Suitable for 3-7 years

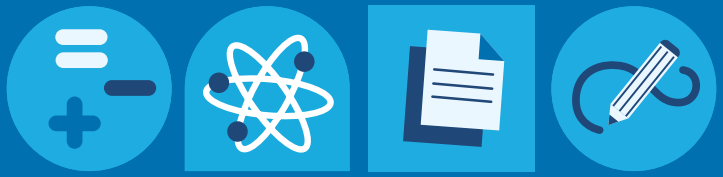
- Solo
- Pairs
- Groups

Diane's activity

Elsie the Engineer throws a party

How to guide

Created and written by Lisa Wilson in collaboration with quality engineer, Diane Gribi



Diane's activity

Elsie the Engineer throws a party

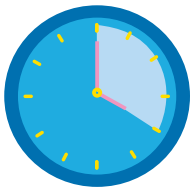
Introduction

Elsie the Engineer Throws a Party is a video for children aged 3-7 to encourage class discussion and problem-solving skills by responding to engineering challenges.

The video follows Elsie who is preparing to throw a party for her friends, only to realise that she has no juice to give them. Elsie tries to solve her problems using her engineering skills but it isn't always smooth sailing.

At several points in the video there is time to pause and ask the class to suggest what Elsie could try next. There is no one 'right answer' that we are looking for here, the children may suggest several ideas and these are all helpful. It is important to remember that when you encounter a new problem, it is good to think of a few ideas to try and not to be discouraged.

After each short discussion, continue the video to see what solution Elsie chose and what might happen next.

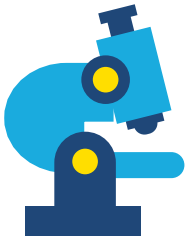


Time required

Video and class discussion. Suggested session length: 20 minutes

Materials and equipment

- A screen to play the video with speakers, space for the class to sit and watch, a remote or access to a laptop so that the video can easily be paused.
- Video can be watched here.



How does it work?

In this video Elsie builds a Juice Machine so that she can serve juice at her party. There are no instructions, only pictures of individual parts. This means that Elsie has to guess how to put everything together. Although she does a pretty good job, she tests her design for any problems before her guests arrive. Each problem is different.

Engineers design things – like machines, bridges or even ways of doing tasks. They also solve problems – by testing, measuring and problem solving. Engineers can work in lots of areas of the working world such as in health, sport, transport, space, food, and more. They also find solutions to help the environment, make new products or find better ways to make our world safer and happier.

This video was created with a real-life engineer, Diane. It is Diane's job to look at systems (the way and order we do things) and think of ways to make them the best that they can be. This includes looking for problems in a system, just like Elsie does with her juice machine.

How to watch as a class

This video is in a similar style to a silent movie, with no talking but some text on title cards as well as music. It is helpful to let you class know that Elsie doesn't speak before you watch. It would also be useful to discuss what an engineer does too. An adult should read out each card so that all the children can follow along. Older children may join in with the repeated "Oh no!" cards.

The video itself is less than ten minutes long, but remember that you and your class will be pausing to discuss ideas for Elsie's next steps. It would be useful to allow for twenty minutes for the session.

Many of the title cards do not need to be paused. Here is a rundown of all the text in the video, with discussion notes for any that do need to be paused.

Elsie the Engineer Throws a Party

Hi Elsie!

"Oh no, no juice!" – Pause. Elsie wants to have juice for her guests but the jug only has water in it. What could Elsie do to solve this?

Children might suggest things like:

- Checking in the kitchen
- Going to the shops to buy juice
- Squeezing some fruit

Any of these could work. All plausible solutions are helpful for Elsie. She may choose something entirely different but that doesn't mean the solutions weren't good. We should think of lots of ideas and keep trying until something works.

Elsie's Juice Machine

"Oh no, the water can't go up the tube!" – Pause. Elsie poured in some water but it didn't come out the tap like it was supposed to. It looks like the water went down the funnel and into the pipe but the first piece of hose was tilted up the way*.

