Function Proposal

Hardware

- Inputs
  - **Pushbutton Rotary Encoders (2)**
    - Function – Controls navigation/changes states of device
      - Right Encoder
        - Allows user to scroll through and select menu items from the main menu/allows users to scroll through and select letters from the alphabet during gameplay (via rotation of knob and pushbutton feature)
      - Left Encoder
        - Allows user to scroll through scrambled phrase during gameplay to select letter to swap out via free rotation of the knob. Also allows user to return to main menu from any other screen via the pushbutton feature
    - Source:
      - https://www.adafruit.com/product/377?gclid=EAIaIQobChMIxbLdvfmC2QIVFAaRCh17QwHLEAYYBSABEgLQyPD_BwE
  - **Slide Switch**
    - Function – On/off switch allowing user to turn device on and off
    - Source:
      - https://www.digikey.com/product-detail/en/e-switch/EG1201A/EG1902-ND/101723&?gclid=EAIaIQobChMIoPyPvYWD2QIVVIGRCh 2JEQUFEAQYASABEgLwdvD_BwE
- Processing
  - **Arduino Pro Mini (3.3V)** – Provides the required amount of digital and analog pins needed for the devices various sensor inputs and outputs
    - Source:
      - https://www.adafruit.com/product/2377?gclid=EAIaIQobChMIm8nI2YzF2gIVDJFpCh37PwckEAQYASABEgLyBPD_BwE
- Outputs
  - **Piezo Speaker** – Provides user with audible feedback about the system such as a victory tune/medley of utter defeat if point values drop
    - Source: https://www.adafruit.com/product/160
  - **2.2" TFT Color LCD Display Module** – This screen uses the SPI protocol allowing for communication between the device's components and for the transfer of data to update the display. It is a full color display, which will allow for differentiation between unselected and selected letters; furthermore, its larger size will make it easier to read words/letters. The screen is also compatible with the Adafruit GFX library and TFT driver (ILI9340) which will simplify the programming process.

        - Source:
            - https://www.amazon.com/dp/B01N3L01BB/ref=asc_df_B01N3L01BB5444348/?tag=hyprod-20&creative=395033&creativeASIN=B01N3L01BB&linkCode=df0&hvadid=198091640568&hvpos=1o1&hvnetw=g&hvrand=16878866167607162323&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9010853&hvtargid=pla-351377324535

- Power
    - **1200 mAh LiPo Battery** – This will supply enough power to sustain the device for extended periods of gameplay
        - Source: https://www.adafruit.com/product/258
    - **TP5410 - LiPo Charger/Boost Converter**
        - Source: https://www.ebay.com/itm/191990401129

Software

- **Arduino IDE** – Used to write the code to control inputs and outputs

  (Source: https://www.arduino.cc/en/Main/Software)

- **Adafruit GFX Library** – Used to generate graphics for the display

  (Source: https://learn.adafruit.com/adafruit-gfx-graphics-library/overview)

- **Adafruit TFT Driver ILI9340** – Used to simplify the creation of lines/shape/words

  (Source: https://www.arduino.cc/en/Reference/TFTLibrary)

- **Encoder Library** – Simplifies process of reading values from rotary encoders

  (Source: https://playground.arduino.cc/Main/RotaryEncoders)