

**ED 101 Educational Technology Lab – Fall 2012
Boston University – School of Education**

LESSON PLAN

Grade(s)	5 (regular and special education)
Content Area(s)	Science
Topic of Lesson	Overview of simple machines and their uses
Three Objectives	<p>1. Students will be able to write the names of all six simple machines with correct spelling (lever, pulley, wheel & axle, inclined plane, screw, wedge), when given a blank piece of ruled paper.</p> <p>2. Students will be able to write down at least one example for each of the six simple machines, for a total of six objects, when given a blank piece of paper.</p> <p>3. Students will be able to correctly circle one example of a complex machine (scissors, stapler, can opener) and one example of a simple machine (jar lid, plastic knife, tweezers), when presented with the group of six objects on a piece of paper.</p>
Technology standard	<p><i>Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.</i></p> <p>G3-5: 2.4 Identify ways in which technology is used in the workplace and in society.</p>
Curriculum Framework	<ul style="list-style-type: none"> ➤ Massachusetts Science and Technology/Engineering Standards ➤ Technology/Engineering, Grades 3-5 ➤ Materials and Tools <p>1. Materials and Tools</p> <p>1.3 Identify and explain the difference between simple and complex machines, e.g., hand can opener that includes multiple gears, wheel, wedge, gear, and lever.</p>
Materials needed	<ul style="list-style-type: none"> • one computer or laptop with internet access • a LCD projector • ruled paper (for students to complete the assessment for objective 1) • handout of a table with two columns (assessment for objective 2) <ul style="list-style-type: none"> ○ left column “simple machine”: 6 rows (pulley, lever,

	<ul style="list-style-type: none"> ○ inclined plane, wheel & axle, wedge, screw) ○ right column “examples”: 6 rows (blank) • 6 objects for the third objective <ul style="list-style-type: none"> ○ jar lid, plastic knife, tweezers (simple: screw, wedge, lever) ○ scissors, stapler, can opener (complex: lever/wedge, lever/wedge, screw/lever/wedge/wheel & axle) • handout with pictures of six objects (assessment for objective 3) <ul style="list-style-type: none"> ○ jar lid, plastic knife, tweezers, scissors, stapler, can opener • handout with pictures of six different objects (door knob, see-saw, flag pole, ramp, wood screw, doorstop) • white board and marker • students’ science notebooks • exit question slip
<p>Lesson Introduction</p> <p>(5 minutes)</p>	<p>The students will participate in a “Do Now” discussion.</p> <p>Each student will copy down the “Do Now” question in his/her notebook and write down his/her own response. The question the students will copy down is: “What are some examples of machines?”</p> <p>After two minutes, I will ask the students to share what they had written down in their notebooks.</p>
<p>Lesson Procedure, Web Site Use, and Technology Standard Instruction</p> <p>(15 minutes)</p>	<p>The students will be seated at their individual desks with their science notebooks in front of them. They will copy down the topic (“<i>Simple Machines</i>”) and the three objectives (1. <i>name the 6 simple machines</i>, 2. <i>list two objects with simple machines</i>, and 3. <i>compare/contrast simple and complex machines</i>) into their notebooks from the whiteboard.</p> <p>I will go over any misconceptions the students may have concerning machines (for example, not all machines are electronic).</p> <p>I will then explain to the students what they will be learning in class. I will explain to them that there are machines everywhere, and that there are two kinds of machines: simple and complex. I will then ask the students what they think the difference is between simple and complex machines. If a student answers correctly, I will repeat the student’s response before writing down the definitions for simple machines and complex machines on the board. If nobody answers correctly, I will explain the difference between the two types of machines before writing down the definitions for simple machines and complex machines on the board.</p> <p>I will then take a moment to set up the laptop/computer and the LCD projector. I will ask the students what they think computers and LCD projectors are examples of. If a student answers with “technology,” I will repeat this and continue to the next part. If nobody mentions “technology,” I will explain that both these objects are examples of technology before</p>

