



Crane**Approach:** One to one**Level:** year 4 and year 8**Resources:** Board with cogs, handles, and drum for string with hook, weight to be lifted on hook.**Questions/instructions**

In this activity you will be looking at a model and telling me how it works.

On this board there are two black handles.

Show student the two handles.

Without touching the board, tell me which handle you would turn to make the string move more quickly, and which handle you would turn to make the string move up more slowly.

Correctly predicted faster handle

% responses
year 4 year 8

44

48

Now try turning the handles and see which one makes the string move up the more quickly.

Teacher may need to hold the board steady for the student at the edge of the desk so that it doesn't tip.

Correctly observed faster handle

64

72

Tell me why you think that turning the big cog makes the string move up more quickly than turning the little cog.

Point to particular cogs.

Now we have a heavy weight to lift on the hook. Which handle do you think it would be best to turn to make it easiest to lift the weight. Tell me without trying it.

Why do you say that?

Now have a go at trying to lift the weight by turning the handles.

Have you changed your mind about what you think?

Explanation for faster handle

clear

6

24

vague

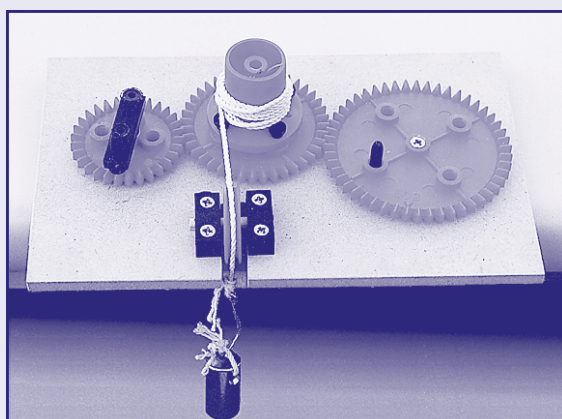
41

37

no idea

53

39

**Commentary**

Difficulty was experienced with the equipment for this task. Friction and wobbling cogs led to unreliable results for the second part of the experiment (related to lifting weight). Results for that part are not reported.