Little Inventors

Inventor's Log

Part II - prototyping your idea!

This belongs to:

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NSERC CRSNG

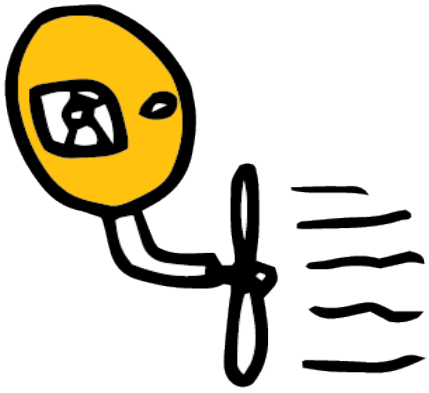
United Nations Educational, Scientific and Cultural Organization

Canadian Commission for UNESCO

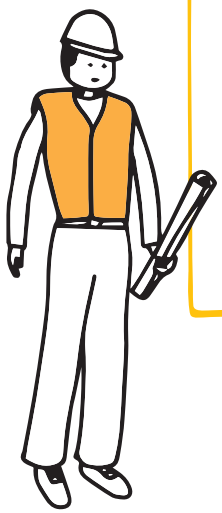
let's talk science

From 2D to 3D!

Drawing is a fantastic way to capture your ideas when inventing, and it should always be the first step. Now we need to propel your ideas into the next dimension – from the paper into reality – from 2D to 3D!



The first step to a real invention is to make a model of it. This is called prototyping. It doesn't need to actually work, it's really to start seeing how your object could look as a real thing.



Designers, architects and artists all do it. They get messy with materials to feel what their idea is like in their hands before they embark on a project, and they spend quite a long time making models to make sure they get it right.

It's a lot of fun! So let's get making!

To get you started

1. Download our **Mission: Protect our oceans** resource packs for free, and have a go at inventing to improve our oceans' health.
2. Come up with an invention idea and draw it!
3. Submit it on the website to be included in the challenge.
4. Use the inventor's log to develop your idea further!

The challenge pack will give you lots of facts on sea life and habitats, on why the oceans matter and what main threats challenge our oceans' health.

Some brilliant prizes to look forward to

After you submit your invention idea to be part of **Mission: Protect our oceans**, some of the invention ideas will be developed and brought together in a unique Canadian exhibition to celebrate the launch of the **United Nations Decade of Ocean Science for Sustainable Development** in 2021. The two top inventors will be invited to attend the celebration!

A few others will have the wonderful opportunity to submit their ideas to the **Canadian Science Fair Journal** and be published!

But that's not all! We will also choose one inventor a month to receive a copy of the Little Inventors Handbook!

All you need to do is upload your invention to nserc.littleinventors.org.

In this inventors log

This is the place where you will find out how to plan and prototype your very own model.
You will find lots of activities here:

- What you need to get making
- Thinking in 3D
- Practice by making a snack shoe
- Plan your prototype
- Present your idea
- Make a logo and poster

You can also download the **Inventors Log - Part I** on developing your idea further.

What you need

Making prototypes doesn't need special materials or skills.

You can find lots of things around the house that you could use (but make sure it's OK with a grown-up!). For example, cardboard is great. It's everywhere and you can cut it, roll it, squish it and fold it into pretty much anything!

Keep empty cereal boxes, egg cartons and toilet paper and you will have some ready-made shapes to play with. What a fun way to recycle!

You could use cardboard packaging, old shoe boxes, paper plates or paper cups of different textures and thickness.

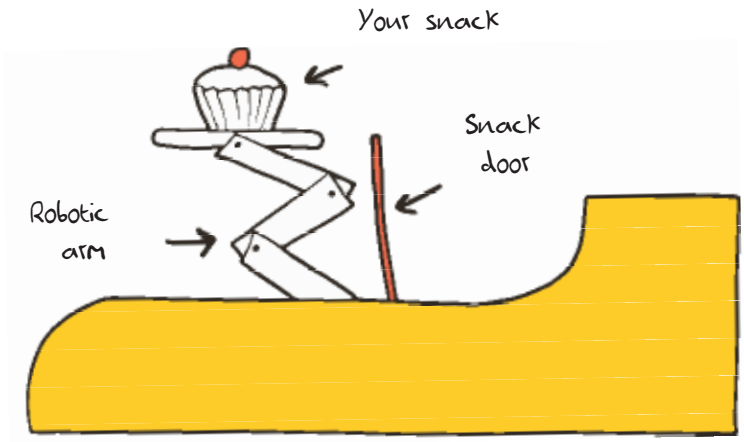
These are just some of the things you could use, but the list doesn't have to stop there. It's another chance for you to use your imagination!

Thinking in 3D...

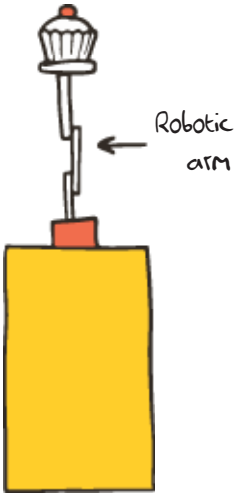
Once you have your invention drawing, it's a good idea to think about how it will look from different sides. This will help you to start imagining what it will look like as a real object.

