

Science Lesson Plan Ranger Rick October 2008 Cool Tools

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Bell: 1 (90 Minutes)

Date: July 8, 2009

Day: A

SOL 3.2 The student will understand what force, motion, and energy are and how they are connected.

3.2.3 Identify, differentiate, and explain the function of the six types of simple machines (lever, screw, pulley, wheel and axle, inclined plane, and wedge).

3.2.4 Demonstrate and explain how machines make work easier.

3.2.5 Classify specific examples of simple machines found in school and household items (screwdriver, nutcracker, screw, bicycle, flagpole pulley, ramp, and seesaw).

3.2.6 Identify the types of compound machines (wheelbarrow, scissors and bicycle) and the simple machines that compose them.

3.2.7 Analyze common household items and identify the simple and compound machines in them.

SOL 3.4 The student will understand and investigate the basic needs and life processes or organisms, their physical characteristics, orderly changes in life cycles, adaptations and survival of the species.

3.3.2 Engage students in science career awareness activities to learn about zoologists.

3.3.4 Explain how an animal's body parts assist animals in survival activities (gathering and storing food, finding shelter, defending themselves and rearing young).

Following completion of this lesson, students will be able to:

- Recognize a connection between animals and the "tools" that nature has provided them with to survive and human use of simple machines and compound machines.
- Name 6 simple machines and their functions.

Additional Subject Area Objectives:

Science

SOL 3.4 The student will understand and investigate the basic needs and life processes or organisms, their physical characteristics, orderly changes in life cycles, adaptations and survival of the species.

3.3.6 Compare the physical characteristics of animals and explain how animals are adapted to a certain environment. (SOL 3.4)

Language Arts

3.1 Use a variety of reading comprehension strategies to gain meaning from print.

3.1.11 Read texts with fluency (rate, accuracy, phrasing, and expression)
(SOL 3.4)

3.3.8 Support conclusions and inferences with information from text (SOL 3.6)

Essential Terms:

Lever

Wedge

Pulley

Wheel

Screw
Wheel and axle
Inclined plane
Simple machines
Compound machines
Adaptations
Habitat
Beak
Bill

Material/Equipment:

- | | |
|--|---|
| <input type="checkbox"/> Textbook | <input type="checkbox"/> TV/VCR/DVD |
| <input type="checkbox"/> Coloring Items | <input type="checkbox"/> Video |
| <input type="checkbox"/> Scissors/Glue | <input type="checkbox"/> Transparencies |
| <input checked="" type="checkbox"/> Handouts | <input type="checkbox"/> Overhead/Pens |
| <input type="checkbox"/> Calculators | <input checked="" type="checkbox"/> Music |
| <input checked="" type="checkbox"/> Other | <input type="checkbox"/> White boards |

- Other: Music IPOD Playlist: Eagle and the Hawk (John Denver) / Too Many Fish in the Sea (Mitch Ryder) / Come Fly with Me (Frank Sinatra) / Mack The Knife (Frank Sinatra) Aurora Nova (Dan Fogelberg) / Song of the Sea (Dan Fogelberg) / Birds (Elton John)/ The Flower That Shattered the Stone (John Denver) / Eagles and Horses (John Denver) / Fly Away (John Denver)
Music IPODBrain Break: Chicken Dance
Reading Selection copies: Cool Tools by Gerry Bishop from Ranger Rick October 2008 pages 16 -22

References:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Textbook | <input checked="" type="checkbox"/> Curriculum Guide |
| <input type="checkbox"/> Newspaper | <input checked="" type="checkbox"/> Other http://www.teach-nology.com/worksheets/science/simpmach/ |

Warm-up Activity:

The students will sort simple machines on index cards by type.

Procedures:

1. Go over the warm-up activity and review the Simple Machines vocabulary (See below).
2. Show the students various pictures of birds compare the birds in size and shape, then draw the students' attention to the birds' bill or beak and reflect on how the bill might help them get their food.
3. Read aloud Cool Tools by Gary Bishop from Ranger Rick October 2008 on pages 16. Have the students get into groups of three or four. Give each group a plastic utensil, then have group discuss the type of machine that a knife, fork, and spoon. After all groups have had a chance to discuss, each group will share their thoughts.
4. Walking around to music the students will find a partner.
5. The partners will sit down and read Cool Tools by Gary Bishop. (Ranger Rick October 2008 on pages 16 – 22.)
6. The students will work with their partner to complete the Cool Tools Making the Connection worksheet to answer questions about the birds and how their bills operate similar to a simple machine
7. Mix Freeze Group: The students will form groups of three or four.
8. Simple or complex machine.
9. Discuss the students' answers to the Cool Tools Making the Connection worksheet.
10. Brain Break: Chicken Dance

11. Explain that the branch of zoology that studies birds is called ornithology. A person who studies birds is called an ornithologist. Remind the students that we will learn the language of the discipline of ornithology. Contact local wildlife specialist to visit your class. (i.e. The Bird Man)
12. The students will be ornithologists exploring an area of the world never explored before in search of new species. Each group will create a new bird, draw it, label it and explain how this bird uses its beak or bill as a simple or complex machine in order to survive. On the poster the group will draw the bird, and write the following on the paper the bird's name, continent it was found on, what it eats, and the type of habitat it lives in. Each group will share their new species of bird with the class.
13. Mix Freeze Group: (The students will then find a new partner someone who they have not worked with yet today.) Then the partners will select a bag with activities. The partners will complete 2 of 5 the activities in bag.

Activities:

- If Simple Machines Weren't Around
- Simple Machines Acrostic Poem
- Simple Machines Chop Worksheet
- Simple Machines Crossword Puzzle
- Simple Machines Reading Comprehension Worksheet

14. Exit Ticket: Describe a bird's beak or bill that seems to work like a simple machine. How does the beak or bill function like a simple machine?

