Inquiry Lesson Plan Template

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Lesson Title:	*You have the potential…energy!*	
Lesson Topic:	*Forms of energy – potential and kinetic*	
Context		
Grade Level, Course	*7th grade general science*	
Anticipated timeline	*3-4 days*	
Learning Goals and Assessments		
Big Idea	*Write a paragraph describe the "big idea" concept(s) you hope your students will learn. (Tip: Write an answer to a one-question essay test you could use to find out if your students understand the idea.)*	
Objectives	**Learning Outcomes** Successful learners will…	**Assessments (EVALUATE phase)**
	• Explain that energy can result in motion. • Describe different forms of energy, including mechanical, chemical, electrical, sound, light, and heat. • Summarize the general points of the lesson and be able to support their points with reasoning and evidence.	• Summative assessment: Forms of Energy Worksheet (attached) • Formative assessment (prior to beginning the lesson): Students will answer the question, "Think of one activity you completed today or watched someone complete today that required energy. What type of energy do you think you used to complete the activity?" and turn their answers in.
State Standards alignment	Process Skills: **SEPS.1** Posing questions (for science) and defining problems (for engineering) **SEPS.4** Analyzing and interpreting data SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) **SEPS.7** Engaging in argument from evidence **SEPS.8** Obtaining, evaluating, and communicating information	

	Content Skills: **7.PS.8** Investigate a process in which energy is transferred from one form to another and provide evidence that the total amount of energy does not change during the transfer when the system is closed. (Law of conservation of energy) **7.PS.9** Compare and contrast the three types of heat transfer: radiation, convection, and conduction.
The Driving Question	
How do you use energy everyday? *What are some different forms you see energy in throughout the day?* *Is there anything that different forms of energy have in common?* *What are some differences in different forms of energy?*	
5E Phases - write a brief statement explaining which activities below represent the 5E phases	
Engage	**The teacher should show a YouTube video about the two types of energy, potential and kinetic energy. The video should be followed by a short discussion to make sure that students obtained the information that they needed from the video:** **1. What kind of energy is stored or not being used at the moment? (Potential energy)** **2. What is an example of Potential Energy? (example response: ball on top of a hill, a water balloon)** **3. What is energy that is in motion? (Kinetic energy)** **4. What is an example of Kinetic Energy? (example response: ball rolling down a hill, when the water balloon pops)** **After the discussion, the teacher should:** **1. Before handing out the rubber bands remind students to follow directions. Wait until instructed to do anything with the rubber band and always aim away from people, especially their faces.** **2. Hand out 1 rubber band to each student. After each student has a rubber band the teacher ask students to demonstrate Potential Energy with the rubber band (the students should pull the rubber band tight, to show that it is energy in waiting or is stored).** **3. After showing Potential energy the teacher should ask students to demonstrate Kinetic energy with the rubber band (the students should let the rubber band snap/fly across the room/hit the desk/etc to show that the rubber band is energy in motion or when the energy is released.** **4. Practice two or more times. Say potential energy. Everyone should stretch their rubber band in their hand and ready to go. Then say 'Kinetic energy!' and everyone releases their rubber band.**

	5. Discuss other examples of potential and kinetic energy in the classroom. A pencil and a blank piece of paper are potential. Then when you pick up the pencil and start writing on it, this is now kinetic. Have students come up with ideas. **6. Collect the rubber bands from students before moving on to Explore portion of the lesson.**
Explore	**The teacher should explain that these types of energy come in many forms. After that short discussion, it is time to begin the Forms of Energy Picture Sort that should have been previously arranged throughout the room. Students must choose the form of energy for each image and support it with logical reasoning.**
Explain	**After enough time has passed, the teacher should bring the small groups back together for whole group explanation. The teacher should use the Forms of Energy PowerPoint to guide the discussion and should refer back to the images from their activity to correct any misconceptions that may have developed.**
Elaborate	**To apply what they have learned, the teacher should have the students complete the summative assessment (see attached). Upon completion of the assessment, the teacher should have students trade papers and look over the answers of their peers. They should discuss any inconsistencies to clarify understanding and misconceptions. If one student makes a differ claim, they should discuss why that was and if it is a logical reasoning.**
Evaluate	**At the end of the lesson, the students will again answer the question, "Think of one activity you completed today or watched someone complete today that required energy. What type of energy do you think you used to complete the activity?" on their worksheets and compare their answers to the original. They should discuss if it has changed and why or why not?**
Extend	**Students will be asked to go out and explore one form of energy that is transferred to another form and report their findings to the class. They can document their findings using technology or hand written images/description.**

