the balls which the teacher will assess through anecdotal notes. During this activity, the students' knowledge of energy and its interactions will **Elaborate** through hands on learning. Through this activity, a deeper and broader understanding of energy and its interactions will take place which will allow the student to Elaborate the information his/her abstract understanding.

Departure: Science Journal Entry

During this activity, the students will be writing about the Newton's Cradle activity that took place this same day. The students will be writing about his/her Newton's Cradle along with the other students' Newton's Cradles. The teacher will ask the students to **Explain** the differences and similarities between the Newton's Cradles. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 7

Whole Group: Marble Activity (S., 2014) (The 5 E's)

The seventh activity that will take place will be on the topic of transferring energy also. This will be a simple activity that can take place after instruction time. The students will pair up and each receive 5 marbles, a ruler, and document paper that will go into his/her science journals. The students have a starter marble that he/she will flick towards the other marbles that are sitting on the ruler. This is so the students can see what happens to the other marbles as

energy is being transferred from the starter marble to the other marbles which will **Elaborate** his/her understanding of energy interactions. Also, the students will be able to see that potential and kinetic energy is taking place in this activity with the marbles. The teacher can provide opportunity for the students to identify what is potential and kinetic energy during the activity in order to **Evaluate** the learners' progress. Inquiry is embedded in this activity as the students are allowed to use as many marbles on the ruler as he/she wants to **Explore** energy being transferred to all the marbles. The students will be documenting the interactions on the document paper where he/she will record the distance the amount of marbles traveled by using the ruler. This will allow the students to **Explain** what he/she observes as well as the reason it is happening. This activity is a constructivist approach as the students are pulling existing knowledge about energy and its interactions from the Newton's Cradle activity. The teacher will come around to each partner generating questions and guiding discussion to **Evaluate** the responses and assess via anecdotal notes. The teacher can assess this through anecdotal notes as well as the work samples that the students will put in his/her science journals. This will guide the teacher's instruction. This activity integrates science and ELA as the students are Elaborating his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the marbles activity that took place this same day. The students will be writing about his/her **Exploration** through the activity. The teacher will ask the students to **Explain** the differences and similarities between the Newton's Cradles. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 8

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Domino Activity (The 5 E's) (Collaboration with Elementary Education Student)

The eighth activity integrates mathematic standards with science standards. The mathematical standard that will be used in this activity is 3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve contextual problems involving addition and subtraction of time intervals in minutes. The teacher will review how to measure time using a stop watch and teach a mini-lesson on how to work, read, and interoperate a stop watch. After the review, the student will be broken into pairs where each pair will be given dominos and recording paper. The students will be instructed to space the dominos differently each round and time how long it takes for all the dominos to get knocked over. The students can measure the distance that each domino is apart so that he/she knows to make the domino separation bigger or smaller in comparison to the other rounds. The students will recognize that when the dominos are placed closer together, all of the dominos fall faster; yet when the dominos are placed farther apart, all of the dominos take a longer time to fall. Inquiry is embedded in this activity as the teacher will not tell the students the fact mentioned in the previous statement, but he/she will allow the students to learn that for his/her own. This will allow opportunity for the students to **Explore** the different aspects of energy and its interactions. Inquiry is also embedded in this activity as the teacher will allow the students to design and create his/her own domino structure. The students will time how long it takes the dominos to fall and record the data on his/her record sheet along with **Explanation** behind the differences in times that have been recorded which will act as a formative assessment for the teacher to **Evaluate** the learners' progress via anecdotal notes. The idea of energy and its interactions will be **Elaborated** as the students' understanding of this topic will be extended. This activity also integrates science and ELA as the students are Elaborating his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the dominos activity that took place this same day. The students will be writing about his/her **Exploration** through the activity. The teacher will ask the students to **Explain** the differences and similarities between the Newton's Cradles. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 9

Whole Group: Measuring Marbles (Royston, 2016) (The 5 E's)

The ninth activity integrates mathematic standards with science standards. The mathematical standard that will be used in this activity is 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. The goal and purpose of this activity is for students to understand that energy has different effects when

transferred from one object to another. Through the fun, interactive, and **Engaging** opportunity, the students will also be gaining great educational benefits as well as **Exploring** the different effects that objects have on one another when transferring energy. The teacher will review how to measure using standard units of measurement. He/she will teach a mini-lesson of how to use a measuring tool as well as how to read one. After the review, The students will get into pairs and complete the activity by rolling a large marble down a ramp and hitting objects at the end of the ramp. The ramp and the starting marble stay the same, yet the objects at the end of the ramp will change. The students will use a ruler or measuring tape to measure the distance that each object travels after energy is transferred from the starting marble. The students will record the measurements as well as other information on a recording sheet that will be put in his/her science journal. On this recording sheet, the students will be **Explaining** what happened during the activity as well as why the events happened. The students will **Elaborate** on the instruction that was taught during the two weeks to give **Explanation** and reasoning which the teacher will assess through anecdotal notes. Inquiry is embedded in this activity as the children are able to choose the objects that he/she wants to use at the end of the ramp and **Explore** the reasoning of why there are different interactions without the teacher explaining it. This activity integrates science and ELA as the students are Elaborating his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the measuring marbles activity that took place this same day. The students will be writing about his/her **Exploration** through the activity. The teacher will ask the students to **Explain** the differences and similarities between the Newton's Cradles. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Day 10

Arrival: GoNoodle

For the arrival activity in the mornings, I will begin the day with GoNoodle. This is an educational program that provides opportunity for exercise inside the classroom. This will be a great way to wake the students up in the morning and get his/her brain ready to absorb information through blood pumping exercises. There are some exercises that will relate to my unit. Activities that require students to high five each other, bump into each other, and move all parts of his/her body will give me the opportunity to implement energy instruction. This will get the students ready for the day and **Engaged** in the learning of energy!

Whole Group: Ping Pong Shooters activity (S., 2018) (The 5 E's)

This activity is called "Ping Pong Launchers". This is a perfect activity for transferring energy since this is the focus standard of my unit. This will be the summative assessment at the end of my unit to evaluate the learnings of each student. Energy is being transferred from the balloon to the ping pong ball. Inquiry is embedded in this activity as the students are able to choose different objects to be placed in the shooter and **Explore** the different effects. During this activity, the students will be learning that when the balloon is stretched, you are creating potential energy, and when the balloon is released it has kinetic energy which will transfer to the ping pong balls. However, the teacher will not explain this to the students. Instead, the teacher will allow the students to **Elaborate** on the knowledge of energy and its interactions from the activities and instruction from the past 2 weeks to **Explain** where potential and kinetic energy is during this activity through a recording sheet to document the answers. The teacher will assess the responses via anecdotal notes. The students should be able to recognize the diverse materials have a different transfer of energy. The lighter in weight ones can go further while the heavier ones, or denser, do not go as far which the teacher will not explain to the students either. Both of these **Elaborative Explanations** that the students will hopefully make will act as inquiry. Since the teacher is not telling the students but allowing him/her to Explore the effects his/herself, he/she is providing opportunity for inquiry to happen. The fact of heavier objects not going as far is an introduction to next week's unit plan for weight. My favorite part of this activity is that the students will get to keep one and take it home to do with his/her families! The students can **Explain** to the families what energy interactions are as well as why the transfer of energy is different for each object. Family interaction is essential to child development. This is a great way to ensure families are getting involved with the child's education. This activity integrates science and ELA as the students are **Elaborating** his/her knowledge of energy while practicing his/her writing skills. The ELA standard that goes with this is 3.W.RBPK.8 Recall information from experiences or gather information from print and digital sources to answer a question; with support; take brief notes on sources and sort evidence into provided categories.

