National Festival of Making and Little Inventors present

The Big Reinvention Challenge

Challenge Workshop Guide

The aim of Little Inventors workshops is to allow students to express the far reaches of their imagination. We want to inspire students to think up and draw original, ingenious, funny, fantastical or perfectly practical invention ideas. There are no limits!

National Festival of Making: The BIG Reinvention Challenge offers a creative approach to learning, using creativity and invention. It is a program designed for the National Festival of Making in partnership with Little Inventors.

At the end of the workshop, students will be able to draw and submit their own inventions to appear on festivalofmaking.littleinventors.org, where they will be reviewed by the Little Inventors team and the National Festival of Making. Every invention submitted to the challenge will receive individual feedback. There is also a bulk upload available for teachers, please email hello@littleinventors.org for more information and access to this. One of your students ideas might be chosen as a Little Inventors team favourite, turned into an animation or even brought to life by one of our Magnificent Makers.

The Challenge Workshop is supported by a resource pack:

The resources have been designed to support scaffolded learning for students aged 7 to 12 years old to stretch their imagination and creativity. The resource pack includes a PowerPoint presentation, 4 activity sheets including a set of picture-challenge cards, and this resource guide, **for you to select or combine to suit the time you have available and the abilities of your students.**

Use the notes in the presentation to deliver your workshop.
You can choose the slides and activity sheets that you think are most appropriate to support your lesson, whether for primary or secondary students.

We encourage a process where students can come up with lots of initial ideas and then develop one or more in more detail where time is available.

A step-by-step guide to using the resources:

1. Familiarise yourself with the resources available before the workshop
2. Start by downloading the Challenge pack
3. Ensure that you have all the printed materials and tools needed to begin:

   Printed materials per student:

   1x Invention sheet (worth printing a few spare ones!)

   1x Each of the activity sheets (AND/OR)

   - Activity 1 Trash to treasure
   - Activity 2 Mix-up machine
   - Activity 3 Office of odd
   - Activity 4 Picture challenge cards (can be shared in a group)

   Tools or materials needed during the workshop

   Make sure you have plenty of black pens and colouring pens available for the workshop.

4. When you are ready to deliver the workshop, set up the powerpoint on a whiteboard or computer to help you deliver the workshop.
5. Use the presentation guide notes to prepare you for each slide.

Running the workshop:

This guide suggests how you might want to use the Little Inventors resources to run a structured workshop over a single or a double lesson. The tasks in *italics* are optional and you can choose to complete any or all of them as time allows.

The workshop is composed of 7 tasks:

1. The Big Reinvention Challenge Presentation

2. Activity 1 Trash to treasure

3. Activity 2 Mix-up machine

4. Activity 3 Office of odd

5. Activity 4 Picture-challenge cards

6. Invention drawing

7. Rounding up

The total time required to complete the following activities varies and we recommend running it over one to three sessions. Some of the activities could also be set as homework. You may want to deliver this as part of an existing scheme in design and technology, or as a stand-alone project. It's up to you!

Task 1 (starter activity): The Big Reinvention Challenge presentation (15-20 mins)

Explain that in this workshop, students will get to learn about invention, about the waste problem and alternative ways of thinking about reducing waste. They will then get a chance to come up with an invention idea to stop unwanted things from going in the bin by reinventing something and transforming it into something new. It could be something fun, useful or totally bonkers!

