



# Sketchbots

## Teacher briefing notes

### What's the experiment?

How do computers communicate with each other?

At this exhibit a computer will take your students' photos. Each photo will then be sent to a series of robotic arms, which will draw that student's portrait in sand. Your students will be able to see their photo being deconstructed, processed and then converted into the information that the robot arms will use to draw their portrait.

### Learning outcome

Understand that web technology and physical machines use computer languages and protocols to communicate with each other.

### Lab Tag activity

Using their Lab Tag students will be able to take away an image of their portrait and a video of their photo being drawn by the robots.

### Glossary

**Protocol** – When computing devices communicate they follow a set of rules called protocols to ensure that they can understand each other and that the exchange of information works properly.

**Browser** – The piece of software that interprets and displays websites for the user to view or browse.

**Network** – A collection of computers and other pieces of hardware connected together in a way that allows them to communicate with one another.

## What does it show us?

How did the information get from the computer that took your photo to your portrait in the sand?

For computers to pass on information they need to use languages, just like humans. But the languages that humans and computers use are very different from each other. Humans are very good at understanding what different words mean depending on their context. Computers, on the other hand, need to be programmed with specific meanings for every piece of information they deal with. Because of this they often work well with mathematical terms.

However, just like human speech, computers have many different languages. Each language is used for specific jobs. So the language used to send a text message to your friend is different from the language used to send that photo of you to the robot that drew your sand portrait. For example, a language called HTML is used for web pages and ASCII is used for text and keyboards.

The languages also have sets of protocols that must be followed for the information to be passed on correctly, and these protocols are different for every language and for every job.

The internet is an international system. All browsers and networks can understand each other's computer languages so that we can share information all over the world.

## What could we discuss?

- List the ways you pass on information at the moment.
- What codes do you use at the moment?
- Compile a dictionary of 'text speak' abbreviations.
- Trying coming up with your own language using symbols to represent letters and write each other some notes!

## Museum web links

[sciencemuseum.org.uk/weblab](http://sciencemuseum.org.uk/weblab)

The on-gallery animation which introduces the topic of languages and protocols can be found here.