Departure: Science Journal Entry (The 5 E's)

During this activity, the students will be writing about the ping pong launchers activity that took place this same day. The students will be writing about his/her **Exploration** through the activity. The teacher will ask the students to **Explain** the differences and similarities between the Newton's Cradles. The students will be required to use the correct form of writing to practice correct grammar, spelling, writing, and illustration structures to integrate science, ELA, and art. This is a form of formative assessment that the teacher will collect to guide his/her instruction and **Evaluate** the learners' progress. This activity provides opportunity for the students to **Explain** what has been taught about energy and its interactions. For the students who need additional support, the teacher can accommodate by limiting the amount of information that needs to be document. For the students who need more of a challenge, the teacher and accommodate by requiring more information to discuss in the journal entry. This activity integrates science and ELA. The students are elaborating his/her knowledge of science while practicing writing skills. The ELA standard that goes with this is 3.W.TTP.2 Write informative/explanatory texts to examine a topic and convey ideas and information.

Two Complete Lesson Plans (e)

Complete Lesson Plan #1: Measuring Marbles

LESSON PLAN TEMPLATE
RESIDENCY I & RESIDENCY II
DATA POINT 2 & DATA POINT 3

Lesson Title: When Things Collide **Grade/Level:** 3rd **Date/Learning Experience #: #1 3/30/18**

Curriculum Standards	Essential Question
State Curriculum Standards – Underline your language/vocabulary words • 3.PS3 Energy is present when objects move; describe effects of energy transfer from one object to another. • 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. ~~Show the data by making a line plot, where the horizontal scale is marked off in appropriate units: whole numbers, halves, or quarters.~~	*What question(s) or big idea(s) drive your instruction?* • What happens when different objects collide with one another? • Why do certain objects have different collisions? • Goal: the students will be able to understand that energy has different effects when transferred from one object to another.

Lesson Objective(s) – Student Learning Outcome(s) for this learning experience

Objectives use active verbs, are measureable (if applicable), and link to standards. Consider using Bloom's Taxonomy or Webb's Depth of Knowledge.

- The learners will be able to recognize and describe the different effects that energy has when being transferred to different objects
- The learners will be able to correctly identify and measure the different measurements of each objects transfer of energy via the activity and work sample (see attached)

Knowing Your Learners

Describe pre-requisite skills students already know that will help them meet the lesson objective(s). What is your evidence that students need this/these skills(s)? This may include pre-assessment data; student personal, cultural or community assets you have gathered and observations you have made concerning your students.

- The learners have been reviewing how to use rulers and tape measures for the past 2 weeks so the learners will be able to measure using the appropriate tools.

- This has been evaluated through work samples and hands on activities to where 70% of the room presented mastery of this topic, 15% presented partial mastery, and 5% presented non-mastery.
- The learners have been learning about energy for the past 2 weeks so they do know what energy is and the different ways to transfer it.
- The learners know that you have to use force and energy to push.
- This has been evaluated through work samples and hands on activities to where 70% of the room presented mastery of this topic, 15% presented partial mastery, and 5% presented non-mastery.

Assessment/Evaluation

How will students demonstrate understanding of lesson objective(s)?

Informal*: How will you monitor student progress towards lesson objectives as you are teaching? (formative assessment)*

- Before the teacher introduces the activity, he/she will review what energy is.
- The teacher will ask the students to define and give examples of energy.
- The teacher will evaluate the responses through discussion
- The teacher will ask the students to define and give examples of transferring energy.
- The teacher will evaluate the responses through discussion
- The teacher will ask the students if he/she is ready to move on by presenting a thumbs up (he/she is ready to move on), thumbs sideways (he/she is kind of ready to move on), or thumbs down (he/she is not ready to move on).
- This will allow the teacher to evaluate the responses and determine if he/she is ready to move on with the lesson.
- While the teacher is introducing the activity he/she will pause at times to ask if the students need him/her to review any information.
- The teacher will pause at times to ask the students if he/she is ready to continue on.
- This will allow the teacher to evaluate the responses and determine if he/she is ready to move on with the instruction.
- The teacher will be evaluating all responses to guided questions and feedback to ensure comprehension is being met with each child.

Formal: *What evidence (formative and/or summative) will you collect and how will you document student learning/mastery of lesson objective(s)? A summative assessment is not needed for every lesson, however, it is required for every lesson submitted for CAEP data collection point (e.g., 3000 courses – ECED 3210,*

Assessment Modifications
What modifications will you make on assessments/evaluations for students with diverse and/or special needs (i.e. students with IEP or 504, struggling learners, advanced learners) and will these modifications be within/for small groups or individuals?

- The students who need more support in math will be in a small group along with an individual instruction to ensure that each child has comprehension of this lesson.
- The students who are struggling learners in math will also be paired during think-pair-share with a student who can help them learn this material by

READ 3100, SPED 3300, PEXS xxxx; 4000 courses – ECED 4680, CUAI 4241, SPED 4710, PEXS xxxx, ECED 4780, CUAI 4391, SPED 4850, PEXS xxxx).

- Each partner group will have the opportunity to fill out the chart, (see attached), where he/she will be answering question and presenting his/her work.
- This will provide opportunity and preparation for the end- of-the- unit test.

Academic Feedback: *How will you give academic feedback? How will your academic feedback promote student understanding of the learning objective(s) or state standard(s)?*

- This lesson starts in the form of whole group which is beneficial for discussion
- The teacher will allow discussion via guided questions and feedback from each child.
- Once the students are assigned partners, they will have the opportunity to have partner discussions to fulfil the outcome of the activity.
- This is beneficial due to the fact that the one-on-one collaboration with another student provides opportunity for more interactive learning to be present via feedback from one another

modeling the correct procedures.

- These steps follow the children's IEP
- For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place.
- The students who need more of a challenge, the teacher will require these students to use centimeters rather than inches.

Assessment Theory/Rationale: *I am administering/giving/collecting _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I will evaluate work samples from the students because my students need to practice recording information. This is appropriate because it is used for assessment and evaluation which will guide the teacher's instruction (Van de Walle, 2014).

