Hydraulic Jack

2 Hydraulic jack

A hydraulic jack is similar to a hydraulic press. It consists of two pistons of different sizes connected by a pipe. When we move the smaller piston back and forth by a handle connected to it, it pumps a liquid into the cylinder of the larger piston. This forces the larger piston to move. In this way, a weak force applied to a smaller piston can raise a heavy load on a larger piston.

3 Investigation: design considerations

In Grade 7 Term 1 you learned about the technology design process. This process can be described as using knowledge, skills and resources to meet people's needs and wants. We do this by creating practical solutions to problems. Our solutions should consider social and environmental factors. People make and design the things in technology. Your design also needs to be fit for purpose and involves investigating, writing a design brief, making the item, evaluating the design stages and the final product and communicating your design.

In this activity you will evaluate the design of a hydraulic jack. You will make a poster and present your evaluation to the class.

Working in groups of five, discuss the following design aspects of a hydraulic jack:

1. Who do you think would use a hydraulic jack?
2. What is the purpose of a hydraulic jack? Think of different reasons why people would need to use it.
3. Will it do the job?
4. a. What materials are used to make a hydraulic jack?
   b. Why is this material effective?
   c. What do manufacturers do to make hydraulic jacks strong, stable and rigid?
5. What will this product cost? Look in brochures and newspapers and compare prices.

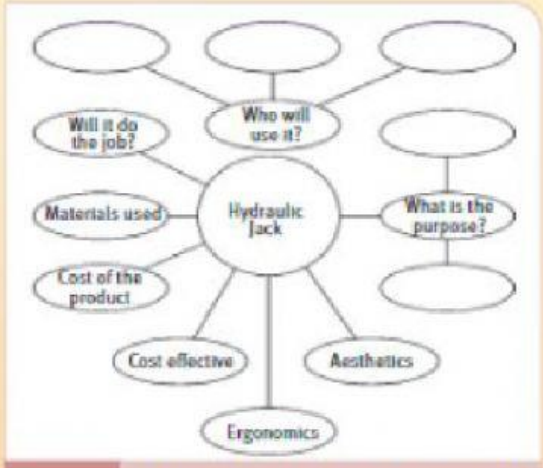


FIGURE 6 Use this mind map to evaluate the design of a hydraulic jack

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6 Is it cost-effective?
7 Are the aesthetics good? This is another way of asking whether it looks good.
   a Study the shapes of the different parts. Why did the designers use these particular shapes?
   b Study the colours. Why did the designers use these particular colours?
8 Is it safe to use? What precautions should the user take when using it?
9 Describe the ergonomics of the design. This is another way of asking whether or not it is easy to use.
10 Using a mind map, give as much information as possible in your answers to this activity. You may use the mind map opposite to design your poster.

Answers

1.

2.

3.

4a

b.

c.

5.

6.

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7.

8

9.

10.

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