

Problem:

There are no free games on the internet that are fun, interactive, and educational for kids with disabilities, specifically kids diagnosed with Rett Syndrome. Rett Syndrome is a neurological disorder that affects mostly girls, causing a variety of symptoms. Many suffer with problems associated with hand-eye coordination, verbal use, long concentration ability, and more. Thus, these kids can't learn in the same way and at the same speed as healthy kids. They get stressed and overwhelmed when there is too much activity and colors on the screen at once; many aren't able to click a mouse, so they require special equipment such as an eye gaze machine; many have short attention spans and have a hard time sitting through lessons; and most learn best through auditory and visual instructions.

Solution:

makechildrensmart is a website designed for kids with disabilities, specifically kids diagnosed with Rett Syndrome, to further develop their mathematical skills in a fun and interactive way.

This will be done through a series of math games at different levels of difficulty teaching students various math topics. The games will be specifically designed to help kid's specific needs. These students are all visual learners so they benefit from instructions being displayed on the screen and being said through the speakers. Additionally, to ensure that they are able to stay focused, but don't get overwhelmed, they require a high contrast of colors and no unnecessary things on the screen. Also, there needs to be an easy target on the screen for what students will have to click on either with a mouse or with their eyes through special equipment.

In the future, the goal is to expand the website to have games for kids with different disabilities and learning impediments.

What Each Game Will Look Like:

Many kids with Rett Syndrome are struggling to be taught advanced mathematical topics, when they haven't been able to master very basic number concepts. The website will provide many games targeted towards mastering these skills. Some of these include:

- One to one correspondence: having a picture of 'x' apples and determining how many apples there are
- Greater than or less than: looking at two numbers and determining which number is great and using the corresponding symbols ($<$, $>$)
- Rounding up or down
- Adding and subtracting very small numbers together
- Identifying shapes

Each game will have to meet the following components to ensure that kids with disabilities are able to stay focused and enjoy learning productively:

- Nothing unnecessary on the screen
- High contrast of colors

- Easy, big targets to hit when answering a question
- The game is engaging
 - For example, a student has to determine how many cows are present after the cows undergo some sort of action
 - For example, the game can be built upon the idea of something a student would do in their daily lives such as going to the store to buy a toy. This gives the game a plot and the student wants to sit through the entire duration of the game.
- A student gets rewarded when getting a question right
 - For example: a big smiley face appears on the screen
- It's important that when a question is answered incorrectly the student doesn't get discouraged
- Instructions are given both visually and auditorily

Game Proposal 1:

1. On the left side of the screen have x (create a random number generator between 1 and 9 inclusively) coins (choose a random coin) and on the right side of the screen have three numbers (two randomly generated and one of the numbers corresponds to the number of coins). Once the player chooses the correct number of coins, repeat. (Remember to have encouragements along the way. And accumulate points so there are checkmarks).
2. The same as above but instead of coins use toys (use various images of toys) and expand number between 1 and 20.

A helpful framework that I encourage you use for creating this game is <https://phaser.io>