



# STEM clubs

# TECHNOLOGY



*Technology is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment*



## BUT WHAT DOES THAT MEAN?

Technology, in the broadest sense, includes anything we have designed to assist us in achieving an aim. Technology is anything that enables us to achieve a task in a way that we could not have done before its invention. This could be a simple pocket calculator or a super-computer.

Technology takes what we have learned from the sciences and applies this knowledge to real-world applications. These applications can change the world and have a great impact on our lives. One of the most recent technological changes that we have seen is the invention of the smart phone. We now carry around a computer everywhere - something that we would never have considered even as recently as 2007.

See the iPhone launch on YouTube: [www.youtube.com/watch?v=Q3W58S29eSE](http://www.youtube.com/watch?v=Q3W58S29eSE)

## BECOME A TECHNOLOGIST



Historically, humans have always had to communicate with each other to transfer ideas and update information etc. At first, this was easy, as we lived in small communities and could just talk to one another. However, as humanity grew and spread, we needed new ways to transfer information.

In the following activity, we are going to investigate whether technology has improved the ways in which we communicate and assess how it has both helped human life and improved the human environment.



## ACTIVITY 1

## EQUIPMENT:

- Paper
- Paint brush
- Paint
- Ball point pen
- Torch
- 2 tin cans
- String
- Mobile phones
- Two printed Morse code sheets

## INSTRUCTIONS

*Sit in pairs at opposite ends of a room.*

*One person in each pair should try to communicate a simple statement to the other (e.g. 'The cat sat on the mat') using the following methods and assess the pros and cons of each communication method:*

- 1** Paint, paint brush and paper - Do you draw it? Write it? How does it get to the other person? Did you walk? Was it delivered?
- 2** Pen and Paper - Was it easier or better than the paint and paper? Did you still need to deliver it?
- 3** Torch and Morse code - Was it easy? Did you have to move? Would it be quicker than hand-delivering a message many miles away?
- 4** Tin cans and string - Drill a small hole just large enough to fit the string through in the bottom of both tin cans. Feed the end of the string through the hole and tie a knot in the end. Unroll the string until it just reaches the other person, then cut the string and feed through the hole in the second tin can and again tie a knot in the end. Pull the string taught between the tin cans and one person speak into their tin can while the other has the tin can to their ear to communicate the message. Was it easier than writing or drawing to get message across? Does the string limit how you can communicate?
- 5** Use the mobile phone to send the message by calling or texting the other person - Was this easier than the other methods of communicating?

## SO WHAT?

As you can see from the last activity, humans have utilised technological advances to benefit ourselves and the way we do things is changing all the time. For example, since its invention, telephone technology has progressed to new levels of usability. Today, the smart phone is a mobile computer that also functions as a phone. Technology is constantly striving to make our world better and to make our tools more user-friendly and is one of the fastest moving and most exciting fields of development to work in.

If you watched the video of Steve Jobs delivering the iPhone, you may have thought it obvious to combine the three technologies he references. We take smart phone functionality so much for granted these days. But, at the time, it was ground-breaking - a defining moment in technology that has quite literally revolutionized the way we live every day. There are lots of challenges ahead for the human race, such as

food shortages, health crises and climate change, but there are lots of ways that technology could help to solve these problems. Could you be the next technologist who takes the next step and changes the way we live our lives forever?

## FIND OUT MORE

Have a look at this National Careers Service link to discover how many different technology careers there are: [nationalcareers.service.gov.uk/job-categories/computing-technology-and-digital](https://nationalcareers.service.gov.uk/job-categories/computing-technology-and-digital)

Technology is not just about solving problems but also about enriching our experience of the world. Why not explore how technology is used in the creative industries to see if a career in the arts could be for you?

[www.lipa.ac.uk/courses/sound-technology-ba](http://www.lipa.ac.uk/courses/sound-technology-ba)

[www.lipa.ac.uk/courses/theatre-and-performance-technology-ba](http://www.lipa.ac.uk/courses/theatre-and-performance-technology-ba)

## MORSE CODE

### KEY ELEMENTS OF THE CODE

- The length of a dot is one unit
- A dash is three units
- The space between parts of the same letter is one unit
- The space between letters is three units
- The space between words is seven units

### SENDING THE CODE

- Make sure you have the letters of your message, and the corresponding dots/dashes, clearly written out in front of you before start
- Allow clear pauses between each letter (three units) and word (seven units)
- A unit is a count of one in your head

### RECEIVING THE CODE

- Make sure every flash of light you see or sound you hear (depending on how the code is being communicated) is written down as a dot/dash and all pauses are written down
- After the message has finished, translate the dots/dashes into their corresponding letters or numbers



### LETTERS

|   |         |
|---|---------|
| A | ● —     |
| B | — ● ● ● |
| C | — ● — ● |
| D | — ● ●   |
| E | ●       |
| F | ● ● — ● |
| G | — — ●   |
| H | ● ● ● ● |
| I | ● ●     |
| J | ● — — — |
| K | — ● —   |
| L | ● — ● ● |
| M | — —     |
| N | — ●     |
| O | — — —   |
| P | ● — — ● |
| Q | — — ● — |
| R | ● — ●   |
| S | ● ● ●   |
| T | —       |
| U | ● ● —   |
| V | ● ● ● — |
| W | ● — —   |
| X | — ● ● — |
| Y | — ● — — |
| Z | — — ● ● |

### NUMBERS

|   |           |
|---|-----------|
| 1 | ● — — — — |
| 2 | ● ● — — — |
| 3 | ● ● ● — — |
| 4 | ● ● ● ● — |
| 5 | ● ● ● ● ● |
| 6 | — ● ● ● ● |
| 7 | — — ● ● ● |
| 8 | — — — ● ● |
| 9 | — — — — ● |
| 0 | — — — — — |

## NEED HELP?

Why not chat live to the team at Shaping Futures to find out more about what is on offer, or to get further advice and guidance [www.shaping-futures.org.uk/activities](http://www.shaping-futures.org.uk/activities)