Unit Overview		
	Learning Activities	**Materials, Supplies, Equipment**
Day 1	*Rubber band activity to demonstrate potential and kinetic energy* *Forms of Energy worksheet and lab activity*	*Rubber bands, Summative Assessment, Formative Assessment, Forms of Energy stations set-up throughout the room*
Day 2	*Forms of Energy worksheet and lab* *Whole group discussion of findings*	*PowerPoint, Summative Assessment*
Day 3	*Forms of Energy assessment* *One-on-one evaluation and discussion*	*Assessment, energy worksheets, and PowerPoint available if needed for*

	Self-reflection *Extend assignment*	*clarification*
Insert/delete rows as needed		

Daily Activity Details		
Activity 1	*The teacher should utilize the engage activity, outlined above, to begin the lesson. If time allows, the teacher should start the students on the engage phase. The students should answer the first set of boxes on the formative assessment before beginning the lab. The various energy stations will be set up throughout the room and groups will rotate from station to station. Each student will have a Forms of Energy worksheet to complete as they explore the forms of energy presented to them.*	*Rubber bands, Forms of Energy Summative Assessment, Formative Assessment, Forms of Energy stations set-up throughout the room*
	Student Handouts – Forms of Energy worksheet	*List student products for assessment – Forms of Energy Summative Assessment key*
Activity 2	*The teacher should have the students continue working through the stations. Once all of the groups have visited each station, the teacher should bring the small groups back together for whole group discussion. The teacher should use the Forms of Energy PowerPoint to guide the class discussion. The teacher should make sure that all groups share their ideas and act as a facilitator for the discussion; this will allow students to guide the discussion and the teacher can contribute clarity for misconceptions as needed.*	*PowerPoint, Summative Assessment, Formative Assessment*
	Student Handouts – Forms of Energy worksheet, Forms of Energy PowerPoint	*List student products for assessment – Forms of Energy Summative Assessment key*
Activity 3	*The teacher should now check for any need to clarify before assigning the assessment. The students should finish*	*Summative Assessment, Formative Assessment, and PowerPoint available if needed for clarification*

	the formative assessment and then trade with a peer. They should compare their answers. Why are they the same? Why are they different? – asking each other to explain and elaborate. The teacher should monitor this activity. Students should discuss if they answered differently the second time around. *To conclude and extend, students will be asked to go out and explore one form of energy that is transferred to another form and report their findings to the class. They can document their findings using technology or hand written images/description.*	
	Student Handouts – Forms of Energy worksheet, Forms of Energy assessment	*List student products for assessment – Forms of Energy worksheet, Forms of Energy assessment*
Insert/delete rows as needed		

References:

Website where lesson plan was retrieved and revised:
http://www.cpalms.org/Public/PreviewResourceLesson/Preview/46550

Include references for any textbook sections your students will use.

*** Use the Appendices on the following pages to attach any additional files you use with this lesson, including links to online materials, presentations (PowerPoint, Prezi, etc), and references to any hard copy handouts you use.*

Forms of Energy Summative Assessment
Forms of Energy Formative Assessment
Forms of Energy Formative Assessment - Sample answers
Forms of Energy Summative Assessment - Answer key
Forms of Energy - Explore - Picture Sort
Forms of Energy - Explain - PowerPoint

APPENDIX A

Learning Activities

Insert any handouts you create for this lesson/unit. If activities are from another copyrighted source, include just a bibliographic reference to the materials.

APPENDIX B

Assessment Instruments

Insert any assessments and rubrics you create as part of this unit. If assessments are from another copyrighted source, include just a bibliographic reference to the materials.