# Solving Dysgraphia

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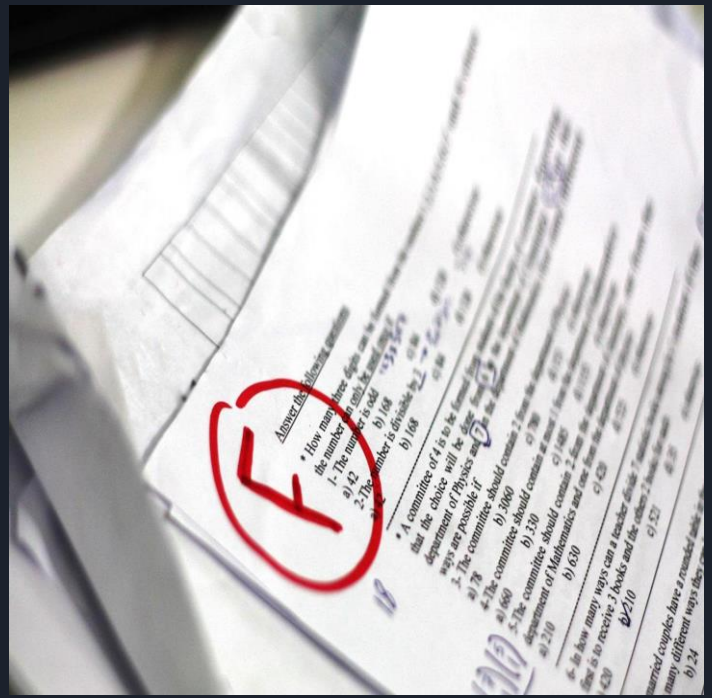
# What is Dysgraphia?

Dysgraphia is a learning disability that affects handwriting skills. It is characterized by difficulties in spelling, poor handwriting, and trouble with the thought processes needed to form sentences.

# Need For Solution



Children with dysgraphia face significant educational hurdles compared to an average student. This is because when the act of developing ideas through writing is needed, they cant put these thoughts down onto paper without difficulty. This fosters academic discouragement within students. Thus, we need to come up with a solution that enables them to overcome these hardships.

# Problem Statement

The clients, consumers with dysgraphia, require a device that helps them to improve their writing ability, as writing is very important aspect of one's life. Clients who go on without solving this issue face psychological and compositional  hardships.

# Stakeholders

The stakeholders are:

- the designers of the solution
- the children afflicted with dysgraphia
- the family members of the children
- educators of the children
- the education business as a whole
- the healthcare industry.

# Criteria & Constraints of Solutions

## Criteria:

1-Storable

2- Aesthetically Pleasing

3- Low Production Cost

## Constraints:

1-Simple, Easy to Use design

2-Low Cost to Consumers

3- High Safety Ratings

# Our Solution

# Train of Thought in Solution

After researching the symptoms of dysgraphia, we found key symptoms to solve:

- Their cramped grip
- Frequent erasing
- Inconsistency in letter and word spacing
- Poor spelling

We set out to find a solution with those symptoms in mind. We wanted a solution that doesn't need to be erased, does not include a grip , consistent and clear in displaying the spacing between letters, and helps the consumers to develop a strong foundation of muscle memory.

