



PROGRESS OUTCOME 2

Scavenger hunt

Annotation

By creating their QR-code scavenger hunt, Samuel and Cody show that they:

- can use a particular application (Qrafter) to create, store and test content within a digital system in order to meet a specific purpose
- understand the particular roles of components in an input-process-output system and how they work together
- understand that the same thing can act as an input or an output in different situations
- are aware of intellectual property when retrieving and using online content.

Background

The students have been learning about data representation using binary numbers. They know that we can represent different types of data, such as text and images, using binary, and they understand how error-detection and correction algorithms can be used to detect and correct errors in data. They have practised using an error-detection algorithm to check whether barcodes are correct. In this process, they have seen that it is possible to encode binary data using the black and white strips in a barcode. They understand that computers can obtain information from these barcodes.

The students have been creating QR codes (two-dimensional barcodes) using the Qrafter app, which can link to URLs, display text and show a position on a map. In mathematics, they have been learning about compass directions and how to give directions using “north”, “east”, “south” and “west”.

Task

Students are given a brief to work in pairs to create a scavenger hunt around their school for other pairs to complete. They are to choose three locations and place a QR code at each of them, as well as at the start position (their classroom). When each QR code is scanned, it should give a hint about where the next code can be found. The last code in the scavenger hunt should link to a free-to-use online image, which indicates the end of the hunt.

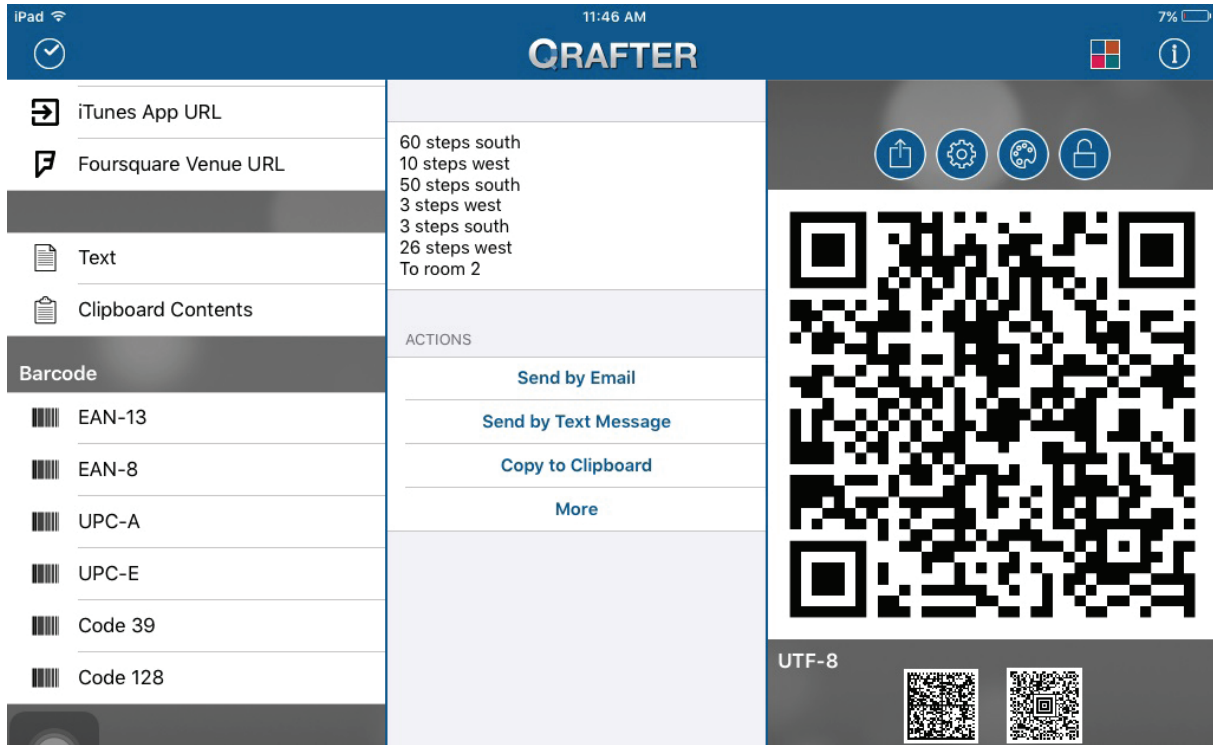
The students then follow each other’s scavenger hunts. They take a screenshot of the final image to show that they made it to the end.

