

Simple Machine Lesson Plans

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Title: Simple Machines
Subject: Science
Grade: Three

Description: This lesson is designed to allow the student the use of the Internet to learn more about simple machines, what they are and how they help make work easier. The lesson follows readings and activities, from our textbook, focused on force, position, motion, speed, friction, and an introduction to simple machines. Students will work independently, in some cases in pairs, to visit sites provided on a hot list to gather knowledge on the six simple machines. Assessment will come in the form of a machine invented by the student. This machine must be comprised of simple machines and has to accomplish a task.

Curriculum Benchmarks: (Source: <http://cnets.iste.org/students/>)

1. Basic operations and concepts

- ? Students demonstrate a sound understanding of the nature and operation of technology systems.
- ? Students are proficient in the use of technology.

2. Social, ethical, and human issues

- ? Students practice responsible use of technology systems, information, and software.
- ? Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

3. Technology productivity tools

- ? Students use technology tools to enhance learning, increase productivity, and promote creativity.**
- ? Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.**

4. Technology research tools

- ? Students use technology to locate, evaluate, and collect information from a variety of sources.**
- ? Students use technology tools to process data and report results.**
- ? Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.**

5. Technology problem-solving and decision-making tools

- ? Students use technology resources for solving problems and making informed decisions.**
- ? Students employ technology in the development of strategies for solving problems in the real world.**

Materials/Hardware: The students will need to use the school's computer lab and a teacher provided hot list of simple machine related sites. Copies of graphic organizers for taking notes will be needed for each student. Materials for the assessment should be items found around the house. Examples of materials include paper tubes, rubber bands screws, sting, pieces of wood, old belts, paper cups, empty boxes, and cans.

Teacher Preparation: Websites will have to be checked and put on a hot list. Information leading up to this point will have to be taught and the understanding of that material will have to be assessed. The teacher will have to be prepared to give clear directions of the assessment to the students and the parents as many of the projects will require parental supervision and assistance. A rubric will have to be constructed and printed. Examples of previous projects, in my case a multimedia slide show, must be available for students.

Student Preparation: Students will need to know background information listed above. They will need to know how to navigate through a hot list and included sites. Students will need to have a system in place for note taking; a graphic organizer would be preferred. When they leave the lab they should have a clear understanding of the requirements for the assessment and a copy of the rubrics for the assessment.

Activities/Procedures: The computer activity is relatively simple; students will work their way through Websites illustrating the use of simple machines. In an attempt to make the assessment more understandable to the students the hot list activity will be reinforced with a PowerPoint of previous students and their inventions. Students will then be give further instructions and the rubric for the assessment. Parents will be allowed to help and offer advice, but the project must reflect the work of the student. Students will present their invention to the class and explain what went into constructing the project and show how the machine works.

Assessment/Evaluation: Students will be assessed on their invention. Determination of the grade will be done according to the number of simple machines used, the completion of a task by the machine, the amount of work done by the student inventor, and the presentation to the class.



Oral Presentation Rubric : **Inventions**

Teacher name: Tim Jardine

Student Name _____

CATEGORY	4	3	2	1
Volume	Volume is loud enough to be heard by all audience members throughout the presentation.	Volume is loud enough to be heard by all audience members at least 90% of the time.	Volume is loud enough to be heard by all audience members at least 80% of the time.	Volume often too soft to be heard by all audience members.
Speaks Clearly	Speaks clearly and distinctly all (100-95%) the time, and mispronounces no words.	Speaks clearly and distinctly all (100-95%) the time, but mispronounces one word.	Speaks clearly and distinctly most (94-85%) of the time. Mispronounces no more than one word.	Often mumbles or can not be understood OR mispronounces more than one word.
Content	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
Listens to Other Presentations	Listens intently. Does not make distracting noises or movements.	Listens intently but has one distracting noise or movement.	Sometimes does not appear to be listening but is not distracting.	Sometimes does not appear to be listening and has distracting noises or movements.



Create Rubrics for your Project-Based-Learning Activities

Building A Structure: **Simple Machine Invention**

Teacher name: Tim Jardine

Student Name _____

CATEGORY	Excellent	Good	Satisfactory	Needs Improvement
Scientific Knowledge	The invention is made of five or six simple machines	The invention is made of three or four simple machines	The invention is made of two simple machines	The invention consist of one simple machine.
Function	The intended task is performed exactly as planned.	The task is completed but there is a snag or two. The machine holds together.	The task is completed with some effort, there is some mechanical breakdown.	The task is not completed, the machine breaks down.
Construction - Care Taken	Student did all the work (except work done with sharp tools) with some adult or older sibling guidance.	Student did most of the work (except work done with sharp tool) with some adult or older sibling assistance.	Student helped someone construct the machine.	Someone other than the student is almost, or all, the work on the machine.

Follow-up Activities: Students will help produce a multimedia slide presentation of the inventions. Inventions will be exhibited in the all school enrichment fair. Some inventors will be asked to present their inventions to students in other classes and, maybe, to parents at a P.T.O. meeting. At the very least, invention will be put on display in the school library.

HotList for This Lesson

<http://sln.fi.edu/qa97/spotlight3/spotlight3.html>

<http://www.mos.org/sln/Leonardo/InventorsToolbox.html>

http://www.coe.uh.edu/archive/science/science_lessons/scienceles1/finalhome.htm

<http://www.plainfield.k12.in.us/hschool/webq/webq8/jjquest.htm> This could be a separate lesson

<http://www.rube-goldberg.com/>

<http://edheads.org/>

This is one wonderful site. Check it out.