Evaluation, design and communication skills

1 Scenario

Umtata Secondary School Communicator

Great news – at last we are getting a separate classroom for Grade 8 learners so that they no longer have to share with Grade 9. The builders are coming next week to dig up soil for the foundations.

COMPETITION

Mr Xolela, our Technology teacher, is running a competition for learners to design a machine that will help the builders dig the soil. Your machine must fulfil the following requirements:

- It must use at least two of the following subsystems to give a mechanical advantage: • mechanical • electrical • pneumatic • hydraulic.
- The mechanical elements, giving mechanical advantage, may consist of one or more of these mechanisms: • levers • linked levers • wheels • cams • cranks • pulleys • gears.
- The machine may include a mechanical or electrical control device such as a: • cleat • ratchet and pawl • switch.

LIVEWORKSHEETS

2 Investigation skills: investigate the situation

You have to investigate how to design an appropriate machine that will solve the problem given in the scenario. You will have to investigate the possible mechanisms and controls to be used together, and to design and make the machine. You will also have to do two sketches of possible designs.

Revise work done on mechanical systems in Grades 7 and 8. Think about how to design a machine that includes at least two of the sub-systems you have learned about. For example, fixed and moveable pulleys, block and tackle, ratchet and pawl, disc brake (hydraulic systems), bicycle cables and cleats.

LIVEWORKSHEETS

3.

Answers

1.

2.

3.

4.

LIVEWORKSHEETS

5.

6.

LIVEWORKSHEETS