

**MAISA and the REMC Association of Michigan  
Best Practices in Technology Integration  
Plan**

**Title: Simple Machines**

**Subject: Science**

**Intended Grade Level(s): 5 - 6**

**Description:**

The purpose of this plan is to integrate a computer laboratory, classroom, and real life situations. In the classroom setting students will be introduced to simple machines. Within the computer laboratory students will explore and investigate simple machines through numerous simulations. Upon successful completion of each laboratory module students will apply what they have learned through the use of building blocks. Students will construct working models of various simple machines that demonstrate mechanical principles and perform to specifications.

**Curriculum Benchmarks:**

**ML.SCI.I. Communicate findings while reconstructing previously learned knowledge.**

**ML.SCI.I.1.E.1** Develop knowledge of simple machines and their relationship to those who use them.

**ML.SCI.I.1.E.2** Use simple machines to solve problems.

**ML.SCI.I.1.E.3** Manipulate simple machines while observing interacting parts and describe how they work.

**ML.SCI.I.1.MS.6** Write and follow procedures in making workable simple machines.

**ML.SCI.I.1.E.4** Explain basic measurements used with simple machines.

**ML.SCI.II.1.E.3** Describe ways simple machines are used in everyday life.

**ML.SCI.IV.3.E.3** Describe how simple machines make life easier.

**ML.SCI.IV.3.MS.4** Demonstrate the relations of simple machines and the objects being moved.

### **Materials/Hardware/Software:**

**Students need access to the following to complete this lesson:**

**Science computer curriculum with a knowledge of simple machines: inclined plane, lever, wheels and axles, and pulley, i.e. Successmaker Science Discovery Curriculum by Computer Curriculum Corporation.**

**Networked computer laboratory with enough stations for an entire class.**

**LEGO DACTA blocks for an entire class.**

**Television/VCR.**

**CD ROM Video Disc Telex Projector.**

### **Activities/Procedures:**

**These lessons are designed to alternate classroom activities with computer laboratory activities as well as integrate homework activities.**

#### **Classroom Activity I**

- 1. Introduce simple machines by showing one of several videos available at the local ISD, i.e. MR. WIZARD-SIMPLE MACHINES.**
- 2. Read picture books to the class with simple machines as their theme.**

#### **Computer Laboratory Activity I**

- 1. Introduce simple machines by using the telex projector with CD ROM video disc E. side B available from Successmaker Science Curriculum. (approximately 16 minutes in length)**
- 2. Each student then accesses the Simple Machines Module (SM). Students are introduced to the study of inclined planes and how they work, lessons**

#### **Homework Activity I**

- 1. Students will need wagon, heavy objects, curb, and driveway. Fill the wagon so that it is too heavy to lift from the street to the side-walk, but not too heavy to pull. After you have tried to lift the wagon over the curb, try pulling the wagon up the driveway and onto the sidewalk.**

#### **Classroom Activity II**

- 1. Discuss students' findings on inclined planes in homework activity.**

**2. Introduce levers with the video, SIMPLE MACHINES-LEVERS.**

**Computer Laboratory Activity II**

**1. Students reenter SM module. Within this module students study levers and how they work, lessons 1 - 4.**

**Classroom Activity III**

**1. On The Farm activity sheet students color all levers.  
2. Students will design levers following procedures outlined on LEGO DACTA card**

**Homework Activity II**

**1. Students will need 1 board 3 - 6 feet long and 1 - 2 feet wide, brick, and 2 people. Use the brick as a fulcrum. Place the board on the brick and have your friend stand on it, acting as the load. Try the fulcrum and load in different positions.**

**Classroom Activity IV**

**1. Discuss students findings in the homework activity.  
2. Introduce wheels and axles with the video SIMPLE MACHINES AND AXLES.**

**Computer Laboratory Activity III**

**1. Students reenter SM module and study wheels and axles and how they work, lessons 1 - 4.**

**Classroom Activity V**

**1. On The Parking Garage activity sheet students color all wheels and axles.  
  
2. Students will design working wheels and axle models as outlined on the LEGO DACTA card 10.  
3. Introduce the pulley with the video SIMPLE MACHINES-PULLEYS.**

**Computer Laboratory Activity IV**

**1. Students reenter SM module and study pulleys and how they work, lessons 1 - 4.**

**Homework Activity III**

**1. Students will need 2 unbendable sticks, strong fishing line, and two other people. Tie the line to one stick and wrap the line loosely around the other stick. Have your friends pull the sticks apart while you try to pull them together by pulling the line. Make five loops around the sticks. Try pulling the line again.**

**Classroom Activity VI**

- 1. On The Harbor activity sheet students will color all pulleys.**
- 2. Students will design working models of pulleys as outlined on the LEGO DACTA card 5.**

**Assessment/Evaluation:**

**Evaluations will be based upon successful construction of working models for each simple machine. Students will also complete Student Evaluation forms.**

**As a final assessment students will be given a problem to solve involving the construction of a working simple machine using LEGO DACTA CARDS 8, 13, 19, and 22. In addition students will be given a series of illustrations in which they must write an essay describing the problem and what will make the job easier.**

**Follow-up Activities:**

**Access the Internet for additional LEGO activities at**  
<http://www.weirdrichard.com>

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