Academic Language Demands

Function and Product of the Lesson *The function is the verb, usually a Bloom's verb (e.g., analyze, interpret, recount), that guides the language objective of the lesson. This includes a product that students will either write, say, present, or do that involves Academic Language (e.g. essay, present, recount).*

- **Recognize**- acknowledge the existence, validity, or legality of. This is linked to my objective as I am asking the students to recognize the different effects that energy has when being transferred to different objects

- **Describe**- This is linked to my objective as I am asking the students to describe the different effects that energy has when being transferred to different objects
- **Identify**- establish or indicate who or what (someone or something) is. This is linked to my objective as I am asking the students to correctly identify the different measurements of each objects transfer of energy via the activity and work sample (see attached)
- **Measure**- This is linked to my objective as I am asking the students to correctly measure the different measurements of each objects transfer of energy via the activity and work sample (see attached)

Academic Vocabulary *What specialized terms and phrases do students need to understand and use to complete the function?*

- **Measure**- review
- **Inches- review**
- **Feet- review**

Content Vocabulary *What are the key vocabulary words, symbols, or sounds in this lesson?*

- **Energy- review**
- **Transfer of Energy- review**
- **Transfer- review**
- **Interaction- review**

- The vocabulary cards will be presented during the opening of the lesson in order to have full comprehension of the lesson.
- All of the review vocabulary words will be printed on large note cards with the definition written on the back. These note cards will be placed in the front of the classroom so that the students have access to the cards anytime they may need them during instruction.

~~**Syntax and/or Discourse (not Early Childhood)**~~
~~Syntax~~ ~~*What are the specific ways or conventions for organizing symbols (e.g., linear, horizontal, words (grammar), phrases, or graphics that students need to know to be able to do what you are asking?*~~
~~Discourse~~ ~~*What are the specific ways in which members of a discipline (e.g., scientist, historian, etc.) talk, write, and communicate knowledge that students need to know to be able to do what you are asking (e.g., essays, presentations, performance, journal, debate, historical account, signal)?*~~

Language Supports *What general instruction will you provide to help students in the whole class (e.g., word walls, learning partners, guided notes) learn the discourse/syntax? What focused instruction (e.g., Venn diagrams, graphic organizers, outlines, student examples, sentence stems) will you provide to help students learn the discourse/syntax (can be completed in small groups)? What individual instruction that targets the needs of an individual student(s) will you provide to help that student(s) learn the discourse/syntax? What opportunities will you provide for students to practice language/vocabulary and develop fluency? What tools (e.g., EQ or vocabulary board, Venn diagram, anchor chart, vocabulary cards, graphic organizer, peer support, sentence stems, pictures, table, chart, thinking map, modeling, sort, song, body movements, games) will you use to help students meet the language demands?*

General Supports – *Strategies used to support the whole class and may be used to support more than one demand (e.g., Venn diagram, learning partners, word wall, anchor chart, vocabulary cards, graphic organizer, sentence stems, pictures, table, chart, thinking map, modeling, sort, song, body movements, games). These strategies can cross disciplines and be used in a variety of lessons.*

The students will have general support through the whole group instruction when the teacher introduces the content vocabulary on large printed note cards that define the terms that the students will be using.. The teacher will provide an example worked through with the students before he/she is asked to complete it on his/her own.

Targeted Supports – *Strategies that focus toward a specific language demand (e.g., Venn diagrams, graphic organizers, outlines, examples, sentence stems). These may be addressed during small groups. These can be general supports that are modified for specific students or groups of students.*

Comprehension of what the instruction is about is demanded in this lesson. Due to that, the teacher will be going over examples prior to partner work during whole group. The teacher will also have the examples and vocabulary/ symbol cards in front of each child that needs the extra help during the independent practice.

Individual Supports – *Supports used to target the specific needs of an individual student (e.g., ELL, student with autism, struggling reader or writer, student with significant language delays). These students may or may not have been formally identified and may or may not have an IEP or 504 plan.*

To the learners needing more support, the teacher will provide the students with his/her own note cards that have the terms along with the definitions written on them as well as examples. Also, the teacher assistant will be helping these students with the activities.

Language Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I am providing vocabulary cards because my students need a visualized and concrete assistant in a card that he/she can keep with him/her to become familiar with these terms. This is appropriate in order to have comprehension of what the lesson is about, and it encourages the students to use these terms during discussion (Morrow, 2012).

Instruction – When designing your instruction, consider when you will implement formal and informal assessments/evaluations, when you will provide feedback, and when you will teach academic language. Therefore, this section should include aspects written above.

Lesson Part	Description of Activities and Instruction (Teacher Does)	Description of Activities and Instruction (Students Do)	Meeting Individual & Group Needs /Learning Styles *Plans instruction to meet the needs of individual students. Adaptations are tied to learning objectives. Specific individual or group learning includes requirements in IEP or 504 plans.*
Set/Motivator: *Restate and address your Essential Question. How do you engage student interest in the content of the lesson? How does this relate to previous learning? Use knowledge of students' academic, social, and cultural characteristics.*	• The teacher will being the lesson by reviewing the instruction taught in the 2 weeks	• The learners will be in whole group at this time	• The students who need more support will be in the whole group with the other students.

	• He/she will present the vocabulary note cards at this time • The teacher will be asking questions for review on the lessons that were taught in the two weeks about energy and the transfer of energy. • The teacher will ask the students what energy is and if he/she can give an example of energy inside the classroom. • The teacher will evaluate the response for informal assessment • The teacher will show the vocabulary card with energy written on it as well as the definition on the back • The teacher will ask the students to define transfer of energy and give examples • The teacher will now show the vocabulary card with transfer of energy written on it as well as the definition on the back. • The teacher will evaluate the response for informal assessment. • The teacher will give guided feedback and questions to generate discussion at this time	• The learners will be responding to the questions presented by the teacher in order to form discussion • The learners will define transfer of energy and give examples • The students will participate in the discussion • The students will observe the materials that will be used during the activity	• The students who need more support will be sitting next to students who can aide them in learning this material. • The teacher will check on the students who need more support individually to ask questions that will help determine where he/she is in the understanding of the lesson. • The teacher will allow the students who need more support to explain in as much detail as each child can the reasoning behind the answers. • The teacher will allow more time for the students who need more support to answer questions that

