Michelle Brooks Sixth Grade Science

Dates Day 1: _____, 2010 Day 2: _____, 2010

Standards and Objectives

6-5.2 Recognize that energy is the ability to do work (force exerted over a distance).
6-5.3 Explain how the design of simple machines (including levers, pulleys, and inclined planes) helps reduce the amount of force required to do work.
6-5.4 Illustrate ways that simple machines exist in common tools and in complex machines.

Focus Questions

How does the design of a simple machine reduce the effort force needed to complete an activity?

Assessment

Students recognize and identify simple machines found on the obstacle course.
Students will demonstrate knowledge by designing a model of an obstacle course utilizing simple machines.

Materials

Day 1: Computer/ SmartBoard
Day 2: 2 scooters; 2 shovels, buckets, sand; 2 buckets of…. and rope; 2 umbrella holders; corn hole set; 2 golf clubs, balls and cones

Procedures

Day 1 *Step 1*: Students are presented with the Inquiry Problem:

A student's youth club is helping to build a wheelchair ramp for a local grocery store. He knows that a ramp is a simple machine called an inclined plane, but does not know how it makes moving things to a higher level easier. Are there other simple machines that would serve the same purpose?

Step 2: Class will be lead through the interactive simulations on Discovery Education for each Simple Machine on the SmartBoard.
Step 3: Discussion of Inquiry Problem

Day 2 Simple Machine Obstacle Course

Step 1: Show students the outline of the obstacle course on the smartboard prior to going outside.

Step 2: Take students outside to the obstacle course and walk through the course.

Step 3: Students will be paired and race each other through the obstacle course designed with Simple Machines (see attachment).

Step 4: Return to classroom and review SmartBoard activity. (see attached)

Step 5: Use pictures of obstacle course to review simple machines found on course (slide #) Question? How did these machines make the job easier?

Step 6: Slide Quick lesson on levers found in the body.

Step 7: Lead students to think about a playground. What equipment would you see made from simple machines? Show students pictures of playground equipment at Alhambra park**.** Next, inquire as to how many students have seen a television show where contestants compete on some type of obstacle course. Students will suggest programs such as Survivor and Fear Factor.

Step 8: Inform students that their task is to show what they have learned about simple machines by creating an obstacle course which may use playground equipment found at Alhambra Park (pictures of the equipment are on SmartBoard Presentation) with a partner. Obstacle course must utilize each type of simple machine at least one time. The best obstacle course design will be used as an activity at the end of the year park party.

Accommodations

Working with partners will benefit students who are struggling with the concept of simple machines.

Homework

Design an obstacle course challenge: utilizing simple machines and those found on playgrounds, design an obstacle course for an end of the year competition.
Summary:

