The Life and Times of a Cell Phone

Dissection of Cell Phones

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**Introduction**

This activity will introduce the student to the different components and functions of a cell phone. After receiving a brief introduction to the major parts of a cell phone, students will have the opportunity to disassemble a cell phone(s) which has been disposed of (for eventual and responsible recycling). The individual parts of the cell phone will be identified and categorized, to the best of the group’s abilities. Following the disassembly process, students will have the opportunity to make an display (educational, artistic, or otherwise) of a cell phone’s function using paint, wood, cell phone parts, glue, and various decorative pieces. The display will convey the function and message of any chosen part(s) of a cell phone that the student wishes to concentrate on.

Major parts of the cell phone include but are not limited to: user touch interface (keypad, touchscreen, etc.), camera, flashlight, exposure sensor, accelerometer, microcontroller, speaker, battery, and antenna.

**Materials & Tools**

*This activity will require the following materials for each individual student:*

1-2 “Dead” (no longer usable) cell phones

1 10” length of re-purposed (used) 2X4 wood

1 pair Safety glasses

1 pair Gloves

Various Decorative elements (sequins, gems, popsickle sticks, etc…)

*And the following tools to be shared among all students:*

Torx (6 point star) screwdriver set

Small head screwdriver, Flathead

Small head screwdriver, Philips

Various color Paint Pens

Spray paint (desired color or colors for wood)

**Precautions**

Before starting Procedure #1, please be sure to put on safety glasses and gloves. Small components may fly across the room and can injure eyes; toxic materials from printed circuit boards and other electronics should not come into contact with the skin.

Most importantly, wash your hands after the activity!

**Procedure #1 (Dissecting the Cell Phone)**

1. Select a “dead” cell-phone and start disassembling it from the back. It is usually easiest to remove the battery first.
2. Depending upon the type of phone, it may be necessary to unscrew the casing from the remainder of the phone or pry it away from the underlying electronics.
3. Carefully attempt to separate all the parts of the cell phone and identify each one before moving forward to the next.
4. Identify and remove the camera/imager, the battery, the memory (SIM) card, the flashlight, the speaker, the microphone, and any other major parts of the phone that are accessible. .
5. Remove the primary (largest) printed circuit board from the phone using a torx wrench or screwdriver (whichever works). The circuit board can be attached deep into the cell phone and may take some time and thought to coax out of the body of the cell phone!
6. Attempt to find the antenna for the phone. Is it where you expected? Does it look like what expected? Mostly external antennas are located at the bottom, curved area of the phone where the keyboard ends. The antenna should look like a long, thin steel plate and will likely be only a few mm wide.
7. Remove the keypad or touchscreen (some touchscreens may not come apart). This will often involve removing the last cell phone layer from the back cover to reveal the touch pad. This might be a challenge if you have a smart phone because then this layer is often attached directly to the outer screen of the phone itself. Be careful to avoid cracking the outer screen, as it is made of glass in most cases.
8. Repeat this procedure with the second phone. Note the differences between older flip phones and the newer smart phones as you disassemble!

Congratulations! You have disassembled your cellphones!

**Procedure #2 (Dissecting the Cell Phone)**

1. Select a color of spray paint for your display board (10” section of 2X4).
2. Outside, put on your gloves, and use a piece of paper or cardboard as the backdrop for painting your display board. Spray paint the board to the color you desire and place it in a safe area indoors to dry.
3. Gather all the parts that you wish to convey an educational message about the guts of cell phones. What will you try to communicate with your educational display? What would you like someone to know or remember as he or she looks at this display once you have carefully created it.
4. Write that goal on the back of the board using permanent marker along with your signature or name.
5. Gather the cell phone parts and extra decorative things you need to create your display and proceed to create…. Let your imagination loose and teach others a simple function of a cellphone using your own unique perspective on cell phones.
6. When you are done, ask some of your fellow classmates what they think your display says (or communicates) to them? How does it compare to the goal you wrote on the back of your display?

How does it feel to be inside the head of a teacher? Was it fun? Frustrating?