	• The teacher will introduce the activity at this time by showing the students the materials that he she will be working with. • The steps that are presented at this time will be the Engaging process of the lesson as the students are connecting past and present instruction.		the teacher will ask. • For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place
Instructional Procedures/Learning Tasks: *Provide specific step-by-step details of lesson content aligned with objectives, utilizing a variety of teaching strategies.*	1. The teacher will partner the students so that there is an equal balance of leveled learners for each pair 2. The teacher will demonstrate how the students will perform the activity. 3. The teacher will explain that the ramp, surface, and the starter marble will be constant through the whole activity meaning that they will never change; however, everything else will change. 4. The teacher will show the ramp and starter marble to the students as he/she is explaining this step. 5. The teacher will explain that the students will be observing the different effects and transfer of	1. The students will be join his/her partner. 2. The students will be listening and paying attention as the teacher models how to do this step.	1. The students who need additional support will be partnered with a student who can assist him/her. 2. The teacher will accommodate the questions that are asked to meet each child's level of understanding. 3. The teacher will pair the students who need additional support with students who are capable of helping. 4. The teacher will allow the teacher assistant to work with the

	energy each object has on one another. 6. The teacher will demonstrate the objects that the students will be using (see material list) 7. The teacher will pause for questions that students might have and ask the students to give a thumbs up/sideways/down if he/she is ready to move on. 8. The teacher will explain that the students will put one of the objects at the bottom of the ramp and the starter marble at the top of the ramp 9. The teacher will ask the students to predict what they think will happen when the teacher lets the started marble roll down the ramp and hit the other marble 10. The teacher will allow time for the partners to discuss and then tell him/her. 11. The teacher will evaluate the responses and create discussion with further questions of why do you think so, what would happen if, etc. 12. The teacher will demonstrate and model	3. The students will ask questions or make comments if needed as well as show a thumbs up/sideways/down representing his/her understanding of the lesson. 4. The students will be listening and paying attention as the teacher models how to do this step. 5. The students will predict what will happen at this stage by discussing it with his/her partner then sharing with the teacher. 6. The students will be listening and paying attention as the teacher models how to do this step. 7. The students will explain his/her	students who need additional support while he/she works on the activity and worksheet 5. For the students who need more of a challenge, the teacher can pair him/her with a student who needs additional support 6. For the students who need more of a challenge, the teacher can require these students to measure using centimeters rather than inches.

	this step of releasing the starter marble to hit the other marble. 13. The teacher will ask the students if his/her hypothesis was correct. 14. The teacher will ask the students to explain why the other marble rolled 15. The teacher will be evaluation responses and looking for students to use the terminology of energy and transfer of energy. 16. The teacher will remind students of how to use a rule and measuring tape. 17. The teacher will model measuring the distance that the marble rolled after the transfer of energy. 18. The teacher will model recording the data on the sheet that is provided to each partner (see attached) 19. The teacher will pause for questions that students might have and ask the students to give a thumbs up/sideways/down if he/she is ready to move on. 20. The teacher will explain that the students	reasoning of why the other marble rolled 8. The students will be listening and paying attention as the teacher models how to do this step. 9. The students will be listening and paying attention as the teacher models how to do this step. 10. The students will ask questions or make comments if needed as well as show a thumbs up/sideways/down representing his/her understanding of the lesson. 11. The students will be listening and paying attention as the teacher models how to do this step.	

	will be doing all the steps that he/she did on his/her with the partner except with the other materials provided. 21. The teacher will be sure to go over the work sample one more time so that the students understand how to fill it out. 22. The teacher will be walking around the room observing, providing guided feedback, questioning, and discussing with the students as they are working.	12. The student will participate in the activity, discussion with the teacher, and collaboration with his/her partner.	
Questions and/or activities for higher order thinking: *These are open-ended and cannot be answered by yes or no. These can be asked at various points throughout the lesson and guide rather than direct student thinking.*	• Why do some objects transfer different amounts of energy when being compared to others? • What would happen if we changed the ramp or surface? • What does it mean when we say energy is being transferred?		• The teacher will provide questions that would better fit the needs of the students who need additional support. • The teacher will provide more time for the students who need additional support to answer the questions asked.

Closure: *Makes clear connections to real-world situations and requires students to reflect on and apply their learning through verbal or written expression.*	• "You all did a great job with this activity! Give a thumbs up if you liked it, sideways thumb if it was okay, or a thumbs down if you did not like it." (response) • "Can someone tell me what happened when your marble hit the playdough?" (response) "Why did it do that?" • "I want everyone to take a sticky note and write one object that you would like to see the starter marble transfer energy with. After you write your object stick it to the end of your desk so I know who is ready to move on!" • This will create engagement to a future lesson which will take place during the next week's unit on weight.	• The learners will give a thumbs up/sideways/down according to how he/she liked the activity. • The learners will explain what happened when the marble hit the playdough, and he/she will explain why it happened in order to restate the learning. • The learners will take a sticky note and write one object that he/she would like to see the starter marble transfer energy with.	• The students who need additional support will be in whole group with the other students. • The students who need additional support will be sitting next to students who can aide them in learning this material. • The teacher will check on the students who need additional support individually to ask questions that will help determine where he/she is in the understanding of the lesson. • The teacher will allow the students who need additional support to explain in as

			much detail as each child can the reasoning behind the answers. • The teacher will allow more time for the students who need additional support to answer questions that the teacher will ask • For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place

Material/Resources/Technology: *What do you need for this lesson? Identify the specific materials, resources and instructional technologies that you will use. How will you model these technologies to engage students and add value to and improve their learning?*

- **Printed Materials**: vocabulary note cards, work sample
- **General Materials**: paper towel rolls to make the ramp, books to stack for the ramp, rulers and measuring tap, big marbles, small marbles, craft pompoms, playdough, ping pong ball, croquet balls, etc.
- **Technology Materials**: N/A

Co-Teaching Strategies Used: *(highlight and explain all that apply): One Teach, One Observe; One Teach, One Assist; Station Teaching; Parallel Teaching; Supplemental Teaching; Alternative (Differentiated); Team Teaching*

- One Teach, On Assist will be used during this lesson to ensure that each child is gaining comprehension of the lesson.
- I will choose this strategy also because I have students who do need the extra help from the assistant for an accommodation and since this is an active activity, more help may be needed for classroom management.

Instruction Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

I am collecting a work sample because my students need practice with recording information. This is appropriate because it allows the teacher to gain knowledge of what each child excels or struggles with. This will guide future instruction. (Van de Walle, 2014).

Meeting Individual & Group Needs Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I am providing accommodations to the activities because some of my students need additional help on this activity with time and material needed to excel. This is appropriate because it provides options in the classroom and needed accommodation to those who may require teaching assistance, modified instruction, and refined responses (Van de Walle, 2014). Due to the fact that physical science requires hands on learning practices, the teacher needs to create accommodations so that each child has the same opportunity to take part in hands on activities to enhance the learning (Worth & Grollman, 2009).

Management/Safety Issues

Management Issues: *Explanation of processes and/or procedures, transitions from one activity to another, strategies for gaining attention, motivating students to engage in the lesson and focus on learning (e.g. work boards, posted procedures, modeling, positive feedback, redirection).*

Due to the fact that this is an active activity, the teacher must enhance the classroom rules, procedures, and transitional activities prior to the lesson.

Safety Issues: *Are there any safety issues that need to be considered when teaching this lesson (e.g., outdoor activities, lab experiments, equipment use)? Expectations are explicitly outlined and are included as part of the instructional process.*

Due to the fact that this is an active activity, the teacher must go over the safety precautions that each child must take when doing this activity. Safety precautions like not running in the classroom, not putting the objects in our mouths, using the measuring tools appropriately, etc. are things that the teacher needs to watch for and inform students not to do. The teacher will allow the students to interact by evenly divided partners to ensure safety.

