Activity: **Make an Alarm! (Can be used in conjunction with "Dear Mr. Henshaw")**

GRADE LEVELS: 3-5

SUMMARY:

After reading the story "Dear Mr. Henshaw" by Beverly Cleary, students will build an alarm system for something in the classroom, as the main character Leigh does to protect his lunchbox from thieves. Students will learn about alarms and use their creativity to create an alarm system to protect their lockers, desk, or classroom door. Note: this activity can also be done without reading "Dear Mr. Henshaw".

LEVEL OF DIFFICULTY [1 = Least Difficult : 5 = Most Difficult]

5-most difficult (can be modified)

TIME REQUIRED

40 minutes (one class period)

COST

$10 (approximately $1 per group, use materials already found in classroom)

STANDARDS:

1.1 Identify materials used to accomplish a design task based on a specific property, i.e. weight, strength, hardness, and flexibility.

2.1 Identify a problem that reflects the need for shelter, storage, or convenience.

2.2 Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.

2.3 Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.

WHAT WILL THE STUDENTS LEARN?

The importance of alarm systems and where they are found.

How to work in teams, with members having different roles.

Design techniques and construction methods.

Understanding the importance of cause and effect when designing an alarm

BACKGROUND INFORMATION:

Design: to plan and make something in a skillful way

An alarm is a device that warns or signals, as by a bell, buzzer, or whistle. They work by having some type of unwanted action set them off. There are many different types of alarms. Some examples are: fire alarms, car alarms, alarm clocks, and security alarms.

RESOURCES:

http://howstuffworks.lycos.com/inside-clock.htm -Good step-by-step pictures of a wind-up alarm clock. Shows inner workings of clock including gears

http://www.zetnet.co.uk/sea.jnp/earth.4/time.htm - Ancient Greeks introduced alarm clocks using water

http://www.ernie.cummings.net/clock.htm?BUTTON=Return+to+Clock+Menu#MENU - General History of clocks, including early candle alarm clock

http://www.howstuffworks.com/digital-clock.htm - How a Digital clock works

MATERIALS:

Small bells (inexpensive)

String

Elastics

Balloons

Wires

Marbles

Papertowel tubes

Pipe cleaners

Popsicle sticks

Paper cups

Duct tape

Typical classroom supplies (such as paper clips, paper, tape, glue, erasers, scissors, etc.)

PREPARATION:

Teacher should gather materials to be used by students to build the alarms.

DIRECTIONS:

1. Introduce the topic of alarms to the students. Discuss the use of alarms in our daily lives and where they are found. If using the book, "Dear Mr. Henshaw," discuss why Leigh built an alarm.
2. Explain to the students their goal. They must build an alarm system to protect something in the classroom using only the materials that the teacher gives them. Some ideas are to build alarms to protect the students' lockers, desks, backpacks, the classroom door, and a window.
3. Identify the materials available to the students. Discuss any safety concerns that should be considered with these materials being used. Explain that the alarm system must consist of at least three steps, and should use the least amount of materials as possible. Talk about and explain what a design is and why it is important, explain your criteria for the grading of their designs. NOTE: the teacher may want to begin with a one step alarm, and make it more challenging by adding steps.
4. Break the students up into groups of 3 or 4. They should collaboratively accomplish the task of building an alarm.
5. Students should draw the design of their alarm system on paper. There should be an explanation describing what their alarm does, how it works, and what materials were used.

6. Each group should present their final products to the class and explain how it works.

INVESTIGATING QUESTIONS:

What are alarms used for?

Why do we need alarms?

Where do we find alarms?

Why did Leigh in "Dear Mr. Henshaw" need an alarm?

What do most alarms have in common?

What might you need an alarm for in the classroom?

REFERENCES:

Cleary, Beverly. Dear Mr. Henshaw. Camelot, New York, New York. 2000.

Rubric for Performance Assessment						
Activity Title:	MAKE AN ALARM!			Grade Level:		
	1	2	3	4		
Criteria	Beginning	Developing	Proficient	Advanced	(X factor)	Subtotal
DESIGN OF ALARM SYSTEM	Design of alarm system is difficult to read and is not expected to work successfully.	Design of alarm system is not very clear.	Design of alarm system is clear and well thought out.	Design of alarm system is highly developed, very descriptive, and goes beyond expectations.		
TEAMWORK	Only one of the team members designed and constructed the alarm system.	Most of the team members worked together on the design and construction.	All members of the team participated in design and construction.	All members of the team participated in design and construction and presentation and worked well together.		
PERFORMANCE	Alarm system consists of less than three steps and does not work.	Alarm system consists of less than three steps, but works.	The three steps of the alarm system work successfully.	Alarm system consists of more than three steps and works well.		
					Total:	
Teacher Comments:						

Group name____

Design an alarm that you can use in your classroom, and label its parts.

What materials did you use?

What does your alarm do?

PreK-12 ENGINEERING

Activity Evaluation Form

www.k12engineering.org

Activity Name: ____

Grade Level the Activity was implemented at:__________

Was this Activity effective at this grade level (if so, why, and if not, why not)**?**

What were the Activity's strong points?

What were its weak points?

Was the suggested Time Required sufficient (if not, which aspects of the Activity took shorter or longer than expected)**?**

Was the supposed Cost accurate (if not, what were some factors that contributed to either lower or higher costs)**?**

Do you think that the Activity sufficiently represented the listed MA Framework Standards (if not, do you have suggestions that might improve the Activity's relevance)**?**

Was the suggested Preparation sufficient in raising the students' initial familiarity with the Activity's topic (if not, do you have suggestions of steps that might be added here)**?**

If there were any attached Rubrics or Worksheets, were they effective (if not, do you have suggestions for their improvement)**?**

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