	<p>moving on.</p> <p>Next, I will ask students how technology is used in the real world. After I listen to all the students’ responses, I will expand on anything that needs addressing, such as how people could use technology in the workplace, in school, at home and in everyday life (i.e. cell phones). If students mention a lot of this in their responses, I will opt to talk to them about safety issues surrounding technology use instead.</p> <p>I will then pull up the website to introduce the six simple machines. I will ask the students to fold the right page of their notebooks in half and write “simple machine” on the left column, and “what it is” on the right column. As each of the six simple machines is introduced, the students will write down the name of the machine in the left hand column. I will explain to the students how each of the simple machines works by pulling up its respective content page. The students will write down anything that will help them differentiate the machines, such as a diagram or a definition, in the right hand column. Before moving on, I will ask students to give me examples of the simple machine. I will then answer any questions the students may have. I will repeat this for all six simple machines.</p> <p>After going through all six machines, I will move on to the “Real Life” page to talk about complex machines. After talking about the complex machines, I will give the students some examples and ask them which simple machines they can identify in each example. Before ending the website portion of this lesson, I will give the website URL to the students so they can explore the site on their own (if they wish to do so at home).</p> <p>Next, I will pass out the handout and have students get into groups of four. The students will work on this handout together to identify the different types of simple machines they see in each of the six objects pictured. I will walk around and stop at any group that needs help.</p> <p>After the students have completed the handout, I will have them return to their individual seats. I will then go over the handout with the students and ask them what they had come up with as answers. To reinforce this, I will tell them the correct answers at the end (door stop – wedge, ramp – inclined plane, flag pole – pulley, door knob – wheel and axle, wood screw – screw, see-saw – lever). I will then take any questions the students may have and address them before the lesson is over.</p>
<p>Wrap-Up of Lesson (5 minutes)</p>	<p>Before ending the lesson, I will hand out the exit question slips. I will have each of the students write down the questions: “How is technology used in the real world?,” “What is a complex machine?,” and “What are the six simple machines?” The students have to write down a response to each of these questions before they can move on to their next class.</p>
<p>How will</p>	<p>Objective 1: Students will be able to write the names of all six simple</p>

<p>students be assessed to make sure they are able to perform the objectives?</p>	<p>machines with correct spelling (lever, pulley, wheel & axle, inclined plane, screw, wedge), when given a blank piece of ruled paper.</p> <p>Assessment 1: Students will be asked to study the simple machines for homework for the next 2 nights. At the start of the next lesson, students will be given a piece of ruled paper and 5 minutes to correctly write the names of all 6 simple machines with correct spelling.</p> <p>Objective 2: Students will be able to write down at least one example for each of the six simple machines, for a total of six objects, when given a blank piece of paper.</p> <p>Assessment 2: Students will be asked to look for simple machines in their homes or around the school for the next few nights. At the start of the next week, students will be given a chart with the six simple machines' names on it, and will be asked to write down at least one object next to each of the six simple machine boxes. After this is done, students will gather as a class and share the different objects they found in their homes. The students will write these examples down to complete their charts.</p> <p>Objective 3: Students will be able to correctly circle one example of a complex machine (scissors, stapler, can opener) and one example of a simple machine (jar lid, plastic knife, tweezers), when presented with the group of six objects on a piece of paper.</p> <p>Assessment 3: Students will be provided with the web site URL and asked to study it, along with their class notes, for the next week. At the end of the next week, students will be given a handout with six objects. These six objects will also be available in the front of the classroom. The students will be given 10 minutes to correctly circle one complex machine and one simple machine. The students must also identify the simple machines found in these two objects in order to pass this assessment.</p>
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Objective 2. Real World Examples

Name: _____

Date: _____

Simple Machines: Real World Examples

Instructions

Individual: Write down one example for each of the following simple machines.

Group: Write down two more examples for each of the six simple machines.

