



Welcome to the **Digital Maker Staged Activity** pack. By completing the activities in this pack you'll earn your **Stage 1 badge**.

Have you ever thought about how a website is made? Or wondered how a robot knows what to do?



There are so many types of digital technologies that we can all use, from iPads to mobile phones to computer games, that it's easy to forget someone had to have the knowledge to make them.

At Nesta, a charity that supports innovation, we believe it's not enough to know how to use technology, it's important to have the opportunity to learn how it's made too - and the best way to learn is to have a go at making it yourself! We call this digital making - learning about technology through making with it. And it's not just us; we found out that 82 per cent of eight to 18 year olds are interested in making things with digital technologies.

**That's a lot of people!**

The skills and knowledge you get from digital making is important for choosing a job, finding new ways to be creative and express yourself, and it's important for understanding the world around you. When you get going, the things you can make are endless - from websites, to apps, to games, animations, robots, 3D printed objects or even digital music and fashion.

**Phew...**

This pack is an introduction to how some of these technologies work and in some cases how you can try them at home. It won't make you a robot engineer or a computer game designer overnight, but it will show you that there are lots of resources out there online, and that learning digital making skills can be fun!

# Activity 1

## Thinking about computer peripherals

Learn how to connect computer peripherals or accessories, such as a screen and keyboard, and explain what they do.

Pick one or two computer peripherals and investigate what it does and how it works.



### Discussion points

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Can you think of any other computer peripherals? What computer peripherals do you have at home, at school, in the library?

# Activity 2

## Game design 101

Rather than just playing a game, can you start to think critically about it? Learn to tweak and adjust games rather than just consuming games.

### Steps for the Activity

#### 1. Play a folk game

Folk games don't need much equipment to play, and they mostly have been transmitted by word of mouth, for instance **Lemon Joust**, **Dodge the Beanbag** or **Human Knot**. What is/or was your favourite playground game?

Try playing **Lemon Joust**, **Dodge the Beanbag** or **Human Knot**.

#### 2. Invent a game and act it out

In groups, invent a game and act it out. How does it work? What do you need?

#### 3. Make a paper prototype

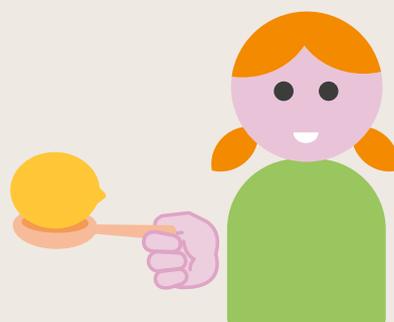
Using paper, prototype your game by drawing the different concepts and characters on paper and explain to another group how it works. You could video this explanation and share it with your Section.

### Some things to think about

A game is an activity that requires at least one player, has rules, and has a victory condition. A good game is easy to explain and has a clear objective. For instance the classic game Battleship's objective is 'sink all your opponents' ships'.

### Discussion

What's your favourite game and why?



# Activity 3

## Human HTML tag puzzle

### What is HTML?

HTML is a language for describing what a web page will look like. Each HTML tag describes different content, depending on where you want it on the page (for example headings, paragraphs and images). Each section of content opens with a tag, and closes with a tag. In this activity, pair up in 'opening' and 'closing' pairs and discuss what some of the different HTML tags mean.

### These are the html tags you will be familiarising yourself with:

- <html> and </html>
- <body> and </body>
- <h1> and </h1>
- <p> and </p>
- <a> and </a>
- <li> and </li>
- <h2> and </h2>
- <video> and </video>
- <div> and </div>
- <img> and </img>

1. Your leader will label you with an HTML tag. Can you identify your tag partners?
2. What do you think your tag might mean or do?

### Steps for the Activity

3. Pair up in 'opening' and 'closing' pairs and discuss what some of the different HTML tags mean.

### Discussion

What are websites made of?

What did you find easy or hard about this activity?

### You might find interesting

- A list of HTML elements and their use: [docs.webplatform.org/wiki/html/elements](https://docs.webplatform.org/wiki/html/elements)
- Introduction to html elements: [www.dontfeartheinternet.com/html/html](http://www.dontfeartheinternet.com/html/html)



# Activity 4

## Edit a website

X-Ray Goggles is an online tool which enables you to see the building blocks that make up websites on the internet. Activate the 'goggles' to inspect the code behind any webpage, then remix elements with a single click, swapping in your own text, images and more. Can you explain the basic concepts of HTML and how they are used in making and editing websites?

### Steps for the activity

#### 1. Test X-Ray Goggles

Go to [webmaker.org/en-US/goggles](http://webmaker.org/en-US/goggles)  
You can follow the instructions here or from the website –

- Click 'Activate X-Ray Goggles'
- Click the background image
- Change the image's source from shapes.jpg to blur.jpg

#### 2. Remix any webpage

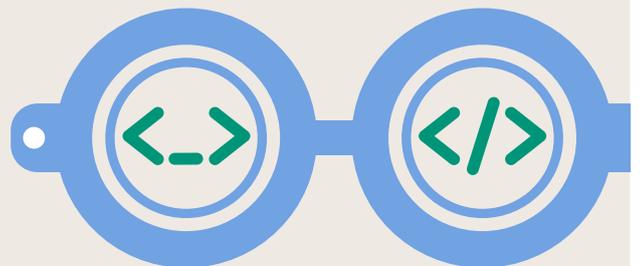
You can take X-Ray Goggles with you anywhere on the web:

- Make sure your web browser's bookmarks bar is enabled.
- Go to this page: <https://webmaker.org/en-US/goggles/install>
- Drag the yellow 'Activate X-Ray Goggles' button into your bookmarks bar, where it will automatically be added as a button that you can click to activate the Goggles on any webpage.

Try visiting the Scouts website at [scouts.org.uk/home/](http://scouts.org.uk/home/)

Activate the X-Ray Goggles by clicking the new button in your bookmarks toolbar and start remixing!

You could also try CBBC [www.bbc.co.uk/cbbc/](http://www.bbc.co.uk/cbbc/) and start replacing headlines, text and images with your own.



# Activity 5

## Robot game

To program a robot, you need to make instructions in a clear list called an algorithm. An algorithm is a set of instructions that run in a sequence. Robots follow these instructions exactly and will only do what we program them to do!

Sandwich Bot can be played by your Leader or a friend, and will make a jam sandwich according to your programmed instructions.

### Steps for the Activity

With a friend, take turns playing the robot and the programmer. Together write out an algorithm so that Sandwich Bot will make a jam sandwich.

- What objects might you need to make the sandwich?
- What actions might you need to give the sandwich bot?
- Can you make instructions for other tasks the robot should do?

### Discussion

What sort of instructions work well?  
What happens when things go wrong?  
What sort of instructions resulted in unintended robot behaviour? What do you do when things go wrong?