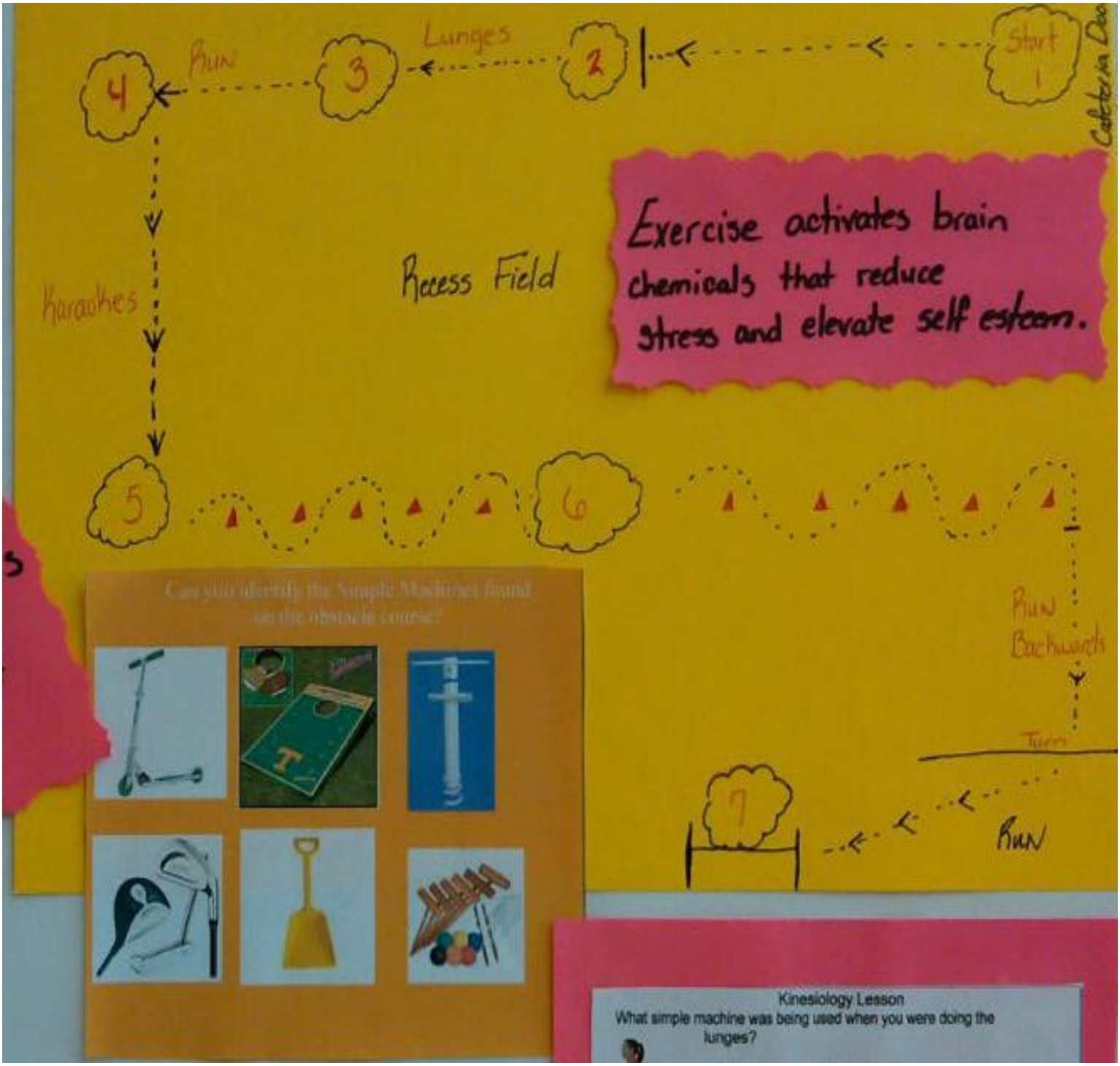
Why did I choose this lesson?

