How do touchscreens work?

KS3 Ages 11-14 ⏰ 3 min read

Most modern touchscreens — on phones, tablets, and laptops — use a technology called **capacitive touch**. It works by sensing the electrical properties of your finger, not the physical pressure of pressing.

What is capacitance?

The human body conducts electricity — not dramatically, but enough. Your skin holds a small electrical charge. A capacitive touchscreen has a grid of transparent electrodes (usually made of indium tin oxide) carrying a tiny electrical field across the screen's surface. When your finger touches or even comes very close to the screen, it distorts that electrical field at the point of contact. The screen detects *where* the field was distorted and calculates the exact position of your touch.

Imagine a taut fabric stretched over a frame with pressure sensors at every point on the grid. When you press a finger down, the specific sensors that feel the pressure report back, and the system calculates where you touched. A capacitive screen does exactly this, but instead of physical pressure, it detects electrical disturbance. Same result — your touch is mapped to an x/y position — but no pressure needed, which is why modern phones respond to the lightest tap, and why a gloved finger often doesn't register.

Why doesn't it work with gloves?

Because gloves (usually) don't conduct electricity. Your finger's electrical charge can't pass through a non-conducting glove to distort the screen's field. Some gloves are made with conductive fingertips specifically for this reason — you've probably seen them. Some modern phones can also detect a capacitance level consistent with a gloved finger and increase sensitivity accordingly.

How does it handle multiple fingers?

Modern capacitive screens are "multi-touch" — the electrode grid is dense enough to detect multiple simultaneous disturbances and track them independently. This is what allows pinch-to-zoom (two fingers moving apart), rotation gestures, and multi-finger

swipes. The screen maps each touch point separately and passes all of them to the software, which decides what to do with the gesture.