QR Codes - How do they work?

Are you using QR codes in your school? Here's how you can make the most of a teaching opportunity that focuses on Computational Thinking.

Create a QR code and have your students try to "break" it by drawing over the QR Code until it doesn't link to the website any more.

QR Codes are examples of Error Detection and Correction.

Here's one for you
to try yourself

The teachable moment: A magic trick

Here's how you can teach what is happening using coloured cards.

Instructions

You need 36 double sided cards, e.g. white on one side (face up) and black on the other (face down).

Get a volunteer to layout 25 cards in a 5x5 square, with a random mixture of sides showing. Casually add another row and column, "just to make it a bit harder" (you actually choose the extra cards so that the number of face up cards in each row and column is an even number, i.e. 0, 2, 4, or 6 face up cards).

While you cover your eyes, get the volunteer to flip over one card. Uncover your eyes and identify which one has been flipped (the row and column containing the changed card will now have an odd number of face up cards showing, making it easy to find with practice).

The addition of the extra cards is a technique called parity checking.

*How do
they know?*
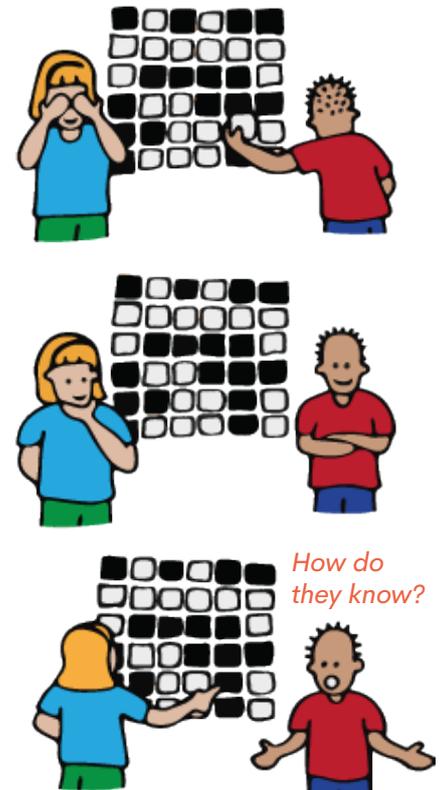
These ideas are examples that can be used for engaging students with error control (detecting errors), which is a topic that appears in **Progress Outcomes 4 and 7** of computational thinking for digital technologies.

Lesson plan: csunplugged.org/en/topics/error-detection-and-correction/unit-plan/parity-magic/
Online version: csfieldguide.org.nz/en/interactives/parity/