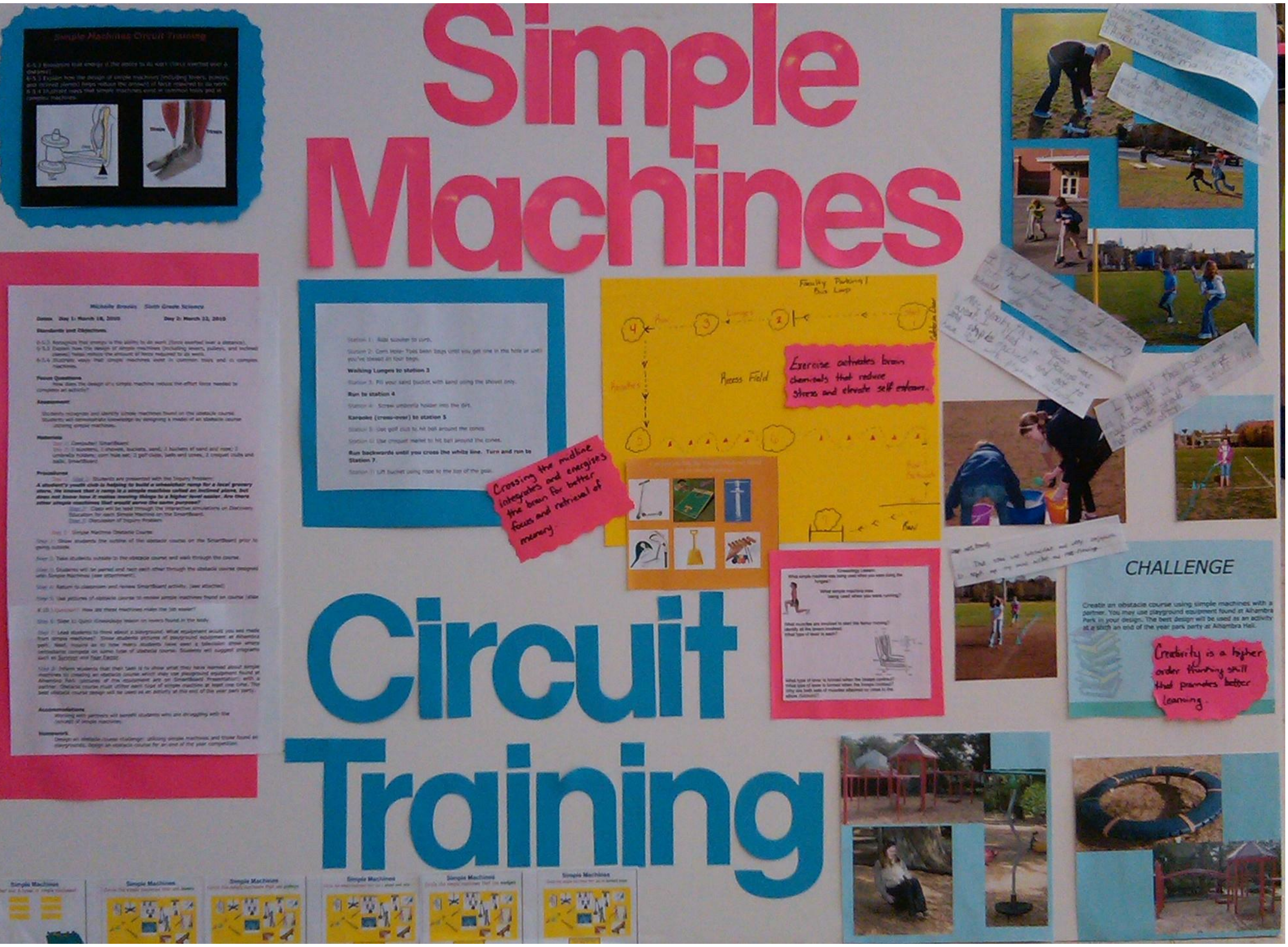
This was an awesome opportunity to demonstrate that we can ***"teach"*** students the concepts of simple machines through the use of lectures, books, and/or demonstrations. Or we can let them really ***learn*** the concepts – in such a way that the lessons remain with them for a lifetime.

