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Physical Science  
3rd Grade  
Simple Machines: The Screw

Objective/Purpose:  
The purpose of this lab is to demonstrate to students the significance of one of the simple machines known as a screw. It also emphasizes the use of screws, the parts of a screw, how they work, and how screws are found all around us. It offers examples of screws in everyday occurrences. It allows the students to observe this type of simple machine.

Materials:  
1. nail  
2. screw  
3. pen (one in which the cap pops off)  
4. soda bottle with twist off top (size of bottle does not matter)  
5. marker  
6. medicine bottle (try to find the type that twists and pops off)  
7. light bulb  
8. tube (twist off)  
9. bottle of sprinkles  
10. notebook with a spiral binding

*NOTE #1* -- The book titled Screws by Sally M. Walker and Roseann Feldmann is a very good source to read when teaching!!! I would highly recommend trying to get a hold of it if you can!!!

*NOTE #2* -- Any one of these may be substituted. However, try to at least even out the amount of objects containing screws with the objects that do not.

Background Information:  
A screw is a simple machine consisting essentially of a solid cylinder, usually of metal, around which an inclined plane winds spirally, either clockwise or counterclockwise. It is used to fasten one object to another, to lift heavy objects, or to move an object by a precise amount. Screws are usually more durable than something such as a nail.

Preparation:  
Clear off the table (one which can be seen by all of the students). Strategically place the items so that they may be observed by the students. Also allow the students to sit in an area so that when the book or information is being read, they can hear you read, (see pictures if you have some), and observe the materials on the table.
Safety Issues:

So far, out of the items, nothing is sharp, so no one should get hurt. However, make sure that all of the contents in the containers are removed. This way, you do not have to worry about any pills being lost or eaten, or any liquids being spilled. If you have a light bulb, make sure to caution the student on how fragile it is and that it breaks easily. To be on the safe side, if a student wants to observe the light bulb, make sure you hold it or at least watch the student that is handling it.

Activity Outline / Teacher Procedures:

Read the book if you have one, or the notes. As you are reading, ask questions to reinforce what they are learning, as well as making sure they are listening. Also while reading, point out clues that may be helpful when eliminating what a screw is (such as twists, turns, etc.). In the book Screws, there is a wonderful exercise the students may be able to do at home that involves a pencil and paper! Encourage them to do this! After you are done, demonstrate how each item works, quietly. For example, quietly spin off the bottle cap to the soda bottle. You can a

After you are done demonstrating, pass out a sheet of paper divided into four sections. In the middle of the blocks, ask the students to draw a picture of what they think is a screw. Then ask the students to draw four more items in the boxes, from the table, that they think contains a screw. Also tell them to draw an arrow that points where the screw is located in the object. If need be, let them handle the objects if they are more hands on. Give them approximately 15-20 minutes to do this. Then ask everyone to come up to the front of the room and share with their classmates what they have drawn. This allows everyone a chance to speak, even those that are a little shy.

Possible Questions:
- What type of tool do you need for a screw?
- What are the parts of a screw?
- What are some of the uses for a screw?

Homework:

Assign students to go home and find four more DIFFERENT objects that are associated with containing a screw. Ask them to draw the items, again putting an arrow where it belongs. Ask them to share with their parents/guardians. This enables them to repeat what they learned in class and explain it. Make sure they bring them back to school to be graded.