Ms Ryan takes the opportunity to link using symbols and images to an investigation by the students into environmental print in their local community.

Student response

Samuel and Cody create four QR codes, save them to the iPad camera roll and email them to Ms Ryan to be printed out.

Their first QR code gives a set of navigational directions to follow:



Ms Ryan: *What are the inputs, processes and outputs this system has used?*

Samuel: *When we wrote our instructions into the Crafter software, that was the input. The app processed the instructions and turned them into a QR code, which is the output.*

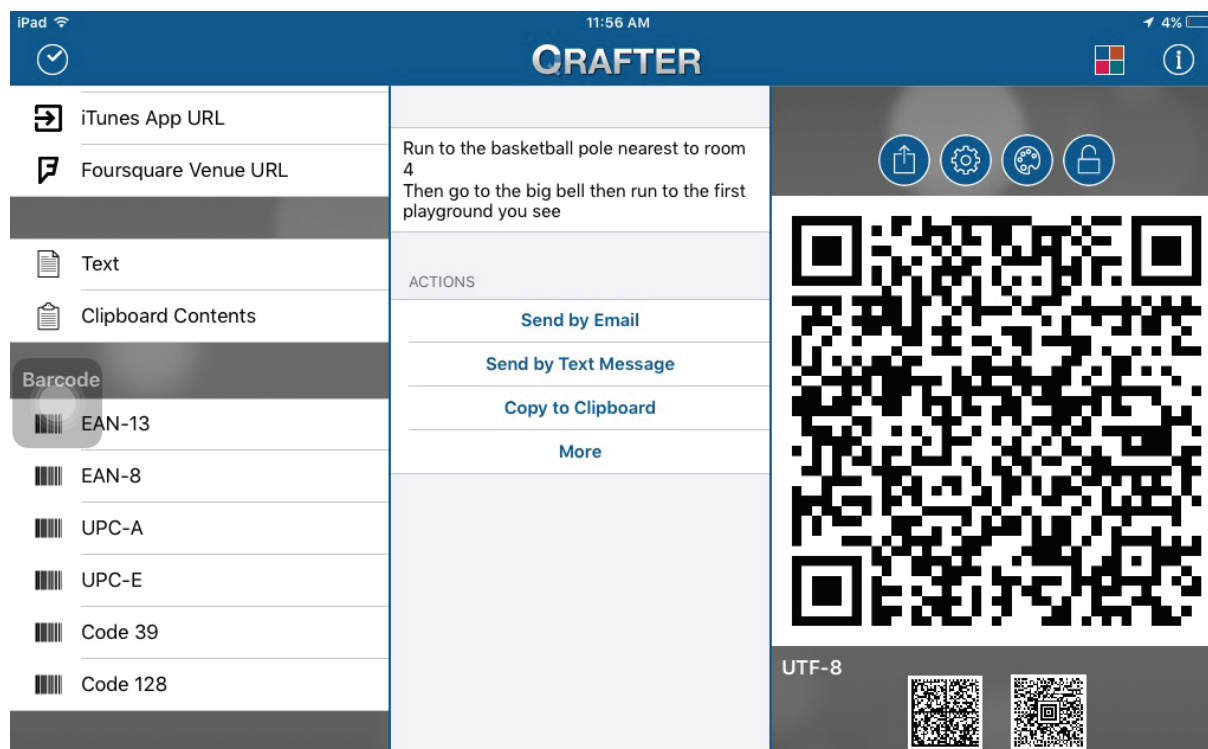
Cody doesn't initially agree with Samuel, but he understands after Samuel explains it again.

Cody: *No, the QR code is the input. We scan it, so it's the input, and then the app processes it.*

Samuel: *That's when we're scanning them though. First we're making them, so the code is the output at the moment. We scan them later.*

Cody: *Oh, OK.*

Their second QR code gives a set of directions using school landmarks:



Their third QR code gives a map location.

Their fourth and final QR code links to an online image, which they have confirmed as free-to-use and which signals the end of the scavenger hunt.

Before and after printing their QR codes, the students scan them to test that they give the expected output.

Ms Ryan: *Can you explain what you're doing?*

Cody: *We want to check the codes work and we have them in the right order, so we're scanning them before we put them outside. This time the codes are the input.*

Samuel: *Now the app turns the code back into the instructions so someone can follow them.*

All the students attach their first QR code to the whiteboard and then place their other codes around the school. They then scan another pair's code on the board to start a scavenger hunt.

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