DESIGNING LEARNING TASKS

Name of Curriculum: __Simple Machines (L+P)__

STEP 1: IDENTIFY OPPORTUNITIES IN THE CURRICULUM

Lesson and Page Numbers:

Investigation 4, pt. 2 (after part 2 — pages 14-20)
student sheet # 24

What is the learning goal?

- Students will understand that there is a direct relationship between the number of ropes supporting a load in a pulley system and the amount of effort required to lift the load (effort = load (N) ÷ # of ropes)

What data will students either be given or collect to analyze?

- Students will use data collected from student sheet # 20

What scientific principle will students use to link their claim and evidence?

- simple machines principles —
  - A) provide mechanical advantage (reduce effort)
  - B) " directional " (change direction of effort)
  - ~~difference~~
  - c) make work easier

- X Rebuttal — disadvantage (increase of distance that effort travels

STEP 2: DESIGN COMPLEXITY OF THE LEARNING TASK

For each of the following characteristics consider how simple or complex you want the learning task to be depending on the needs of your students.

What <u>question</u> will you ask students?

- ~~The~~ Refer to attached sheet (student sheet #24 — Response Sheet - Pulleys at work)

What <u>specific data</u> will you either provide students or have students collect?

- student sheet #20

A) One pulley system (↓)(effort, distance effort travels)
B) One pulley system, direction up) " " ")
C) Two pulley system ↓ (" , " " ")

D) Two pulley system, ↑

How <u>much data</u> will you have students analyze?

- 4 pulley systems, one set of data for each
(# of pulleys, direction of effort, weight of load (newtons), Effort (Newtons), # of ropes lifting load, distance effort moved, distance load moved)

What <u>variation of the framework</u> do you want students to include in their response?
For example – complexity of the evidence, complexity of reasoning and inclusion of rebuttal

Rebuttal / Counter argument

STEP 3: CREATE CLASSROOM SUPPORTS

Do you want to include any type of <u>visual representation</u> in your classroom? If yes, describe or sketch the representation.

- poster /

-| scientific explanation |

Claim

Evidence

Reasoning

Counter / rebuttal

- Modeling

Do you want to provide students with <u>curricular scaffolds</u>? If yes, draft the scaffolds below.
Consider – content specific, generic or combination AND level of detail to include

Combination scaffold (Detailed support)

Claim — (write a statement that responds to the original question about whether Jове will be able to lift six crates of milk using the pulley system)

at least 3 piece of

Evidence — (provide ~~at least three~~ scientific data to support your claim about whether Jове will be able to lift six crates of milk using the pulley system).

Reasoning - (write a statement that explains why your data count as evidence to support your claim ...

*Rebuttal - (write a statement that explains any ~~disadvantage~~ other interpretation or analysis of the ~~to the system~~ pulley system

* ~~a~~ ~~rebuttal~~ will be used

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