Which way does water flow, up or down? What could Elsie try to fix this?

Children might suggest:

- Making the hose flat/straight to let the water run
- Pointing the hose down instead of up
- Adding a lot more water so it spills over

All of these could work. They may also revert to previous answers such as buying juice from the shops. These are also ok if it means Elsie can have juice for her party. Play the video and see what Elsie tries.

*It may be helpful to rewind to just before this title card appears, then pause so that you have a still image of the juice machine and can point out that the water is having trouble going up the hose.

"Oh no, a leak!" – Pause. Elsie straightened the hose so it wasn't going up-hill anymore and the water could flow further through the machine.

But there is now a leak. What could Elsie do to fix this?

Children may suggest:

- A variety of items to plug the hole in the pipe
- Adding another part to the machine/diverting water away from the area that leaks
- Revert to earlier answers to come up with a different way to get juice.

Elsie uses the stopper we see earlier that she first puts on the top of the machine, before she changes it for the funnel. The children do not need to guess this to have some up with useful suggestions of their own. Anyone who suggests that we must stop the leak has had an idea very similar to Elsie.

"Oh no, the water is stuck!" – Pause. Now the stopper is in place the water can move further along the machine but it still isn't coming out of the tap. Something must be blocking one of the pipes. We don't know what it is yet. Does anyone have a suggestion about what we could do to solve this problem?

The children may suggest:

- Cutting the pipe
- Sticking something down to dislodge the blockage such as a stick or pipe cleaner,
- Flooding the machine with even more water
- Pouring down drain unlocking solution.

Anything along these ideas could work, or again, abandon the machine for another juice idea. But remember that Elsie is an engineer so she would like to solve any problems with the machine first before trying out other ideas, even if they are very good ideas.

Let's try again

It's working. Hooray!

Time for the party

The End

The End (Thank you)

It is useful to have a final wrap-up of all the ideas suggested, to remember what Elsie tried and to remind them that many of their ideas could have worked even if they are not the ones that Elsie herself chose. You can also discuss what they liked about the video and whether it would have been useful to have instructions with the machine. Do you think Elsie could make these for the next person?

Follow up activity

Imagine you are going to throw a party just like Elsie. Design a machine that makes something people would want to eat or drink. Draw a picture of your machine and think of a name for it.

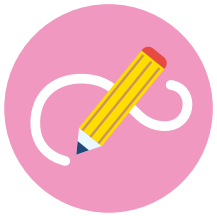
What do you need to help your machine to work? Does it get plugged in to a plug socket or run on batteries or solar power? Do you need to add ingredients like water, sugar, flour or fruit?

You could even make your machines out of cardboard boxes and other craft materials.

Credits

Elsie the Engineer Throws a Party was created by Lisa Wilson and Diane Gribi, starring Jessica Innes as Elsie. Filmed and Edited by Philip and Jess from Heriot Watt University as part of the Let's Do Engineering Project.

Story, direction and teacher's pack by Lisa Wilson.
Engineering support by Diane Gribi.



Experiences and Outcomes

Technologies

- I can share their thoughts with others to help further develop ideas and solve problems. TCH 0-04c
- I am developing and using problem solving strategies to meet challenges with a food or textile focus. TCH 1-04c
- I can adapt and improve ideas and can express my own thinking in different ways. TCH 1-04d

- I explore ways to design and construct models. TCH 0-09a
- I explore and discover engineering disciplines and can create solutions. TCH 1-12a

Science

- I can talk about science stories to develop my understanding of science and the world around me. SCN 0-20a

Health and Well-Being

- I can describe some of the kinds of work that people do and I am finding out about the wider world of work. HWB 0-20a / HWB 1-20a
- I explore a variety of products covering a range of engineering disciplines. TCH 0-12a
- I have participated in decision making and have considered the different options available in order to make decisions. SOC 1-18a