RUBE GOLDBERG MACHINE ACITIVITY
Design for Engineering

Best known for his "INVENTIONs" cartoons, which use a string of outlandish tools, people, plants, and steps to accomplish everyday simple tasks in the most complicated way, Pulitzer Prize winning cartoonist Rube Goldberg's drawings point out that people are often overwhelmed by over complicating their lives.

Rube Goldberg's "INVENTIONS" continue to inspire the many local and regional RUBE GOLDBERG MACHINE CONTESTS culminating at the "University National Contest", which is held annually at Purdue University. This National Competition (featuring "winners" from local contests at universities and colleges all over the country) garners growing international and domestic network TV, print, and other media coverage. High and middle school science classes and clubs throughout the U.S. are now also holding regional and state-wide RUBE GOLDBERG MACHINE CONTESTS. A "National Contest" for high schools is hosted by the Milwaukee Colleges of Engineering Partnership: Marquette University, Milwaukee School of Engineering, and University of Wisconsin - Milwaukee.

Rube's work has been immortalized in every media from a recent U. S. postage stamp to the many RUBE GOLDBERG sites on the Internet; at last count almost 3,000 "references" to Rube are on the Web.

Rube Goldberg has been part of shows presented at the Smithsonian Museum, the Williams College Museum of Art, and the new Tang Museum of Art at Skidmore College.

Rube Goldberg fans will also see more of Rube with stories and cartoons about and by Rube in many publications with numerous and regular "mentions" in the *New York Times*, *Wall Street Journal*, *Time Magazine*, *Newsweek*, *USA TODAY*, *Scientific American*, etc. continues to talk about, and laugh with the wonderful drawings and "INVENTIONS" of RUBE GOLDBERG.

Rube Goldberg's "INVENTIONS" have become such a part of the English language that just their mention brings instant recognition, a laugh, and an image of the most convoluted way to do something simple. Rube, a graduate engineer from the University of California at Berkeley, uses his engineering, story-telling, and drawing skills to make sure that the "INVENTIONS" work, even though they might need very patient and dedicated people, animals, and plants to accomplish the inventor's goal. The "INVENTIONS" are always very funny, and do make you laugh as you learn a thing or two about how easy it is to make simple, everyday tasks "complicated".

GETTING STARTED

1. Identify the Problem
    a. Whatever the problem chosen, it will need to solved in at least 20 steps (or more) Some examples might be:
        1. Sharpening a pencil
        2. Watering a plant
        3. Pouring a glass of milk
        4. Etc., etc., etc.,
2. Locate Potential Materials
    a. Look around the house, the garage, the Tech.Ed. room, the thirfty store, etc.
    b. Materials can be taken from existing products, they can be products, whatever you can find. However make sure they are not dangerous in any way.
    c. Make sure you ask permission before taking something that does not belong to you.

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3. Research
    a. Find out if someone has already done this or something like this. Look on the web. There is a list of possible resources at the end of these instructions.
    b. Find out the possible machines that could be utilized and how they work (six basic machines).

4. Brainstorm Solutions
    a. Each person should draw at least one potential solution to the problem chosen.
    b. From your potential solutions, select the best one or make it a combination of the choices, or go with a totally new idea.
    c. Remember, there are no bad ideas!

5. Rationale
    a. Prepare a rationale statement, or a reason for choosing your design. Select sound reasons and explain them and why you think they will work.

6. Design Brief
    a. Prepare a design brief explaining your problem chosen.
    b. What are the variables that can be tested (you should have at least two)
        1. Time
        2. Distance
        3. Weight
        4. ????

7. Testing
    a. Complete several trials and document the outcomes of each trial.
    b. Make observation of what changes need/could be made to make it more successful.
    c. Prepare a demonstration for the class and possibly parents or other audience (this may be through a live demonstration or an electronic method).

8. Grading
    a. Grading will done using a rubric (see attached example).

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