References

Morrow, L. M. (2012*). Literacy development in the early years: Helping children read and write* (8th ed.)
Boston: Pearson.

Van de Walle, J. A., Lovin, L. H., Karp, K. S., & Bay-Williams, J. M. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades pre-k-2 (2Nd ed.*). Boston, MA: Pearson.

Worth, K., & Grollman, S. H. (2009). Worms, shadows, and whirlpools: Science in the early childhood classroom. Newton, MA: EDC.

Object	What do you think will happen?	Was your hypothesis correct? Why/why not?	What was the measurement?	Describe what happened when the objects transferred energy

Complete Lesson Plan #2: Ping Pong Launchers

LESSON PLAN TEMPLATE
RESIDENCY I & RESIDENCY II
DATA POINT 2 & DATA POINT 3

Lesson Title: Ping Pong Launchers **Grade/Level:** 3rd **Date/Learning Experience #: #2 4/1/18**

Curriculum Standards	Essential Question
State Curriculum Standards – Underline your language/vocabulary words • 3.PS3 Energy is present when objects move; describe effects of energy transfer from one object to another.	*What question(s) or big idea(s) drive your instruction?* • What different affects create different effects for energy being transferred? • Students will understand that energy is present when objects come together.

Lesson Objective(s) – Student Learning Outcome(s) for this learning experience

Objectives use active verbs, are measureable (if applicable), and link to standards. Consider using Bloom's Taxonomy or Webb's Depth of Knowledge.

- The learners will be able to recognize and describe the different effects that energy has when being transferred to different objects
- The learners will be able to identify what objects have a greater transfer of objects in comparison to others.

Knowing Your Learners

Describe pre-requisite skills students already know that will help them meet the lesson objective(s). What is your evidence that students need this/these skills(s)? This may include pre-assessment data; student personal, cultural or community assets you have gathered and observations you have made concerning your students.

- The learners have been reviewing the topic of energy for the past two weeks, so he/she does know the basics of energy as well as energy being transferred.
- This is the last lesson and activity of the unit, and I feel as if the students have an understanding that is good enough for us to be able to complete this lesson.
- This has been evaluated through work samples, evaluated responses, and projects over the past two weeks where 70% of the room presented mastery of this topic, 15% presented partial mastery, and 5% presented non-mastery.

Assessment/Evaluation

How will students demonstrate understanding of lesson objective(s)? **Informal***: How will you monitor student progress towards lesson objectives as you are teaching? (formative assessment)* • Before the teacher introduces the activity, he/she will review what energy is. • The teacher will ask the students to define and give examples of energy.	**Assessment Modifications** *What modifications will you make on assessments/evaluations for students with diverse and/or special needs (i.e. students with IEP or 504, struggling learners, advanced learners) and will these modifications be within/for small groups or individuals?*

• The teacher will evaluate the responses through discussion • The teacher will ask the students to define and give examples of transferring energy. • The teacher will evaluate the responses through discussion • The teacher will ask the students if he/she is ready to move on by presenting a thumbs up (he/she is ready to move on), thumbs sideways (he/she is kind of ready to move on), or thumbs down (he/she is not ready to move on). • This will allow the teacher to evaluate the responses and determine if he/she is ready to move on with the lesson. • While the teacher is introducing the activity he/she will pause at times to ask if the students need him/her to review any information. • The teacher will pause at times to ask the students if he/she is ready to continue on. • This will allow the teacher to evaluate the responses and determine if he/she is ready to move on with the instruction. • The teacher will be evaluating all responses to guided questions and feedback to ensure comprehension is being met with each child. **Formal:** *What evidence (formative and/or summative) will you collect and how will you document student learning/mastery of lesson objective(s)? A summative assessment is not needed for every lesson, however, it is required for every lesson submitted for CAEP data collection point (e.g., 3000 courses – ECED 3210, READ 3100, SPED 3300, PEXS xxxx; 4000 courses – ECED 4680, CUAI 4241, SPED 4710, PEXS xxxx, ECED 4780, CUAI 4391, SPED 4850, PEXS xxxx).* • Each partner group will have the opportunity to fill out the work sample, (see attached), where he/she will be answering questions and presenting his/her work. • This will provide opportunity and preparation for the end- of-the- unit test. **Academic Feedback:** *How will you give academic feedback? How will your academic feedback promote student understanding of the learning objective(s) or state standard(s)?* • This lesson starts in the form of whole group which is beneficial for discussion • The teacher will allow discussion via guided questions and feedback from each child. • Once the students are assigned partners, they will have the opportunity to have partner discussions to fulfil the outcome of the activity. This is beneficial due to the fact that the one-on-one collaboration with another student provides opportunity for	• The students who need more support will be in a small group along with an individual instruction to ensure that each child has comprehension of this lesson. • The students who are struggling learners will also be paired during think-pair-share with a student who can help them learn this material by modeling the correct procedures. • These steps follow the children's IEP • For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place.

more interactive learning to be present via feedback from one another	• The students who need more of a challenge, the teacher will require these students to use centimeters rather than inches.

Assessment Theory/Rationale: *I am administering/giving/collecting _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I will evaluate work samples from the students because my students need to practice recording information. This is appropriate because it is used for assessment and evaluation which will guide the teacher's instruction (Van de Walle, 2014).

Academic Language Demands

Function and Product of the Lesson *The function is the verb, usually a Bloom's verb (e.g., analyze, interpret, recount), that guides the language objective of the lesson. This includes a product that students will either write, say, present, or do that involves Academic Language (e.g. essay, present, recount).*

- **Recognize**- acknowledge the existence, validity, or legality of. This is linked to my objective as I am asking the students to recognize the different effects that energy has when being transferred to different objects
- **Describe**- This is linked to my objective as I am asking the students to describe the different effects that energy has when being transferred to different objects
- **Identify**- establish or indicate who or what (someone or something) is. This is linked to my objective as I am asking the students to correctly identify what objects have a greater transfer of objects in comparison to others.

Academic Vocabulary *What specialized terms and phrases do students need to understand and use to complete the function?*

- **Predict-** review

Content Vocabulary *What are the key vocabulary words, symbols, or sounds in this lesson?*

- **Energy-** review; power derived from the utilization of physical or chemical resources, especially to provide light and heat or to work machines.
- **Transfer of Energy-** new; The conversion of one form of energy into another, or the movement of energy from one place to another.
- **Interaction-** new; the total energy that is caused by an interaction between the objects being considered

- **Potential Energy-** new; the energy possessed by a body by virtue of its position relative to others, stresses within itself, electric charge, and other factors.
- **Kinetic Energy-** new; energy that a body possesses by virtue of being in motion.

- The vocabulary cards will be presented during the opening of the lesson in order to have full comprehension of the lesson.
- All of the vocabulary words will be printed on large note cards with the definition written on the back. These note cards will be placed in the front of the classroom so that the students have access to the cards anytime they may need them during instruction.