Chief Inventor Dominic invented **the snack shoe**!

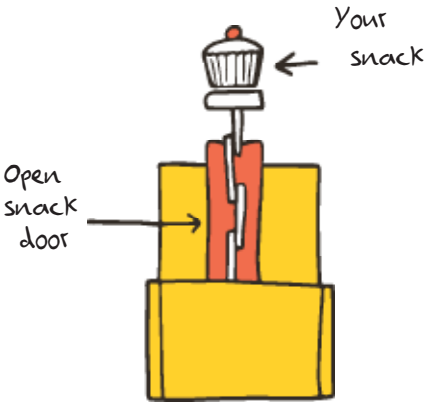
" Sometimes you get hungry but there are no shops around. This way I can always have a quick snack when I need it. "



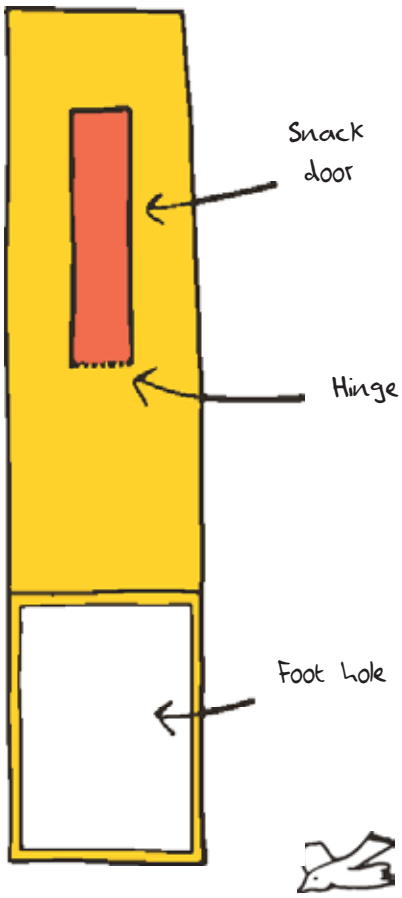
Side view



Back view



Front view



Bird's-eye view

Prototyping the snack shoe!

Before he started, Dominic had to think about how big his invention was going to be. **He wanted it to be a life-size version!**

1. Draw the outline of the side of the shoe.

2. Cut it out!

3. Use the first shape as a guide to draw and cut all the parts you need.

4. Glue the parts together.

5. Add tape to secure the parts, and for decoration!

6. Use scissors to make holes and tie all the arm pieces together with string.

7. Tape to the inside of the shoe.

You're done!

Now get making!

By creating a 3D model of an invention idea we can start to make more decisions about its design.

We can see if it should be bigger or smaller, more angular etc. We can find out if our idea on paper works in reality, or if it needs to be altered to work better.

Think about:

- *the size of your prototype*
- *the shapes and elements that make up your invention*
- *the way they connect together*

Then it's really about **getting started and having fun!**

Some fun techniques you could try:

Layering

Slotting

Bending

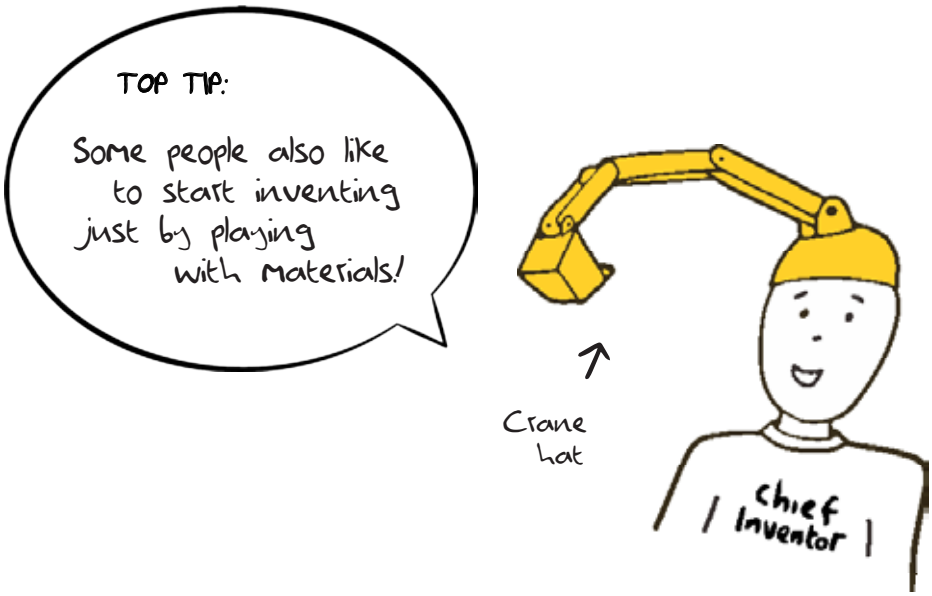
Texturing

What have you learned about your invention?

Having a go at making your idea into a 3D object can seem daunting, but it will also help you continue thinking about your idea.

You will figure out what works best and what works less well. And that might make you think about how you can improve on your original idea!

