

Unit Plan Title: Inventing Machines

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Grade Level: First

Subject Area: Science

Short Description of Lesson:

Students will make a K-W-L chart for machines, listen to stories about simple machines, watch an internet video on simple machines, do a simple machine search, and design and invent a machine.

State Curriculum Standards met in this lesson:

GLE 0107.T/E.2 Apply engineering design and creative thinking to solve practical problems.

0107.T/E.1 Explain how simple tools are used to extend the senses, make life easier, and solve everyday problems.

0107.T/E.2 Invent designs for simple products.

0107.T/E.3 Use tools to measure materials and construct simple products.

Materials, Resources, and Technology:

1. Chart paper, drawing paper, index cards each labeled with a different simple machine Ex. Pulley, lever, screw, etc.
2. Simple Machine Search handout (see below)
3. Books - Simple Machines by Allan Fowler and Simple Machines by Susan Canizares
4. Computer with internet access
5. United Streaming video *Simple Machines* found at:
<http://player.discoveryeducation.com/index.cfm?guidAssetId=588F8477-8B32-4468-90B1-D70B43504260>
5. Building supplies: cotton swabs, toilet paper & paper towel tubes, wood scraps, aluminum foil, string, rope, dowel rods, Tinkertoys, Legos, blocks, rulers, etc.

Student's Present level of Performance and Knowledge:

When doing the "Simple Machine Search" and machine design, students will need to work cooperatively with another student. A high functioning student should be paired with a lower functioning student. In the design phase, some students may need additional support and suggestions from the teacher.

Day 1:

Lesson Set:

Students will begin by making a K-W-L chart for simple machines. They will list what they

already know and what they would like to learn on the chart.

Students will listen to the stories Simple Machines by Allan Fowler and Simple Machines by Susan Canizares.

Students will watch a United Streaming video *Simple Machines* located at the internet site: <http://player.discoveryeducation.com/index.cfm?guidAssetId=588F8477-8B32-4468-90B1-D70B43504260>

Tell students that for homework find some type of simple machine at home, and bring it to school the next day.

Day 2:

Show power point presentation "Simple Machines".

Have students lay out simple machines on desks. Have students "tour" the simple machines that are laid out. Lay out index cards with types of simple machines written on each card. Place the cards around the room, and have students match their machine to the corresponding card. If students combined simple machines, their machine may be able to go under more than one card.

Come back together as a group and pose the following questions, "Are all simple machines placed with the correct card? What type of simple machine is represented the most and the least? Discuss why we need simple machines and their importance to society.

Day 3:

On a computer, students will watch the following Brain Pop videos: Pulleys, Levers, Inclined plane, and Wheel & Axle, on this site <http://www.brainpop.com/technology/simplemachines/>.

Next students will work with a partner on a simple machine hunt inside and outside the school, using the Simple Machine Search handout. They will list examples of the machines they find and write about how one of these machines makes a job easier

Days 4-5:

Tell students to think of a job they would like to make easier. Explain that students will create a machine to make this job easier. Students can work in pairs or individually to design a drawing of his/her machine. Students will need to combine two or more simple machines for his/her "invention".

Once students have a design in mind, give students access to building supplies: cotton swabs, toilet paper & paper towel tubes, wood scraps, aluminum foil, string, rope, dowel rods, Tinkertoys, Legos, blocks, rulers, etc.

Students will then present machines to classmates (parents could be invited in for this), explaining the importance of his/her machine. Students will describe what job(s) his/her machine will make easier.

Adaptations for Special Learners:

When doing the "Simple Machine Search" and machine design, a high functioning student should be paired with a lower functioning student. In the design phase, some students may need additional support and suggestions from the teacher.

Supplemental Activities: Extension and remediation:

Create an invention center in which students could design more machines that help to do jobs. Students could do a simple machine search at home. Have students watch Simple Machine video on www.discoveryeducation.com. Play computer games involving simple machines at http://www.edheads.org/activities/simple-machines/frame_loader.htm.

Assessment/Evaluation:

Using the following Rubric, grade the student's inventions: Score of 1 - Designed and created a machine, did not combine simple machines, did not relate machine to making a job easier. Score of 2- Designed and created a machine combining simple machines, did not relate machine to making a job easier. Score of 3 - Designed and created a machine combining simple machines and related the invention to making a job easier.

Name

Simple Machine Search

Directions: Go on a search inside and outside your school looking for examples of simple machines. List your results below.

Lever	Inclined Plane	Wheel and Axel	Pulley

Which type of simple machine did you find the most examples of?

Choose one of the examples you found and tell how it can make a job easier.