Open the **The Big Reinvention Challenge** and go through the slides with your class:

- **Slides 2–3** explain who Little Inventors are
- **Slides 4** introduces the National Festival of Making
- **Slides 5-8** introduce invention, what it is and who might need it and where it might take you! Nothing is too bonkers…
- **Slide 9** play this short film to your students to help them get inspired by Dominic's (the founder of Little Inventors) crazy invention ideas
- **Slides 10-12** introduce the challenge to the students. Play them the challenge film by clicking the link
- **Slide 13** explain that the best ideas will be selected and brought to life by professional makers

- **Slide 14-15** these slides talk about reinventing and gives inspiration from other professional designers
- **Slides 16-18** gives more information about the problem of waste and its impact on our planet
- **Slide 19-20** inspiration from Dominic's invention drawings and other Little Inventors whose ideas have been made real
- **Slide 21** some helpful tips about how to come up with brilliant ideas
- **Slide 22** introduces the drawing sheet and how students can tell us about their invention ideas
- **Slide 23** gives information about how to upload invention ideas to our website to be in with the chance of seeing their idea brought to life by a professional maker. All uploaded ideas will appear on the Little Inventors website and receive individual feedback.

You can make this PowerPoint as interactive as you wish by asking your students questions throughout, such as:

- What was the last thing you threw away or decided you didn't want anymore? Think about clothing, things getting dusty under your bed, packaging…
- What's your favourite thing you own that you would never throw away?
- How could you reinvent a cardboard box to make it more fun?

Task 2: Activity 1 Trash to treasure (10-15 mins)

This is an idea generation activity. It encourages students to think about customising objects, thinking creatively and having fun with invention.

- Ask them to draw around or onto the objects on the page to make them into something new.
- Think about adding electrics, wings, propellers, buttons, mirrors…anything goes!
- Remind them that there are no wrong ideas and that fantastical ideas are always welcome.
- They can draw onto a spare piece of paper if they need more room or want to do more than one idea around each object.

Task 3: Activity 2 Mix-up machine (15-25 mins)

This activity allows students to get hands-on with inventing by cutting and sticking different parts together to make something new. It can be a sculpture or any kind of

creation. It doesn't need to be functional (but it could be).

- Cut out the parts and arrange them into any shape they'd like.
- Before sticking down the parts, try out different arrangements and see which one they like best.
- Try to picture their creation in 3D. How would it stand up, or would it lie down or be attached to a wall perhaps?
- They can draw extra parts on spare paper and cut those out to add to their creation.
- Finally stick the parts to a piece of plain paper and finish off by colouring in. (This could be done for homework).

Task 4: Activity 3 Office of odd (10-20 mins)

This activity is all about imagination. Looking at the inventions on the sheet, challenge your students to come up with a name and a function for each one. They can be as silly as you like. This activity could be done in pairs or small groups to initiate conversation around the objects.

- Tell your students to look closely at each object, what can they see?
- Start writing down or share ideas in a group or pairs about what they think each object could be used for.
- Come up with a name for each object. Maybe something that talks about what it does or who it's for.
- Think about who might need to use this object and what they might do with it. Fill in the questions on the sheet.

Task 5: Activity 4 Picture-challenge cards (15-20 mins)

These cards are designed to stimulate creative thinking. They can be used together with the whole class (inviting one student to pick out the first card, and another to pick the second to make it more interactive) or in smaller groups. This activity is about thinking at different scales, there's a lot of waste in the world!

- To start, cut out the cards and mix them up
- Pick out one card at random
- Imagine that you have 100 of this object i.e. 100 toothbrushes. What could you invent? Perhaps a whole wall of brushes for cows to itch on?!
- Then pick 2 more cards, how could you join these two objects together to make something new? E.g. a ladder and wheels - you could create a moving ladder. Some will be harder than others, don't give up, it can take a bit of time to think up something new!
- Tips - think about flipping the objects upside down or turning them in different directions. What about adding more of one object or adding some extra parts? If

you're stuck, try picking out another card.
- These cards can be used as many times as you like

Task 6: Invention drawing (20-30 mins)

Once students have had a chance to develop their ideas a little through one or more of the activity sheets, give them an invention sheet to draw and explain their own invention.