Remember: everything you do is helping you to understand your idea better, so you can take it even further – and who knows, maybe even make it into a real working prototype too!



Plan your prototype

Before you make a model of your invention, it's a good idea to think about how it will look from different sides:

Front view

Side view

Back view

Bird's eye view

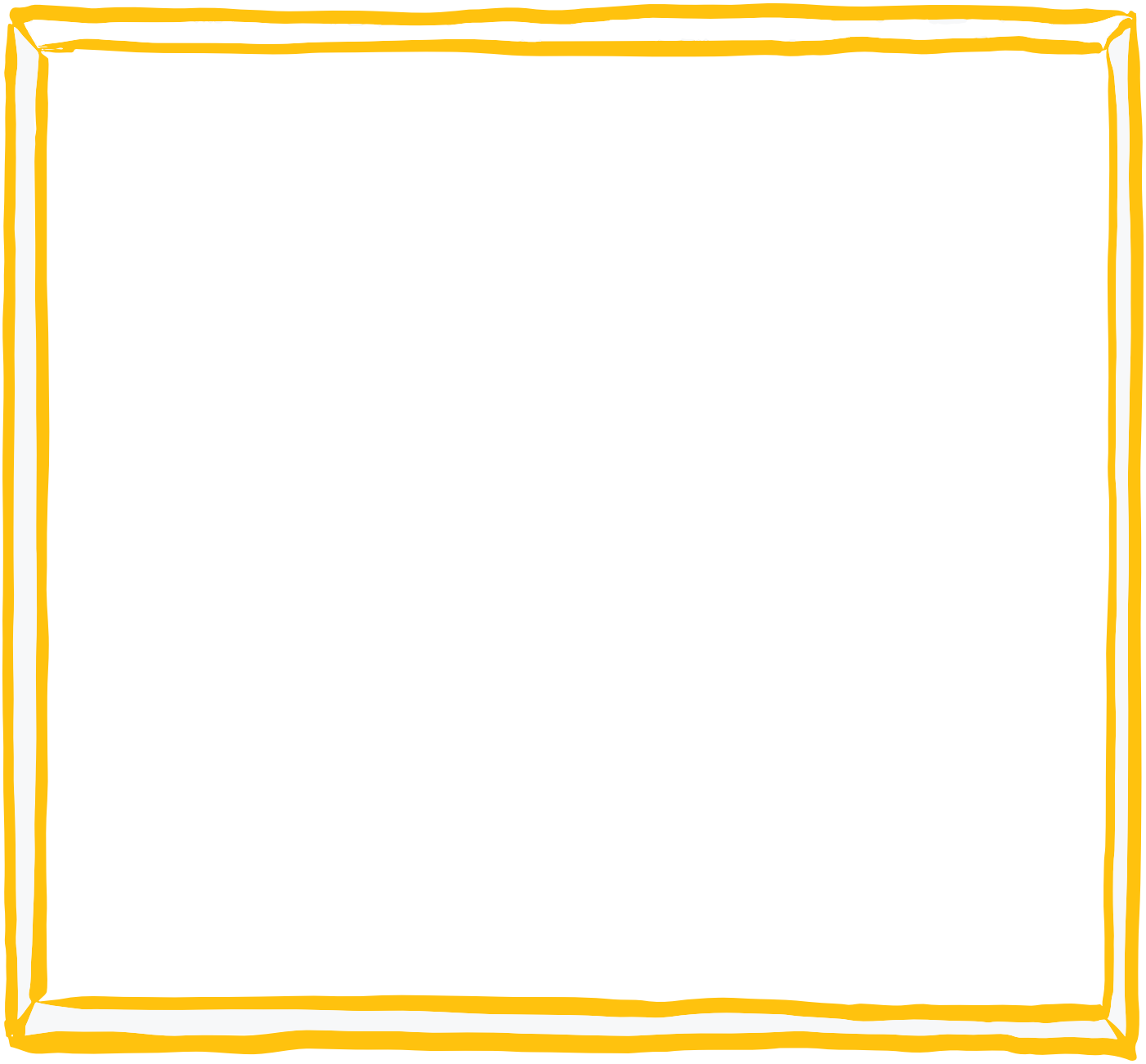
Think about:

- the materials you might use (think recyclables!)
- the size of your prototype
- the shapes and elements that make up your invention
- the way they connect together

Now you're ready to get making!

My prototype

My invention is called .....



Place an image of your prototype here!

What materials I used to make my model: .....

What shapes I used: .....

Present your invention to the world!

You've had an idea. You've made a model. Now it's time to tell people what it's for and why it's great! This activity challenges you to tell someone about your idea in 60 seconds. Ready, set, go!

My invention is called:

What my invention does:

How I came up with the idea:

How it helps people:

Other thoughts about how this invention could be developed:

When you're done, ask people what they think and if they have any questions. Who knows; they might help you develop your idea even more!

Create a logo for your invention

Make it colourful, bright and eye catching!

Draw it here!

Design a poster

This is another way to tell the world about your idea. Make sure you include your invention's name and a bit of writing about what it does, as well as some nice artwork.

Design it here!