~~**Syntax and/or Discourse (not Early Childhood)**~~
~~Syntax~~ ~~*What are the specific ways or conventions for organizing symbols (e.g., linear, horizontal, words (grammar), phrases, or graphics that students need to know to be able to do what you are asking?*~~
~~Discourse~~ ~~*What are the specific ways in which members of a discipline (e.g., scientist, historian, etc.) talk, write, and communicate knowledge that students need to know to be able to do what you are asking (e.g., essays, presentations, performance, journal, debate, historical account, signal)?*~~

Language Supports *What general instruction will you provide to help students in the whole class (e.g., word walls, learning partners, guided notes) learn the discourse/syntax? What focused instruction (e.g., Venn diagrams, graphic organizers, outlines, student examples, sentence stems) will you provide to help students learn the discourse/syntax (can be completed in small groups)? What individual instruction that targets the needs of an individual student(s) will you provide to help that student(s) learn the discourse/syntax? What opportunities will you provide for students to practice language/vocabulary and develop fluency? What tools (e.g., EQ or vocabulary board, Venn diagram, anchor chart, vocabulary cards, graphic organizer, peer support, sentence stems, pictures, table, chart, thinking map, modeling, sort, song, body movements, games) will you use to help students meet the language demands?*

General Supports – *Strategies used to support the whole class and may be used to support more than one demand (e.g., Venn diagram, learning partners, word wall, anchor chart, vocabulary cards, graphic organizer, sentence stems, pictures, table, chart, thinking map, modeling, sort, song, body movements, games). These strategies can cross disciplines and be used in a variety of lessons.*

The students will have general support through the whole group instruction when the teacher introduces the content vocabulary on large printed note cards that define the terms that the students will be using.. The teacher will provide an example worked through with the students before he/she is asked to complete it on his/her own.

Targeted Supports – *Strategies that focus toward a specific language demand (e.g., Venn diagrams, graphic organizers, outlines, examples, sentence stems). These may be addressed during small groups. These can be general supports that are modified for specific students or groups of students.*

Comprehension of what the instruction is about is demanded in this lesson. Due to that, the teacher will be going over examples prior to partner work during whole group. The teacher will also have the examples and vocabulary/ symbol cards in front of each child that needs the extra help during the independent practice.

Individual Supports – *Supports used to target the specific needs of an individual student (e.g., ELL, student with autism, struggling reader or writer, student with significant language delays). These students may or may not have been formally identified and may or may not have an IEP or 504 plan.*

To the learners needing more support, the teacher will provide the students with his/her own note cards that have the terms along with the definitions written on them as well

as examples. Also, the teacher assistant will be helping these students with the activities.

Language Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I am providing vocabulary cards because my students need a visualized and concrete assistant in a card that he/she can keep with him/her to become familiar with these terms. This is appropriate in order to have comprehension of what the lesson is about, and it encourages the students to use these terms during discussion (Morrow, 2012).

Instruction – When designing your instruction, consider when you will implement formal and informal assessments/evaluations, when you will provide feedback, and when you will teach academic language. Therefore, this section should include aspects written above.

Lesson Part	Description of Activities and Instruction (Teacher Does)	Description of Activities and Instruction (Students Do)	Meeting Individual & Group Needs /Learning Styles *Plans instruction to meet the needs of individual students. Adaptations are tied to learning objectives. Specific individual or group learning includes requirements in IEP or 504 plans.*
Set/Motivator: *Restate and address your Essential Question. How do you engage student interest in the content of the lesson? How does this relate to previous learning? Use knowledge of students' academic, social, and cultural characteristics.*	• The teacher will begin the lesson by asking the students if he/she knows what energy transfer is • The teacher will ask the student to give an example where energy is transferring • The teacher will ask the students if he/she knows what potential and kinetic energy is • The teacher will now present the vocabulary note cards at this time • The teacher will now ask the students to give an example of potential and kinetic energy	• The students will be in small group at this time • The students will respond to the questions presented by the teacher in order to form discussion	• The students who need more support will be in the whole group with the other students. • The students who need more support will be sitting next to students who can aide them in learning this material. • The teacher will check on the students who need more support individually to

	• The teacher will evaluate the response for formative assessment.	• The learners will give examples of potential and kinetic energy	ask questions that will help determine where he/she is in the understanding of the lesson. • The teacher will allow the students who need more support to explain in as much detail as each child can the reasoning behind the answers. • The teacher will allow more time for the students who need more support to answer questions that the teacher will ask. • For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place

Instructional Procedures/Learning Tasks: *Provide specific step-by-step details of lesson content aligned with objectives, utilizing a variety of teaching strategies.*	23. The teacher will prepare cups that have the bottom cut out with a balloon attached to the cut out end prior to the lesson 24. The teacher will give each student a cup and balloon 25. The teacher will model how to use the cup and balloon combination to shoot objects 26. The teacher will present the materials that the students can shoot out of the cup 27. The teacher will ask the students will predict what object he/she thinks will shoot the farthest and what object will shoot the lowest 28. The teacher will allow the students to pick his/her own materials and use them however he/she likes to ensure inquiry 29. The teacher will be going around to each child asking questions and generating discussion 30. The teacher will ask the students what is potential and kinetic energy in this activity 31. The teacher will ask the students to **Evaluate** his/her predictions and hypothesizes	1. The students will be in small group listening to the teacher's instructions 2. Each student will receive a cup and balloon tool 3. The students will predict what object will shoot the farthest and what object will not go the farthest 4. The students will pick materials for him/her to shoot out of the cup 5. The students will be observing how each material transfers energy differently 6. The students will explain what is potential and kinetic energy in this activity 7. The students will interact with one another to compare interactions	7. The students who need additional support will be partnered with a student who can assist him/her. 8. The teacher will accommodate the questions that are asked to meet each child's level of understanding. 9. The teacher will pair the students who need additional support with students who are capable of helping. 10. The teacher will allow the teacher assistant to work with the students who need additional support while he/she works on the activity and worksheet 11. For the students who need more of a challenge, the teacher can pair him/her with a

	32. The teacher will ask the students to **Explain** why there are differences in how the objects react 33. The teacher will ask the students will record his/her observations on the document paper (see attached) 34. The teacher will bring the attention back to him/her and ask the students to identify how energy was being transferred 35. The teacher will ask the students to identify the potential and kinetic energy in the activity and why it would be potential/kinetic	8. The students will Evaluate his/her prediction and hypothesis and give reasoning of why or why not he/she was correct 9. The students will explain why there are differences in how the objects react 10. The students will record his/her observations on the document paper (see attached) 11. The students will explain how energy was transferred during this activity 12. The students will identify what was potential and kinetic energy and why it would be	student who needs additional support For the students who need more of a challenge, the teacher can require these students to measure using centimeters rather than inches.
Questions and/or activities for higher order thinking: *These are open-ended and cannot be answered by yes or no. These can be asked at various points throughout the lesson and guide rather than direct student thinking.*	• Why do some objects transfer different amounts of energy when being compared to others? • What does it mean when we say energy is being transferred? • Why is it important to understand and learn about energy and its interactions?		• The teacher will provide questions that would better fit the needs of the students who need additional support. • The teacher will provide more time for the students