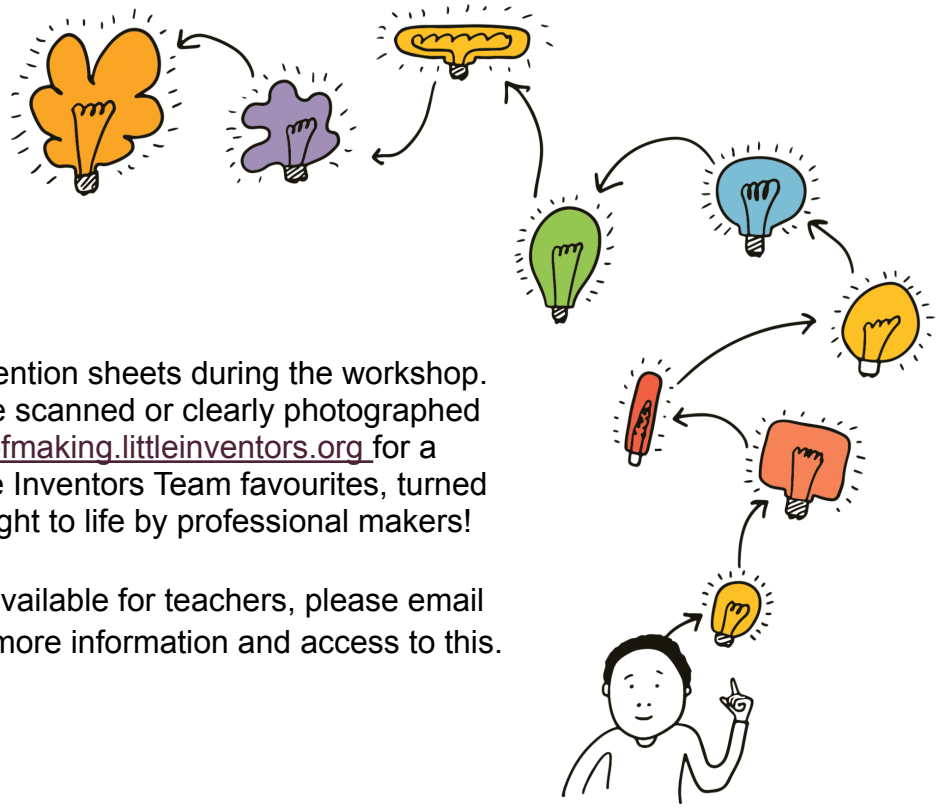
Students can draw more than one invention if they want. Remind them to add colours and labels to explain their invention. They could share it with the person next to them after they've finished to see if they need to add any more parts or labels to help describe their invention. We advise sketching out the idea in pencil first, then going over it in pen to ensure it is clear when scanned/photographed.

Task 7: Rounding up (5-15 mins)

Gather all the student invention drawings in a gallery around the classroom / workspace. Invite students to discuss their favourite ideas – what do they like and why? Encourage positive feedback throughout.

- What do they think of their invention?
- What are its strengths and weaknesses?
- How do they think their invention would work in real life?
- Can they imagine their invention being used by other people? What would they say?
- What other ideas or challenges can they think of?
- Why are inventions useful?
- How will they approach problems in the future?

Give students extra invention sheets to come up with more invention ideas at home. They can also download more invention sheets for free on festivalofmaking.littleinventors.org



After the workshop:

Make sure you collect all invention sheets during the workshop. Invention drawings should be scanned or clearly photographed and be uploaded on festivalofmaking.littleinventors.org for a chance to get picked as Little Inventors Team favourites, turned into animations or even brought to life by professional makers!

There is also a bulk upload available for teachers, please email hello@littleinventors.org for more information and access to this.

Contact

If you want to know more about the challenge or the National Festival of Making please feel free to contact Daisy Williamson by emailing daisy@decopublique.co.uk

To find out more about the National Festival of Making head to https://festivalofmaking.co.uk/

If you have any questions about inventing or need support with the challenge please contact hello@littleinventors.org

To find out more about Little Inventors and discover other challenges visit https://www.littleinventors.org/