MISSION STATEMENT

Our goal is to design a practical, affordable toy for a child with Autism Spectrum Disorder that helps them with tasks such as speaking, reading, or counting syllables.

The toys should cater to the specific learning styles: auditory, visual, and tactile (ex. visual learners might want a colorful toy, auditory learners might want a toy with sound).

BACKGROUND

• ASD children often struggle with reading and speaking.
• In a study conducted by Int J Lang Commun Disorder, among girls with ASD 40% had at least one reading/writing disorder.
• They often chunk learn with syllable families (e.g. the -ick family: sick, tick, lick, etc) rather than learn spelling rules.

THE DESIGN

• Speaking Syllables is designed to help users with speaking, reading, and counting syllables.
• Speaking Syllables will be comprised of many building blocks with screens that snap together. When they snap into a formation that makes a word, it will repeat the word back through a speaker.
• The building blocks will be accompanied by an app that connects to the blocks via Bluetooth. This allows the user to interact with the blocks and change the syllables available on the blocks. The app presents additional features, such as bookmarking words the users want to review later on or creating their own custom lesson by adding words.
• The blocks connect through a central Arduino that communicates to other blocks using a physical I2C connection.
• The design will include a protective case for each block that encases the screen and the wiring to protect the integrity of the toy.

NEXT STEPS

• Next steps for 3D printing: print the prototype, test the fit of the prototype with the circuit and Arduino, and make any adjustments necessary for better case utility (see below)
• Next steps for app team: integrate the app prototype into the hardware by adding a syllable library and Arduino interface
• Next steps for hardware: complete the hardware testing to prove functionality of the prototype. Then, turn each LCD screen into a modular unit completely housed in the 3D printed case.

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• electronics-projects-hub.com for Arduino LCD communication tutorials

Inspiration for our design. This is an example of the base toy that we saw could be improved with better feedback.