Cell Phone Surgery

Thinking about the Materiality of Data

OVERVIEW

Participants, with the aid of library staff, will take apart old cell phones to locate the elements that capture the input or output of data.

WORKSHOP PURPOSE

Digital data isn't magic: It is part of a technical system that includes internet-connected devices. In this activity participants take apart old cell phones to get "under the hood" and explore how data enters and exits a device in order to learn about how cell phones generate, gather, store, and share of the user's data locally and across networks.

DESCRIPTION OF ACTIVITY FOR LIBRARY WEBSITE

"Ever wonder what's inside a cell phone? Let's take a peek! In this workshop participants to dissect cell phones to find out how they work."

QUESTIONS TO PROMPT DISCUSSION:

1. *How do you create, record, and capture data with your cell phone?*
2. *Where does the data from your cell phone live?*
3. *How can data captured by your phone be shared and transmitted through cell phone networks?*

KEY TERMS AND CONCEPTS:

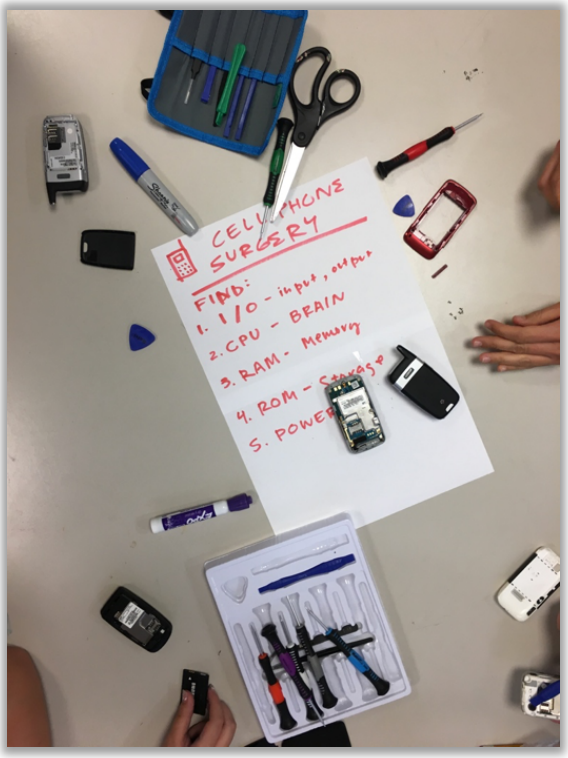
Data awareness, data flows, input/output, microchip, motherboard, circuit, data, SD card, memory, storage.

PHASES OF DATA LIFE CYCLE ADDRESSED:

Collect/Create Data, Preserve Data, Transform/Use Data.

RECOMMENDED AUDIENCE & ENVIRONMENT

For teens, ages 13 and up. A flat surface area is needed for this activity because small parts are removed from the cell phones. Groups of 6 or fewer participants are preferable, with supervision by library staff. Some manual dexterity is needed to dissect the cell phones, such as wedging open casings. *YouTube* tutorials for cell phone repair are a great place to start learning about cell phone disassembly.



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MATERIALS NEEDED

1. A cell phone repair toolkit (approximately $10.00)
    a. Telescopic ratcheting screwdrivers
    b. Precision bits
    c. Torx (star bit) screwdrivers
    d. Slot screwdrivers
    e. Philips screwdrivers
    f. Hex (Allen) keys
    g. Nylon pry tools
    h. Metal micro-spatula
    i. Electrostatic Discharge (ESD) tweezers
    j. Suction cups
    k. Pry bars
    l. Flashlights

2. A selection of old cell phones, one per participant. You can find old cell phones at your local e-waste collection, garage sales, or on E-bay. Cell phones must be powered down, with SIM cards and batteries removed.
3. Flat table surface.
4. Bins or bags to hold parts and screws removed during surgery
5. A box to collect all the disposed phone parts for proper disposal of e-waste

STEP-BY-STEP PLAN

Directions

1. Important: Before dissection, make sure to review any safety concerns that exist for the phones you are using. Take care to explain wedges, micro-spatulas, and prybars (Example: the liquid used in screens are a skin irritant so glass screens and liquid crystal displays should never be cracked or broken.)
2. Lead participants through cell phone dissection, starting with the small screws found outside the external case, within the battery compartment, or use nylon wedges to pry open casings. Can they find the input and output points? Are there external ports for headphones or internal storage ports for memory cards?
3. Dissect phones. There are diagrams of cell phones available online as references, if needed.
4. Collect parts into similar groups and examine them. What function do these parts serve?
5. When dissection activity is complete, gather up all the parts and place in a plastic bag for proper disposal.

INSTITUTE of Museum and Library SERVICES

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