

Science Cycle 2--GROUP WORK Checklist: Change

“Every body persists in a state of rest or of uniform motion in a straight line, unless it is compelled to change that state by forces having impact upon it.”

-Sir Isaac Newton

This is your Trimester 2 Group Work Checklist. As you turn things in this trimester mark them off here. Use your agenda/planner to keep track of daily work. Check out the key at the bottom to help you know which items need checked and which items need turned into the IN BOX.

GUIDING QUESTIONS:

- 1: Use Newton's Laws of motion to discover simple and compound machines. (7.PS.4-7.PS.7)
- 2: What are the different types of energy and how is energy transferred from one form to another? Is energy lost when this happens? (7.PS.8)
- 3: What are some alternative energy forms?
- 4: How can we design and construct a device that converts energy from one form to another to perform work? This device should have a practical use in your everyday life on the farm/land at Oak Farm and should explore alternative energy forms (6-8.E.1, 6-8.E.2, 6-8.E.3, 6-8.E.).

GROUP WORK

Guiding Question 1: Use Newton's Laws of motion to discover simple and compound machines. (7.PS.4-7.PS.7)

_____ 1. Key Lessons:

- Newton's Laws of Motion-lesson introduction and webquest on

<http://www.physicsclassroom.com/class/newtlaws/Lesson-1/Newton-s-First-Law>

_____ 2. Come Back Can Lab

_____ 3. Simple Machines—They can really make a BANG!

<https://www.youtube.com/watch?v=qybUFnY7Y8w> (7.PS.4-7.PS.7)

a. Lesson 3 Experiment with Simple Machines--Rube Goldberg Resources

b. Lesson 6 Energy Transfers--Rube Goldberg Resources

_____ 4. Seminar: Laws of Motion (concept map)

_____ 5. Shelf work GQ#1—K'Nex Simple Machines

_____ 6. Reflect: How do you use Newton's Laws of Motion in your everyday life. Site specific examples and which of Newton's Laws you are using in those examples.

X Connection X Silence & solitude X Meaning & purpose X Joy X Creativity X Transcend X Initiation

Key: ★ = Turn in = Get checked

NAME: _____ BLOCK: AM or PM

Guiding Question 2: What are the different types of energy and how is energy transferred from one form to another? Is energy lost when this happens? (7.PS.8)

____ 7. Key Lessons:

- Forms of Energy (KE, PE, radiation, convection, conduction)
- Law of Conservation of Energy

____ 8. Cars and Energy Lab

____ 9. Energy Webquest

____ 10. Energy demonstration for your classmates (KE → PE; PE → KE; KE + PE = ME)

____ 11. Seminar: "This Time It Will Be Different"

____ 12. Shelf work GQ#2

____ 13. Reflect: Recall the Law of Conservation of Energy. How does this apply to your life.

Think about your cosmic task and the energy within you. Where did the energy within you come from? How are you using this energy to search for your cosmic task? What have you discovered about yourself so far this year? Have you changed in anyway?

Guiding Question 3: What are some alternative energy forms?

____ 14. Key Lessons:

- Alternative energy forms—research and share with class

____ 15. Energy Group Work activity

____ 16. Shelf work GQ #3: Rockefeller Game

____ 17. Reflect: After doing research on a form of alternative energy, what is your "take away?" In other words, what is the big idea you will take with you from this project? Is there a new outlook you have on your personal energy use or maybe your family's energy use? Have you considered using alternative energy? If so, which ones and how? Is this even practical for you?

Guiding Question 4: How can we design and construct a device to scale that converts energy from one form to another to perform work? This device should have a practical use in your everyday life on the farm/land at Oak Farm and should explore alternative energy forms(6-8.E.1, 6-8.E.2, 6-8.E.3, 6-8.E.).

____ 18. Design Process: Construct a Rube Goldberg device that uses two or more of Newton's Laws. Explain how motion, acceleration, force, and mass are working in the device. This Rube Goldberg contraption must accomplish a task and utilize at least 8 steps and 4 simple machines. This is an opportunity for you to make an impact at Oak Farm!

<https://www.youtube.com/watch?v=AmY-EBsvUcY> (7.PS.4-7.PS.7)

a. Lesson 7 Build a 8-Step Rube Goldberg Machine

____ 19. Reflect: Consider the project you have completed above using the design process. If you could make another change (or changes) what would they be? Why? How can we implement this device right now at Oak Farm? How does it make your life or the life of others easier here at school?

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