FOCUS BUDDY

by Amy Brons

Problem Definition

Inspiration:
For this project, I wanted to focus on the ideas of mental health, productivity and mindfulness. However, when trying to think of an idea for this project I noticed something about myself—my phone habits were effecting my productivity in a negative way. I kept finding myself picking up my phone, during attempts to focus. I kept coming back to one question: how can I break this habit?

Problem Definition:
Due to a conscious and subconscious attachment to our phones, many people find it difficult to keep away from the screen. Often, people don't even realize the extent of these habits.
How can we become more mindful about our cell phone habits?

Constraints and Outcomes:
The solution needs to create mindfulness, focus and data.
The solution needs to have the constraints of being not distracting, portable and usable for everyday, non tech-savvy person

Research:
Through researching many journals and studies, the data clearly comes to three conclusions:

1. Cell phone over addiction and over stimulation leads to mental health issues, stress (Chen et al.) and focus issues (Duke and Montag).

2. Too much screen time results in mental health issues (Rosenthal et al.), and poor performance in university students (Tajane et al.).

3. During the COVID-19 pandemic, all of these issues have been exacerbated ((Chen et al.) & ((Tajane et al.)).

Design

Three Ideas:
For the design of this project, I first brainstormed various words and concepts surrounding the problem definition. Out of this, I found three concepts for the project. They are as follows:

1. Self Tracking: A device that prompts user to input their screen time and cell usage. The device would take this input and output a data visualization. This would cause the use to become more mindful. This idea decided against because it would be incredibly difficult to get users to accurately and consistently track info.

2. Warning Sound: A device that would use a buzzer to notify users when screen time is going on too long. This would use the micro:bit to sense when user in on and off the phone. This idea was decided against because the buzzer seemed counterintuitive to one of the main themes—focus. Additionally, it would be difficult to sense if the user was one the phone or not.

3. Phone Pad: A pad that would track when users pick up their phone. This would allow users to be conscious about the hard data of pickups. This would force the user to be reflective and mindful on their cell usage. This idea proceeded to the next steps. This idea is not distracting, it could be portable and it would instill mindfulness, thus fulfilling the problem definition projected outcomes.

Design of Idea:
The design of the final phone pad (dubbed Focus Buddy) will be a small portable rectangular pad. Users put their phone on top of the Focus Buddy, and then focus on their work. When the use picks up their phone, the pad senses it. A message is displayed on the screen, reading how many times the user picks up their phone. The whole time that the user keeps their phone off of the pad, an LED will be on, so users keep in mind how long the phone is in their hand. Ideally, a thin flexible mat with a screen would be used. Here is a rough sketch from my notes of what the design could look like:

Screen
LED
Pressure Sensitive
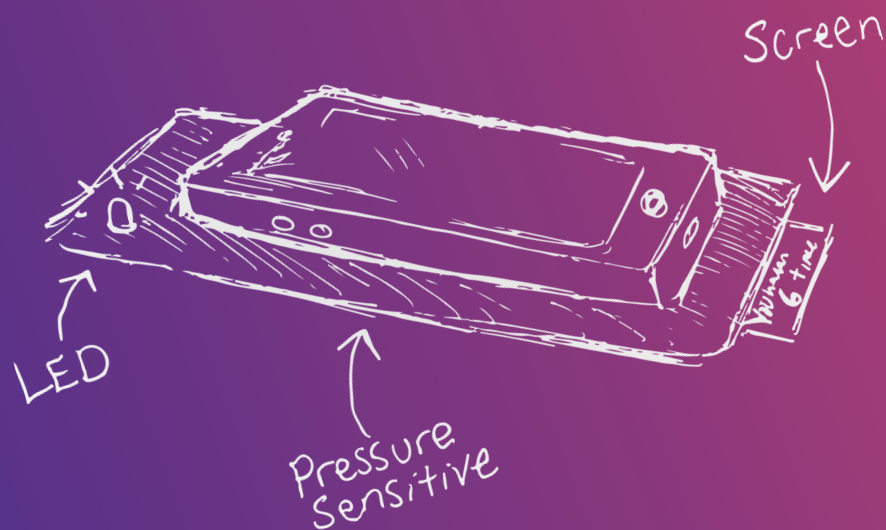
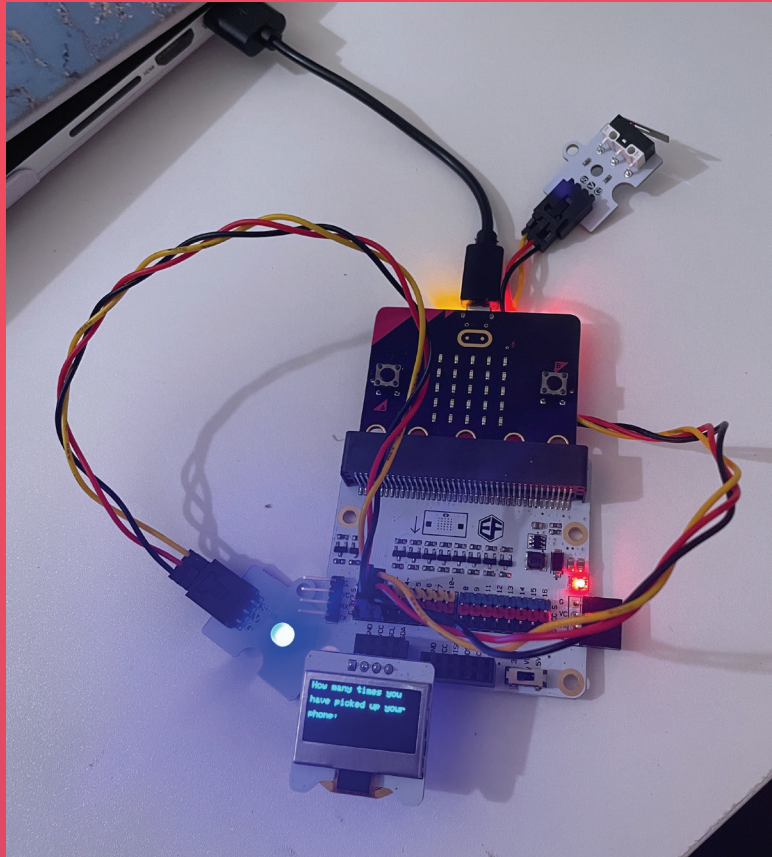# Prototype

Parts Used:
Parts that were used:
- Crash sensor
- LED light
- OLED screen
- Wires
- micro:bit breakout board
- micro:bit
- Micro-USB to USB connector

User Instructions:
1. User plugs in device

2. The device starts, displays starting screen

3. User places phone on device

4. Device is blank

5. When user picks up phone, LED comes on and screen displays message and indication of number of pickups.

6. User is mindful of phone usage.

Link to Project:
https://makecode.microbit.org/_LT65s9A0raYh

Images of Prototype in the form of cardboard model and circuit model:

Reflections

Although I am overall pleased with the results of this project, there are a couple ways in which I believe it could be improved. Ideally, the button could be a pressure sensitive pad or button, instead of a crash sensor. This would allow much of the mat to be used for sensitivity. The OLED screen also has some limitations on what can be shown, include font size. This makes the prototype perhaps inaccessible to many people. Also the material of the prototype would benefit from being a flexible material, like fabric or rubber.

Overall, I believe this project is fulfills its goals of creating user feedback that would invoke mindfulness, and hopefully help users moderate self-control.

References

Chen, Yuanyuan, et al. "Reciprocal Longitudinal Relations between Peer Victimization and Mobile Phone Addiction: The Explanatory Mechanism of Adolescent Depression." Journal of Adolescence, vol. 89, 2021, pp. 1–9., https://doi.org/10.1016/j.adolescence.2021.03.003.

Tajane, Isha Akulwar, et al. "Impact of Excessive Screen Time and the Mediating Effect of Physical Exercise on Sleep in Physiotherapy Students during COVID-19." Sumerianz Journal of Medical and Healthcare, no. 43, 2021, pp. 149–159., https://doi.org/10.47752/sjmh.43.149.159.

Rosenthal, Samantha R., et al. "Association between Mobile Phone Screen Time and Depressive Symptoms among College Students: A Threshold Effect." Human Behavior and Emerging Technologies, vol. 3, no. 3, 2021, pp. 432–440., https://doi.org/10.1002/hbe2.256.

Duke, Éilish, and Christian Montag. "Smartphone Addiction, Daily Interruptions and Self-Reported Productivity." Addictive Behaviors Reports, vol. 6, 2017, pp. 90–95., https://doi.org/10.1016/j.abrep.2017.07.002.