Or

Name a kitchen utensil or tool of your choice and explain what type of simple machine it is?

Homework Assignment:

None

Cooperative Strategies:

- | | | |
|--|--|---|
| <input type="checkbox"/> Blind Sequence | <input type="checkbox"/> Mind-mapping | <input type="checkbox"/> Sages Share |
| <input type="checkbox"/> Boss/Secretary | <input type="checkbox"/> Numbered Heads Tog | <input type="checkbox"/> Simultaneous Round Table |
| <input type="checkbox"/> Carousel Feedback | <input type="checkbox"/> One Stray | <input type="checkbox"/> Showdown |
| <input type="checkbox"/> Fan-n-pick | <input type="checkbox"/> Pairs Compare/check | <input type="checkbox"/> Spend-a-buck |
| <input type="checkbox"/> Find the Fiction | <input type="checkbox"/> Poems for 2 voices | <input type="checkbox"/> Talking Chips |
| <input type="checkbox"/> Find Someone Who | <input type="checkbox"/> Popcorn | <input type="checkbox"/> Team Stand-n-Share |
| <input type="checkbox"/> Inside-outside | <input type="checkbox"/> Quiz, Quiz, Trade | <input checked="" type="checkbox"/> Timed Pr Share |
| <input type="checkbox"/> Jot Thoughts | <input type="checkbox"/> Rally Coach | <input type="checkbox"/> Transparency SS |
| <input type="checkbox"/> Line ups | <input type="checkbox"/> Rally Robin | <input type="checkbox"/> Window Panes |
| <input type="checkbox"/> Match Mine | <input type="checkbox"/> Rally Table | <input type="checkbox"/> Note Taking |
| <input checked="" type="checkbox"/> Mix-Freeze-Group | <input type="checkbox"/> Reading Boards | <input type="checkbox"/> Overhead with student models |
| <input type="checkbox"/> Mix Pair Share | <input type="checkbox"/> Round Robin | |
| <input type="checkbox"/> Mix-n-Match | <input type="checkbox"/> Round Table | |

Teaching Strategies:

- | | | |
|--|--|--|
| <input type="checkbox"/> Exit Ticket | <input type="checkbox"/> K^3 C | <input type="checkbox"/> Say Something |
| <input type="checkbox"/> Graphic Organizer | <input checked="" type="checkbox"/> MAB/E | <input type="checkbox"/> Somboddy Wanted |
| <input type="checkbox"/> Guided Reading Question Cards | <input type="checkbox"/> Penny for your thoughts | <input checked="" type="checkbox"/> Think-Pair-Share |
| <input type="checkbox"/> Insert | <input type="checkbox"/> RAFT Activity | <input type="checkbox"/> TP-CASTT |
| <input type="checkbox"/> It Says, I say, And So | <input type="checkbox"/> Reading Toolkit | <input type="checkbox"/> Walkabout |

Student Evaluation:

- | | |
|---|---|
| <input type="checkbox"/> Test | <input type="checkbox"/> Homework Check |
| <input type="checkbox"/> Quiz | <input checked="" type="checkbox"/> Oral Review |
| <input type="checkbox"/> Student self-evaluation | <input type="checkbox"/> Group Production |
| <input checked="" type="checkbox"/> Teacher observation | <input type="checkbox"/> Other |

Lesson Evaluation:

- Great
- Changes needed
- Other

Other:

Literacy Center Ideas:

Research simple machines in the computer lab

Make a foldable about simple machines that includes a drawing and the function of the machine.

Differentiation:

Students work with peer buddies to the Ranger Rick article.

All tasks are respectful to the students understanding, age, and level of performance.

Bag task allows student choice and tasks reflect multiple intelligences.

Simple Machines Vocabulary

| | |
|-----------------------|--|
| force | an influence on the shape, motion, or other characteristics of a body or system. |
| friction | the resistance of a surface to relative motion, as of an object sliding or rolling over it. |
| fulcrum | the point of support on which a lever turns. |
| inclined plane | a plane surface inclined at less than a right angle to a horizontal surface, used to roll or slide a load up or down. |
| lever | any of a class of basic tools consisting of a rigid bar or an equivalent, acting by pivoting around a fixed fulcrum to transfer applied force from one point to another. |
| load | an amount of something carried; cargo or freight. |
| machine | a man-made device, usu. driven by a motor or engine, with a system of interrelated parts that work together to perform a task. |
| axle | a supporting bar or shaft on which, or by means of which, a wheel or wheels turn. |
| power | physical, mechanical, or electrical energy. |

| | |
|---------------|---|
| pull | to bring or try to bring closer by exerting force upon. |
| pulley | a wheel or set of wheels with grooved edges over which a rope or chain can be drawn in order to change the direction of a pulling force and increase the capacity for lifting weight. |
| push | to thrust (something) away. |
| screw | a fastener, usu. metal, having a sometimes tapered shank with a helical thread, driven into a surface by applying pressure to the head while turning it. |
| spring | an elastic device or object that regains its original shape after being compressed, stretched out, or otherwise distorted. |
| tool | an instrument, such as a hammer, drill, or other hand-held device, used for doing work. |
| torque | the measured ability of a force to produce turning or twisting around an axis, such as a gear or shaft. |
| wedge | a piece of wood or metal in a three-dimensional, triangular shape with a thin edge that is driven or forced between objects to split, lift, or reinforce them. |
| wheel | any instrument, device, or apparatus resembling such a disk or frame in shape, motion, or function. |
| work | physical or mental effort directed toward achieving some result; labor. |