Simple Machine	Example(s)
Pulley	
Lever	
Wedge	
Inclined Plane	
Screw	
Wheel & Axle	

Objective 3. Simple vs. Complex Machines

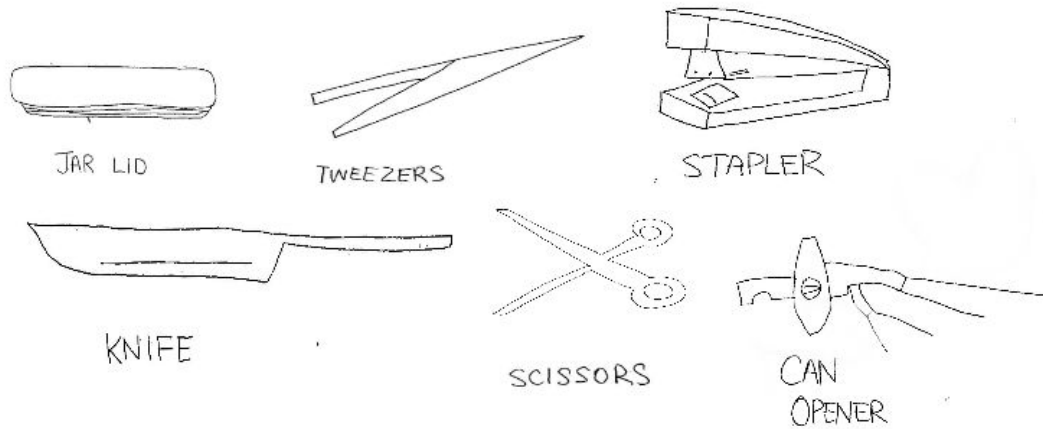
Name: _____

Date: _____

Simple Machines vs. Complex Machines

Simple Machines

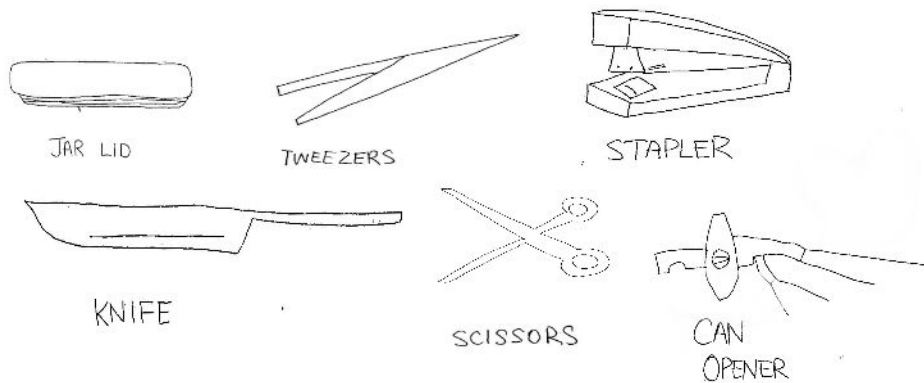
Circle an example of a SIMPLE machine.



Which simple machine is this?

Complex Machines

Circle an example of a COMPLEX machine.



Which simple machines are in this complex machine?

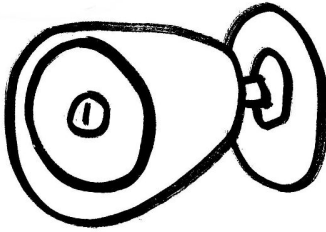
Handout. Which Simple Machine?

Name: _____

Date: _____

Which Simple Machine?

Below each object, write down the simple machine it is an example of.



DOOR KNOB



FLAG POLE

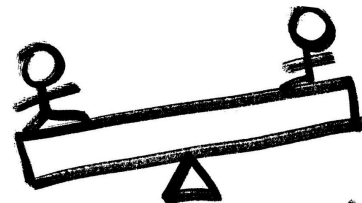


WOOD SCREW



DOOR STOP

RAMP



SEE-SAW

Exit Questions.

Name: _____

Date: _____

Exit Questions

Instructions: Answer the following questions.

1. How is technology used in the real world?

2. What is a complex machine?

3. What are the six simple machines?
