

LET'S NEGOTIATE

Description of activity

This activity helps students to understand how engineers and designers balance different specification details when developing new products.

Preparation for Let's Negotiate activity

Each group of four students will need a copied sheet from overleaf that has been cut into the card statements and a sheet of flipchart paper.

The activity

Organise the class into groups of four students. Ask one student per group to draw the 'Let's Negotiate board' on flip chart paper, as shown below.

Explain to the students that they are to assume they are a team of engineers working for a mechanical toy company.

The aim of the Let's Negotiate activity is for the team to prioritise which of the specification details (on the cards) will be high, medium or low priority.

Ask one student per group to deal out the all of the statement cards equally amongst the group.

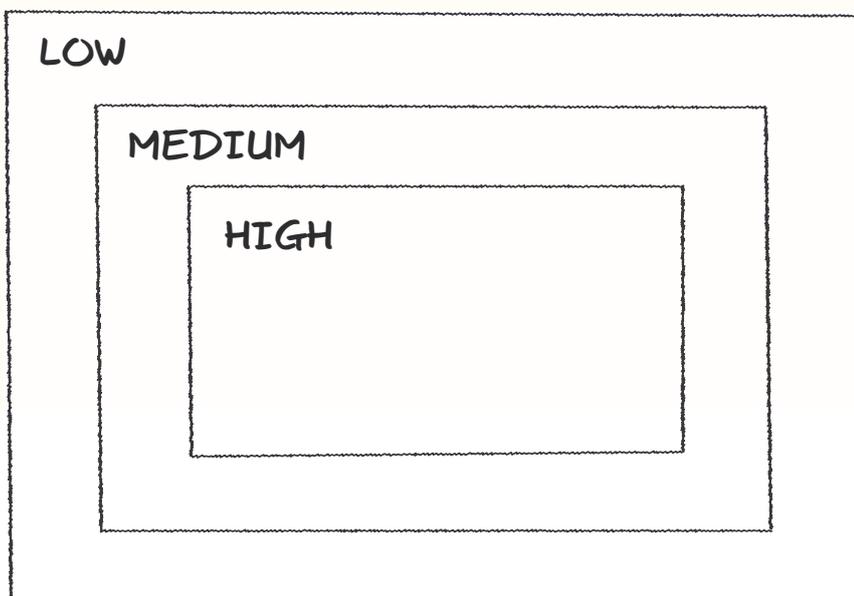
They then take it in turns to put one of their cards on the board in high, medium or low sections, read out the criterion and explain why they want it put there. Continue doing so but if the high section has six cards in it and someone wants to put another card in there, then he/she must persuade the group that the new criteria replaces one already in there. Continue until all cards are placed in agreed sections. Then look at the decisions and decide if there are any other criteria that are more important that are missing.

Ask each group to feedback and justify its top priority specification choices.

Reflect on how many sustainability criteria are in the top, medium or low priority boxes.

How might your company criteria for developing a new toy differ if you had an environment policy or strong value within the company on reducing environmental impact? Which specifications might come into your top 10?

Let's Negotiate board



Learning objectives:

1. To enable students to understand that any engineering process involves balancing the demands of different criteria including sustainability.
2. To help students to identify criteria for and write their own specifications.

Learning outcomes:

1. Students will understand that sustainability is a key element of any modern engineering solution.
2. Students will understand and be able to explain why they have chosen to include particular criteria in their specification, including sustainability criteria.

PLTS:

Reflective learners – students discuss and justify choices they would make about the criteria they think ought to have a high priority in an engineering product.

Team workers – students work together to produce an agreed set of priorities for an engineered product.



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RESOURCES:

You can develop your own specification criteria depending on the task but we have used the generic criteria below for a number of different engineered products e.g. a children's mechanical toy, a prosthetic limb or a power screw driver.

CAPABLE OF BEING USED BY DISABLED CHILDREN	DURABLE	MUST BE DESIGNED FOR EASE OF DISASSEMBLY
MINIMISES ENERGY USE IN PRODUCTION	CAPABLE OF BEING REPAIRED	MUST APPLY TO ALL RELEVANT QUALITY CONTROL TECHNIQUES
FIT FOR PURPOSE	WORKERS HAVE FAIR PAY AND EQUAL RIGHTS	MADE FROM LOCAL MATERIALS
CAN BE MADE AT A PROFIT	PRODUCED IN GOOD WORKING CONDITIONS	EASY TO USE
CAPABLE OF BEING USED BY DISABLED COMPONENTS CAPABLE OF REUSE OR RECYCLING AT END OF LIFE	MINIMISES ENERGY USE IN NORMAL USE	CAPABLE OF BEING MADE IN SCHOOL WORKSHOP
SHOULD MINIMISE ANY CHEMICAL EMISSIONS	REDUCES PACKAGING TO A MINIMUM	SAFE FOR ALL CHILDREN TO USE
MUST NOT PRODUCE ANY HAZARDOUS WASTE	MEETS A GENUINE NEED	USES SMART MATERIALS OR PROCESSES AS APPROPRIATE
PROMOTES A HAPPY, HEALTHY LIFE	ATTRACTIVE TO ALL CHILDREN	REUSES COMPONENTS WHERE PRACTICABLE IN MANUFACTURE
DOESN'T USE ANY BATTERIES		