			who need additional support to answer the questions asked.
Closure: *Makes clear connections to real-world situations and requires students to reflect on and apply their learning through verbal or written expression.*	• "You all did a great job with this activity! Give a thumbs up if you liked it, sideways thumb if it was okay, or a thumbs down if you did not like it." (response) • "I need one person to explain to me what transferring energy means" (response) • "Great job! Now I need someone to give me an example of energy beign transferred" (response) • "Good example! Someone tell me what potential and kinetic energy is" (response) • "Yes! Can someone give us an example of potential and kinetic energy?" (response) • "Wonderful! I hope you all enjoyed this activity! You can keep your ping pong shooters and take them home to your families. Teach them about energy transfer using this activity!"	• The learners will give a thumbs up/sideways/down according to how he/she liked the activity. • The learners will explain what transferring energy means • The learners will give an example of energy being transferred • The learners will explain what potential and kinetic energy is • The learners will give an example of potential and kinetic energy	• The students who need additional support will be in whole group with the other students. • The students who need additional support will be sitting next to students who can aide them in learning this material. • The teacher will check on the students who need additional support individually to ask questions that will help determine where he/she is in the understanding of the lesson.

			• The teacher will allow the students who need additional support to explain in as much detail as each child can the reasoning behind the answers. • The teacher will allow more time for the students who need additional support to answer questions that the teacher will ask For the students who need more of a challenge, the teacher will plan and ask higher order questions to ensure higher order thinking to take place

Material/Resources/Technology: *What do you need for this lesson? Identify the specific materials, resources and instructional technologies that you will use. How will you model these technologies to engage students and add value to and improve their learning?*

- **Printed Materials**: vocabulary note cards, work sample
- **General Materials**: cups, tape, balloons, ping pong balls, mini marshmallows, craft pomp oms, rubber balls, different sized balls, etc.
- **Technology Materials**: N/A

Co-Teaching Strategies Used: *(highlight and explain all that apply): One Teach, One Observe; One Teach, One Assist; Station Teaching; Parallel Teaching; Supplemental Teaching; Alternative (Differentiated); Team Teaching*

- One Teach, On Assist will be used during this lesson to ensure that each child is gaining comprehension of the lesson.
- I will choose this strategy also because I have students who do need the extra help from the assistant for an accommodation and since this is an active activity, more help may be needed for classroom management.

Instruction Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

I am collecting a work sample because my students need practice with recording information. This is appropriate because it allows the teacher to gain knowledge of what each child excels or struggles with. This will guide future instruction. (Van de Walle, 2014).

Meeting Individual & Group Needs Theory/Rationale: *I am _____ because my students need_____. This is appropriate because _____. Provide citation (APA, 6th edition) for learning theory and/or research.*

- I am providing accommodations to the activities because some of my students need additional help on this activity with time and material needed to excel. This is appropriate because it provides options in the classroom and needed accommodation to those who may require teaching assistance, modified instruction, and refined responses (Van de Walle, 2014). Due to the fact that physical science requires hands on learning practices, the teacher needs to create accommodations so that each child has the same opportunity to take part in hands on activities to enhance the learning (Worth & Grollman, 2009).

Management/Safety Issues

Management Issues: *Explanation of processes and/or procedures, transitions from one activity to another, strategies for gaining attention, motivating students to engage in the lesson and focus on learning (e.g. work boards, posted procedures, modeling, positive feedback, redirection).*

Due to the fact that this is an active activity, the teacher must enhance the classroom rules, procedures, and transitional activities prior to the lesson.

Safety Issues: *Are there any safety issues that need to be considered when teaching this lesson (e.g., outdoor activities, lab experiments, equipment use)? Expectations are explicitly outlined and are included as part of the instructional process.*

Due to the fact that this is an active activity, the teacher must go over the safety precautions that each child must take when doing this activity. Safety precautions like not running in the classroom, not putting the objects in our mouths, using the tools appropriately, beign cautious of the space around you before shooting the object out of the cup, etc. These are things that the teacher needs to watch for and inform students not to do. The teacher will allow the students to interact by evenly divided partners to ensure safety

References

Morrow, L. M. (2012*). Literacy development in the early years: Helping children read and write* (8th ed.)
Boston: Pearson.

Van de Walle, J. A., Lovin, L. H., Karp, K. S., & Bay-Williams, J. M. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades pre-k-2 (2Nd ed.*). Boston, MA: Pearson.

Worth, K., & Grollman, S. H. (2009). Worms, shadows, and whirlpools: Science in the early childhood classroom. Newton, MA: EDC.

Ping Pong Launchers Activity Sheet

1. What materials are you using?

_____

2. What is the potential and kinetic energy in this activity?

_____

_____

3. What do you predict will happen? Why?

_____

_____

4. What really happened?

_____

_____

5. Was your hypothesis correct? Explain why/why not

_____

_____

Unit Evaluation Plan (f)

Formative

For the formative assessment during these 2 weeks, the teacher will implement formative assessment each day to guide his/her instruction. These formative assessments will prepare the students for the end of the unit summative assessment which is a final project. The teacher will get a good idea of the students' learning progress through these formative assessments. Through these assessments, the teacher will be able to gain knowledge of the areas where students are excelling and the areas where the students need more practice. There are many diverse types of formative assessments that the teacher will be collecting from these 2 weeks. These assessment forms would be work samples, journal entries, anecdotal notes from evaluated responses/ discussion, and evaluated projects.

Formative Assessment

Energy Detectives Work Sample (Day 1 activity).

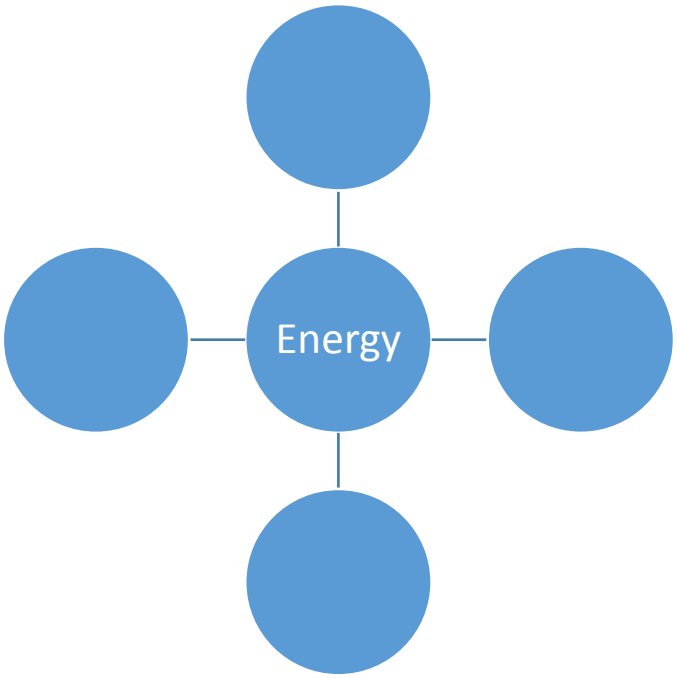
#1	Draw and write the energy form you found!
#2	Draw and write the energy form you found!
#3	Draw and write the energy form you found!
#4	Draw and write the energy form you found!
#5	Draw and write the energy form you found!
#6	Draw and write the energy form you found!

Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Formative Assessment

Mind Map Work Sample (Day 2).

The teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.



Formative Assessment

Potential and Kinetic Energy Sticky Notes (Day 3).

The students will write an example of a potential energy as well as his/her name on a sticky note on the correct side of the anchor chart labeled POTENTIAL and KINETIC. Then, the students will write an example of a kinetic energy as well as his/her name on a sticky note on the correct side of the anchor chart. Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Transfer of Energy Discussion (Day 4).

The teacher will assess the students' knowledge of transferring energy through discussion/ replies while taking anecdotal notes. Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Begin Newton's Cradle Discussion (Day 5).

The teacher will assess the students' understanding of energy and its interaction with the Newton's Cradle by evaluating the replies and discussion by taking anecdotal notes. Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Finish Newton's Cradle Discussion (Day 6).

The teacher will assess the students' understanding of energy and its interaction with the Newton's Cradle by evaluating the replies and discussion by taking anecdotal notes. Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Marble Activity Discussion and Journal Entry (Day 7).

The teacher will assess the students' understanding of energy and its interaction with the marble activity by evaluating the replies and discussion by taking anecdotal notes. Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Domino Activity Work Sample (Day 8).

# of Dominos (should be consistent)	Measured distance between each domino	Measured time	Reason?

Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Formative Assessment

Measuring Marbles Work Sample (Day 9).

Object	What do you think will happen?	Was your hypothesis correct? Why/why not?	What was the measurement?	Describe what happened when the objects transferred energy

Also, the teacher will evaluate the children's explanation of energy and its interactions through the science journal entry. This is an activity that will happen daily, so the teacher can evaluate the understanding of the instruction taught and the projects completed each day to ensure that every student is advancing in the learning process of energy and its interactions.

Summative

For the summative end of unit test, the teacher will provide project based assessment that will assess the children's learning of energy and its interactions. The project based assessment is the final activity Ping Pong Launchers. The teacher will be able to use this information to determine which children understand shapes and which children need more practice with energy and its interactions through evaluating the process and products that are made. The summative assessment will ask the students to use terminology as well as provide explanation of transferring energy. The teacher will be assessing the knowledge of potential and kinetic energy as well. The teacher will use this information to guide instruction to determine whether the class is ready to move on, or if the class needs to keep practicing the concept of energy and its interactions.

Summative Assessment

Ping Pong Launchers Work Sample (Day 10).

Ping Pong Launchers Activity Sheet

1. What materials are you using?

2. What is the potential and kinetic energy in this activity?

3. What do you predict will happen? Why?

4. What really happened?

5. Was your hypothesis correct? Explain why/why not

A Letter to Parents (g)

Dear Families,

Over the next two weeks, we will be exploring energy and its interactions! This is a fun and exciting time for our students as the learning process will be growing. During the next 2 weeks our reading, math, science, and all other areas of practices will be centered around the subject of transferring energy. I hope this unit will be fun, engaging, and meaningful to you and your child! These next 2 weeks are to ensure that your child is getting the most experience in practicing his/her recognition of energy and its interactions. This is a learning opportunity that can take place at home also! I will be attaching two activities that you can do at home with your child to enhance the learning process (please see the additional sheet). This will provide time for you to get involved in your child's education. The family can take part in this with the center at home so that you and the child can take full advantage of this great learning experience. Please take part in this opportunity to bond, engage, and interact with your child in his/her learning process. Have fun with this and make memories that will last forever!

If you have any questions or concerns please email or call me

missanna@gmail.com 423-555-5555

Anna Sexton

Anna Sexton

Energy Detectives

For the first take home activity, you and your child will be interacting in the learning of all types of energy! This goes along with our 2 week unit due to the fact that at the end of the 2 weeks, your child will be able to understand what the interaction of energy is. So to start this 2 week unit, I want to be sure that students know what energy is. This is why this activity is so important!

How?

1. Look for different forms of energy in your house, in the car, outside, etc.
2. Document the energy that you found (see attached sheet)
3. Identify the type of energy that was found (physical, electrical, sound, etc.)

Why?

The purpose of this activity is to get the families engaged in the child's learning process that corresponds with the instruction from the classroom. The children will learn the basics of energy and recognizing the different types. This is an activity that we completed in class, so your child can help explain the instructions.

Benefits

This is an activity to ensure that your child is getting the most experience in practicing his/her recognition of the different ways we use energy. The family can keep this activity at home so that you and the child can take full advantage of this great learning experience. Please take advantage of this opportunity to bond, engage, and interact with your child in his/her learning process.

#1	Draw and write the energy form you found!
#2	Draw and write the energy form you found!
#3	Draw and write the energy form you found!
#4	Draw and write the energy form you found!
#5	Draw and write the energy form you found!
#6	Draw and write the energy form you found!

Ping Pong Launchers Take Home Activity

For the second take home activity, you and your child will be practicing the learning of potential and kinetic energy through transferring energy. This is a very easy and fun activity that you and your child will both benefit from! Get involved with your child in this activity!

How?

1. Make sure that the balloon is attached properly
2. Place different objects in the cup to launch out (I have provided a baggy full of objects)
3. Shoot the objects out of the cup and allow the child to explain the interaction that is happening

Why?

The purpose of this center is to get the families engaged in the child's learning process that corresponds with the instruction from the classroom. The children will learn the basics of energy and its interactions. We have completed this activity in class so your child will be able to assist you during the activity!

Benefits

This is a center that will be sent home to ensure that your child is getting the most experience in practicing his/her recognition of the different ways energy is transferred. The family can keep this center at home so that you and the child can take full advantage of this great learning experience. Please take advantage of this opportunity to bond, engage, and interact with your child in his/her learning process.

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List of Resources Used in the Unit (i)

Materials and supplies

- "Energy is Everywhere"
- "Energy makes things Happen"
- Newton's Cradle
- Popsicle sticks
- String
- Hot glue
- Glue
- Large beads
- Sports materials (soccer ball, basketball, football, baseball and bat, tennis, etc.)
- Marbles
- Ruler/ measuring tools
- Ramp (paper towel rolls)
- Different objects for measuring marbles activity (craft pompoms, rocks, ping pong ball, bouncy ball, etc.)
- Dominos
- Stop watch
- Cups
- Balloons
- Ping pong balls
- Different objects for ping pong shooter activity (craft pompoms, rocks, ping pong ball, bouncy ball, etc.)
-

Print and non-print

- Vocabulary cards
- Work Samples (see formative assessment section)
- End of unit exam (see summative assessment)
- Potential and Kinetic energy anchor chart
- How is Energy Transferred anchor chart
- Science journals

Technology resources

- YouTube
- GoNoodle