

Challenge I: Form and Function

Teacher Resources:

One set of LEGO Mindstorms per pair (working in pairs is usually the best option, but groups of three are OK!)
Internet access is required for research.

SACSA Outcomes:

Design and Technology

4.5

Evaluates materials and equipment in order to meet principles of function, aesthetics and sustainability. [F] [In] [KC1]

Task card 1: Collect a construction set for your Mindstorms robot. Each set should contain all the parts necessary for building a basic robot including a 'construction' book. Working in your pair, construct the robot at the beginning of the book. As you work through the book, instructions are given for onboard programming. Complete all of the programming steps as you go!

Remember to take photos or video of each of the results of each of these programming steps.

Question/ Research/ Reflection:

You have built a basic robot which incorporates a number of sensors. One of the main reasons to build this robot- it is a simple construction that demonstrates how the Mindstorms robot might be constructed and allows you to complete the next set of challenges.

Research: Using the library resources/ internet

1. Find another set of instructions for a general purpose LEGO Mindstorms robot which incorporates all the sensors. What are the differences and what are the advantages of each design?
2. Find 2 different robots that can be constructed from the LEGO Mindstorms system that have a specialised function. Comment on the differences between these robots and the one you made.
3. There are a number of different robots being made. Find an example of a current robot (not LEGO) and compare this design to yours. How does the 'style' of robot reflect the function it is made for?

Reflection:

What are the three most important things that you know now that you didn't know before?

What would you change about your robot having completed some research?

What sensors are on your robot and how might you use each one?

Present your evidence to move on to the next challenge!

At Distance Control / Teacher Notes:

This challenge cannot be completed 'at distance' as it is obviously a hands-on building task. It was always my intention to use this task to give students a 'feel' for the robots. The high level of engagement this activity generates improves the success of the programme.