

# ENG 10: Design Proposal

## Team 4:

- Oscar Li
- Julia Cube
- Guadalupe Barrera
- Kelly Mendoza
- Von Taylor

## Team Name:

StudyBox

## Mission Statement:

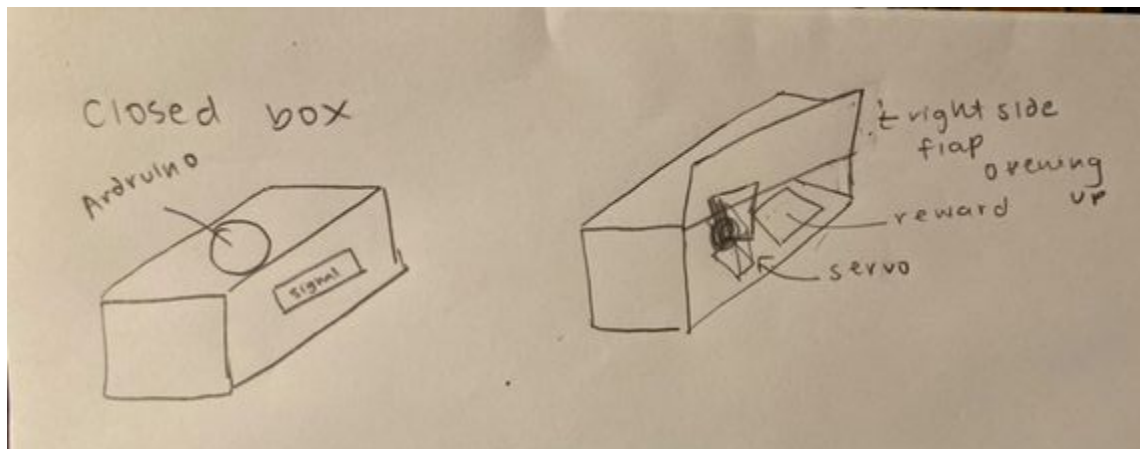
The StudyBox is meant to encourage healthy habits and combat the distractions that social media poses on youths today, we aim to create a device that stimulates focus toward productive activities and helps young people to achieve their academic and personal goals. The deliberate design of addictive social media has harmed many teenagers' and children's attention span, self-esteem, and mental development. Thus it is essential that devices exist to counter this modern phenomenon. Our solution to this problem is to create a StudyBox, which is basically a container that can store a "reward" (i.e. phone, cookies, etc.). After a certain amount of time that is set by the user expires, the StudyBox will automatically open, revealing the "reward" inside that they can take. The purpose of this is to utilize the concept of 'positive reinforcement' to increase their motivation to completely focus on studying for set periods of time which would ultimately increase their productivity and efficiency with their time.

## Design Requirements:

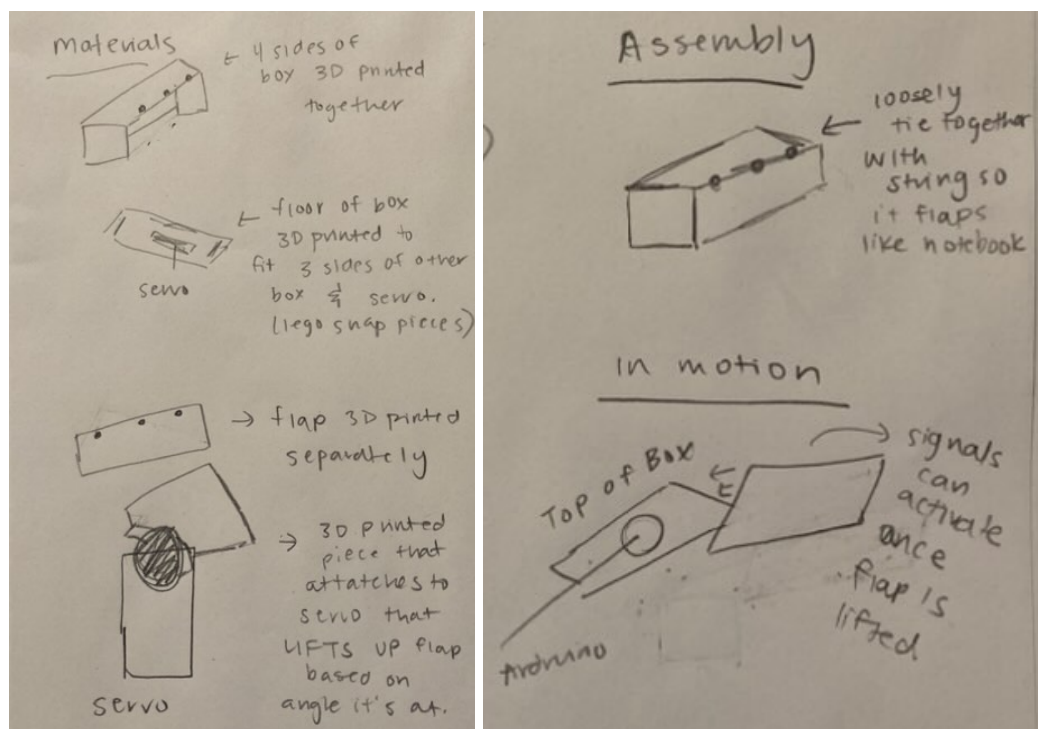
- Quantifiable: The system is roughly than 6" x 6" x 4" (tall, wide, thick; dimensions based off large iPhone sizes)
- Verifiable: The device can endure a fall from 3 ft and still operate with full functionality
- Verifiable: The enclosure is non-magnetic
- Verifiable: The system provides non-verbal indication to signify the amount of time left on the timer
- Verifiable: The system provides verbal indication to signify the expiration of the timer
- Verifiable: The container is able to be opened via a mechanism involving the servo motor

## Proposed Solution:

The user will be able to put a "reward" (i.e. phone, cookies, etc.) inside the StudyBox, close it, and set a timer on it by using the 2 buttons on the Arduino. One button will add 5 minutes to the timer, to a maximum of 60 minutes, in which the next press of the button would reset the timer back to the default 5 minutes and play a short sound to indicate that the timer was reset. The other button will start the timer. Once the timer has started, the Arduino will display lights to indicate how much time is left on the timer. The lights will start from green to signify "lots of time left" then transition to yellow, then to red to signify "time is almost up". Once the timer expires a soft sound will be played, in which the Arduino would then activate a mechanism to open the StudyBox, revealing the "reward" that the user initially put inside of it.



**Figure 1:** Isometric View of Open and Closed Box is shown. Inside, a servo with a 3D printed piece will lift up the rightmost side of the box. Once lifted, the signals from the top of the box and the outermost side can activate and emit lights and music.



**Figure 2:** Materials and Assembly of the StudyBox is shown. It would be 4 separate 3D prints with 1) the four sides of the box, 2) the last layer of the box with slits to fit a servo and the walls of the previously printed box, 3) a flap of the box, and 4) a piece that can attach to the servo with an angle in such a way that it lifts up the flap of the box. When assembled, there should be holes drilled into the top of the box and the higher right flap so that it can be loosely attached with string or wire in order to create a flexible rotation.

**List of Materials:**

- (1) Arduino Case
- (1) Arduino
- (5) Alligator Clips (Male)
- (5) Alligator Clips (Female)
- (1) Battery Pack w/ Batteries
- (1) Servo Motor
- (2) Wires
- (3) Strings/Wires
- (1) The 6" x 6" x 4" Box made of 3D printed materials