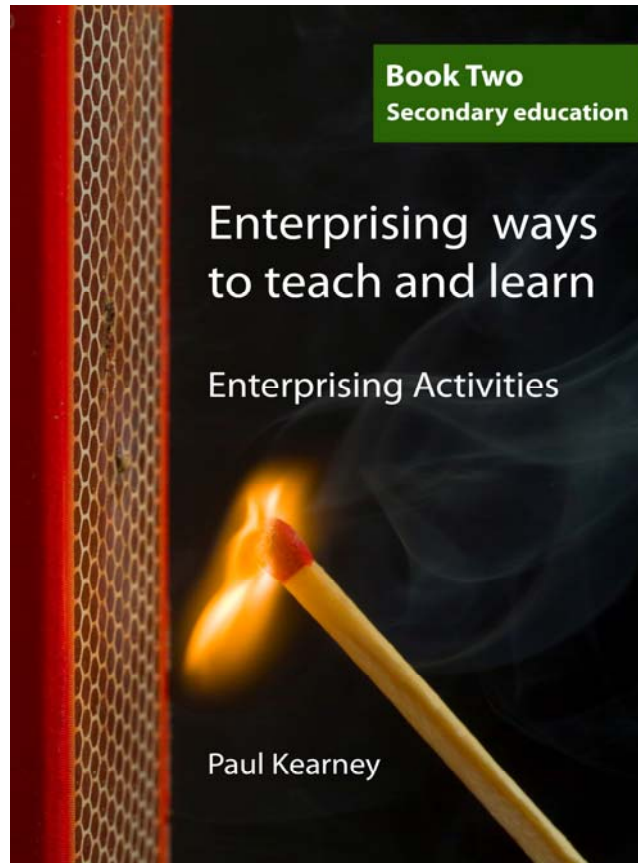


Sample Simulation



Glovers

Design and Waste

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GLOVER'S SIMULATION

Waste meets Design



Summary

Students act as product designers in a glove manufacturing company that must reduce waste to survive. Students enjoy this activity.

Focus

The simulation provides a limitless range of learning possibilities, especially mathematics.

Process

The activity relies heavily on student handouts. The first activity (described in the first handout) is the least demanding. The activity described in the second handout is a little more so.

The activity works better with students working as pairs. Mixing gender can add excitement and a source of learning.

See the Variations for ways of simplifying the activity or making it more sophisticated.

Handout – The Problem at Glovers

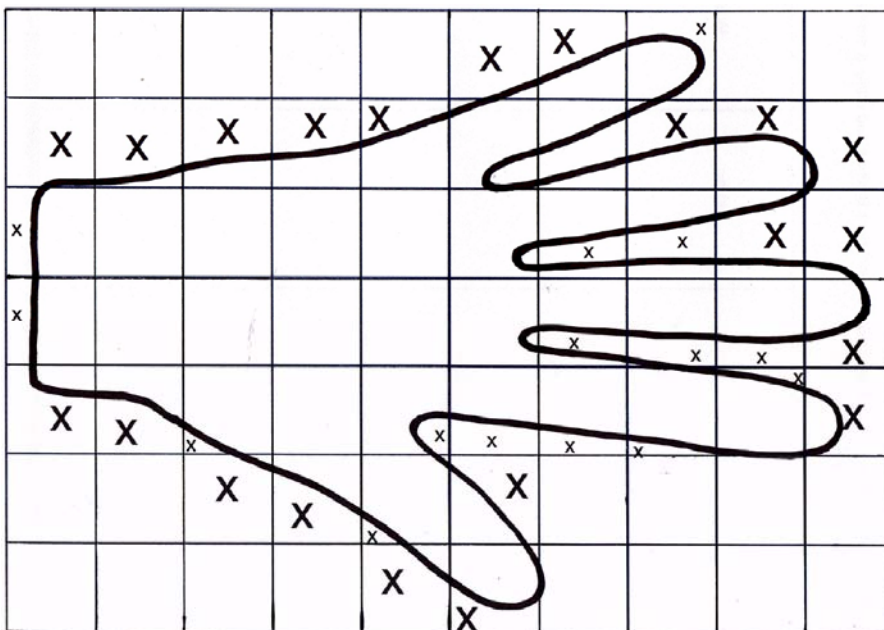
Glovers is a large manufacturer of gloves. It is about to go bankrupt because it wastes too much leather when producing gloves. The waste costs a lot of money.

If the business goes under, you and your sister will lose your jobs.

Most of the waste is caused by the way gloves are designed and cut.

It is decided that you and your partner should make a new design that produces the least waste. For practice you are given the piece of leather below.

Sample grid*

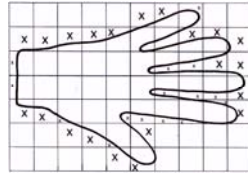


One of you must place your hand somewhere on the 'grid' that causes the least waste.

Where the hand covers only parts of the square there is waste. Each of these squares costs the company \$8.

Other pairs will be competing with you. The pair that reduces the most waste will keep their jobs. The other pairs might lose their jobs.

Handout – Prototype



Glovers is pleased with your designs and wants you to produce a *prototype* of the new gloves it can make.

A prototype is a model of the product. It helps you to find out the best way to make the final product.

Make another glove pattern like the one you have already made.

Make one glove by sticking the two sides together, using staples, glue or sticky tape. You must be able to put a hand in the glove.

Now repeat the entire process. You should end up with a complete set of gloves – a glove for each hand.

If you can open the classroom door wearing your gloves, you have made an excellent pair of gloves.

To finish, you and your partner must prepare a 10 minute presentation answering the following questions. (You must use pictures and graphs in the presentation).

How many *pairs* of gloves would Glovers have to produce to save over \$240?

How can the waste (off-cuts) be used to help the business? (Hint – think of other products).

What are six other types of industrial waste?

How does industrial waste affect the environment?

Is your family having jobs more important than hurting the environment?

Review-Reflection-Generalisation

Review-Reflection-Generalisation could touch on topics such as:

- The relationship between business success and employment
- Design and production
- Importance of quality
- Effects of waste on business and the environment
- Waste at home and school

Questions such as:

- Who do you think might be most responsible for problems at Glovers?
- What other things might get businesses into trouble?
- Would you like to work at Glovers, and if so, why?
- If you worked at Glovers, would you prefer to be paid
 - a fixed amount per hour or week?
 - by how many products you produce?
 - by the quality of products?

A focus on the '**process**' of carrying out the simulation could examine questions such as:

- Who did most of the work?
- Where did most of your time go?
- Did you take any risks?
- What would you do differently next time?
- What skills do you need to work on? What have you learned about planning and organising that will help you in the future?

Variations

1. The whole simulation can be **simplified**, eliminating the contextual detail, e.g. the company's plight and the cost issues. The students would just make a template.
2. The activity could be made far more demanding by changing costs, e.g. \$8 per wasted square. Percentages and other mathematical processes could be introduced.

3. Production costs could be added, including roles. For example, Cutters, who cut the patterns, may cost a certain amount per minute, as could be the case with Sewers who glue sides together. A pollution fine could be imposed, e.g. untidy work areas and mess on the floor.
4. Different styles of gloves could be involved, e.g. colour.
5. Use larger **paper sheets** focusing on:
 - the position of a number of templates
 - the adjusting of costing implications

(*Source of grid format Schools Curriculum Industry Partnership workshop handout non-attributed)