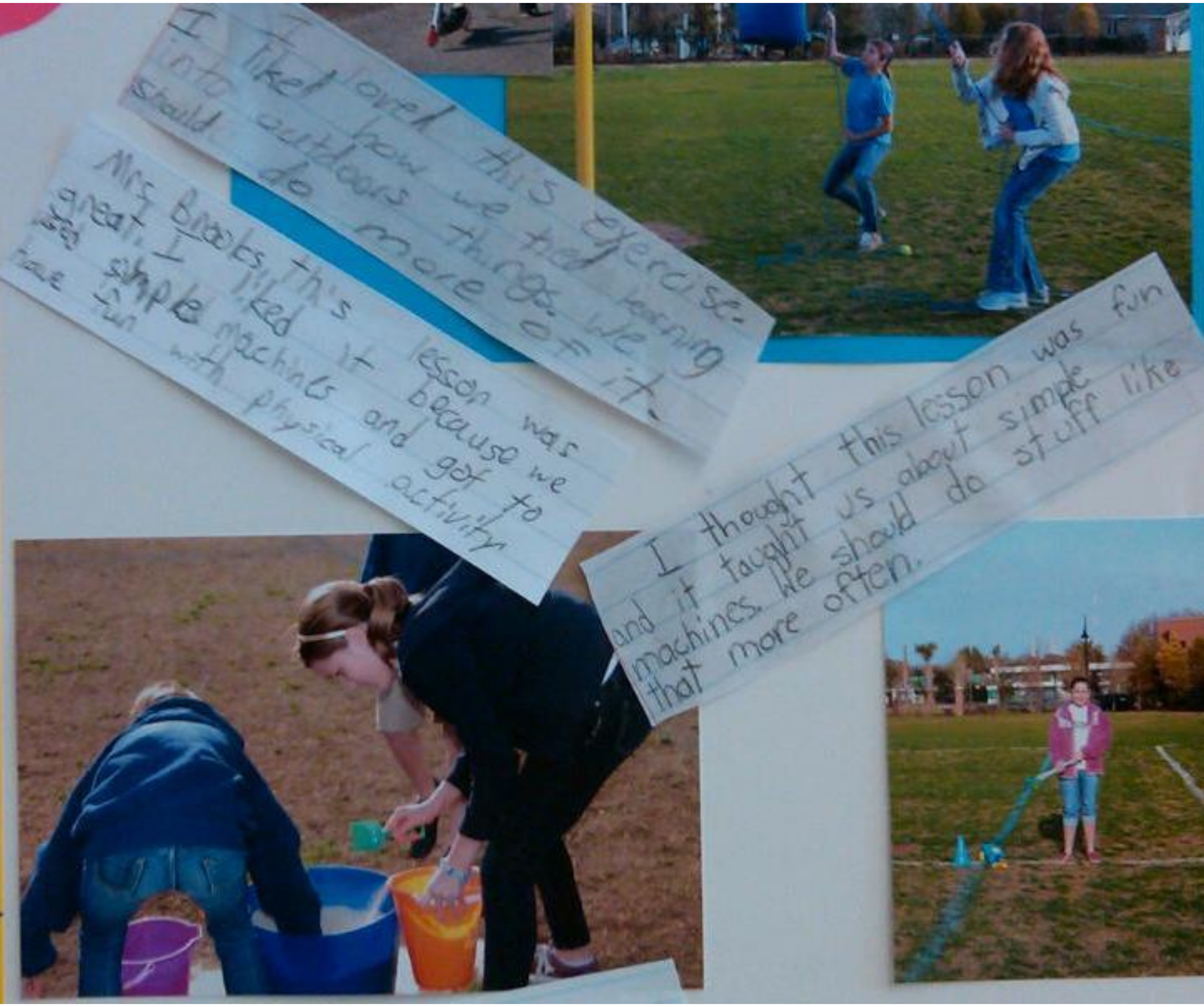
The obstacle course also allowed me to incorporate physical activity into a lesson. Studies show that physical activity programs have positive effects on academic achievement, including increased concentration; improved mathematics, reading, and writing test scores; and reduced disruptive behavior.

Students not only performed tasks using simple machines, they were also exercising. In between each station, they ran, did walking lunges, and karaoke's. Students were able to experience challenges and physical activities, which are components necessary for optimal brain function. Research shows that, for the majority of individuals, learning by *doing* is most effective. In fact, the more senses involved in the learning process, the greater the percentage of retention. As Confucius said, "What I hear, I forget. What I see, I remember. What I do, I know."

Symons,C.W., Cinelli, B., James, T.C., Groff, P. Bridging student health risks and academic achievement through comprehensive school h ealth programs. Journal of School Health 1997


Start
1
Lunges
2
Run
3
4
Karaokes
5
6
Recess Field
Exercise activates brain chemicals that reduce stress and elevate self esteem.
Run Backwards
Turn
7
Run
Can you identify the Simple Machines found on the obstacle course?
Kinesiology Lesson
What simple machine was being used when you were doing the lunges?


Simple Machines
Circuit Training
Exercise activates brain chemicals that reduce stress and elevate self esteem.
Crossing the midline integrates and energizes the brain for better focus and retrieval of memory.
CHALLENGE
Create an obstacle course using simple machines with a partner. You may use playground equipment found at Alhambra Park in your design. The best design will be used as an activity at a sixth an end of the year park party at Alhambra Hall.
Creativity is a higher order thinking skill that promotes better learning.


I loved this exercise. I liked how we tied learning into outdoors things. We should do more of it.
Mrs. Brooks, this lesson was great. I liked it because we learn simple machines and got to have fun with physical activity
I thought this lesson was fun and it taught us about simple machines. We should do stuff like that more often.