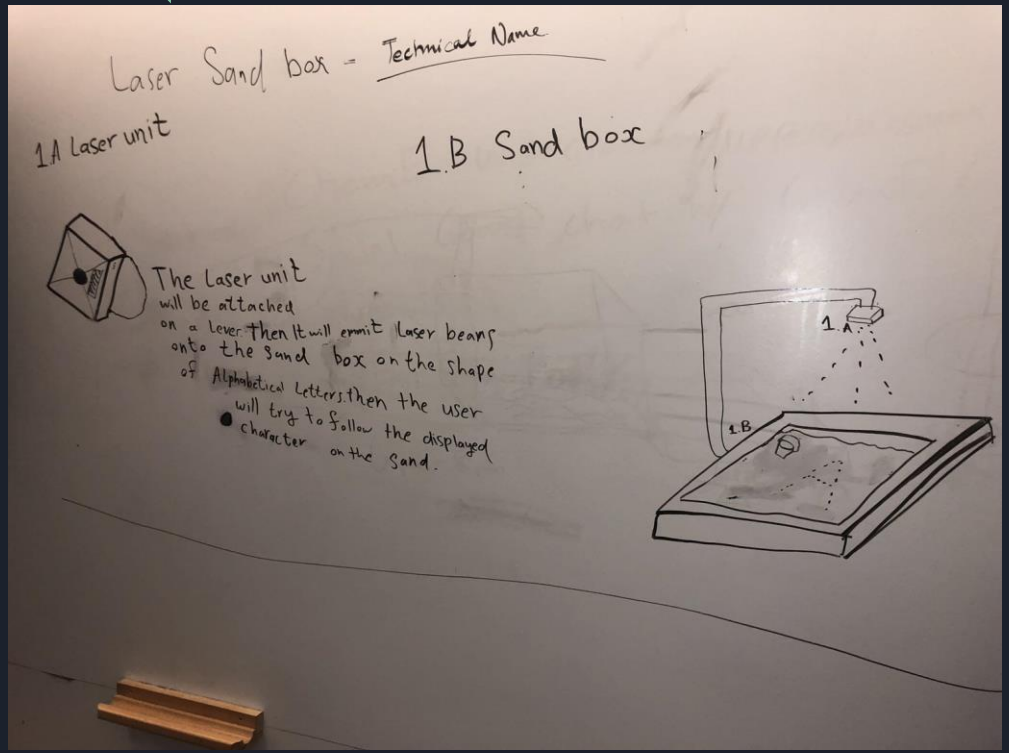
# Projector Sandbox

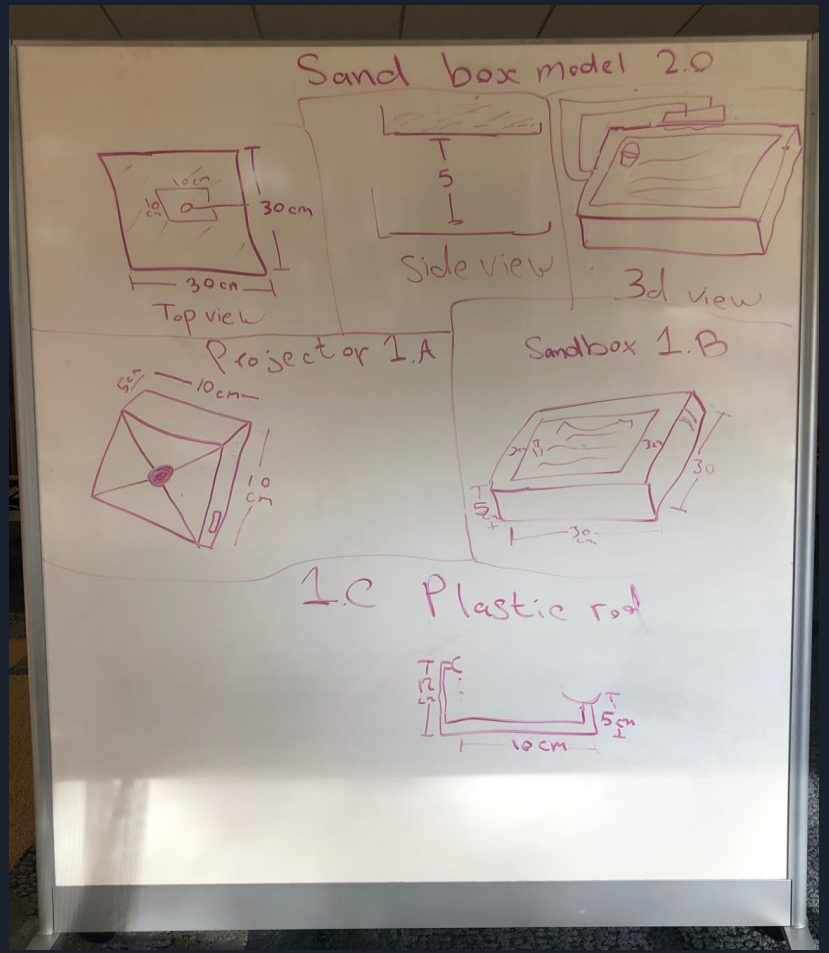
The product consists of :

1. The top unit that contains the projector and its sensors
2. The kinetic sand
3. The container (the box)

How does it work?
The sensors and projectors project text  onto the sand. The user traces the projected text, as the successfully traced path darkens out, leaving the untraced path still illuminated.  Once finished, the projector will display the letter again in green while indicating the missed parts in red.

# Projector Sandbox Sketches



# Why the Sandbox ?

- Achieved Highest Score in the Weighted Decision Matrix.
  - Small, storable, and aesthetically pleasing design
    - Volume and shape after assembly
    - Volume and Shape before assembly
  - Simple Design
    - Time to assemble
  - Suitable Production and Retail value for everyone
    - Monetary Cost
  - Safe Product
    - Safety Rating

# Weaknesses of the Product

1. There is a finite amount of Kinetic Sand
2. The core of the product is concentrated in the Upper unit.
3. While assembling and disassembling the product parts could be lost (e.g. screws).

# Assumptions about the Product

1. The material protecting the Upper Unit is strong.
2. The cost of the Upper Unit components align in keeping our products inexpensive.

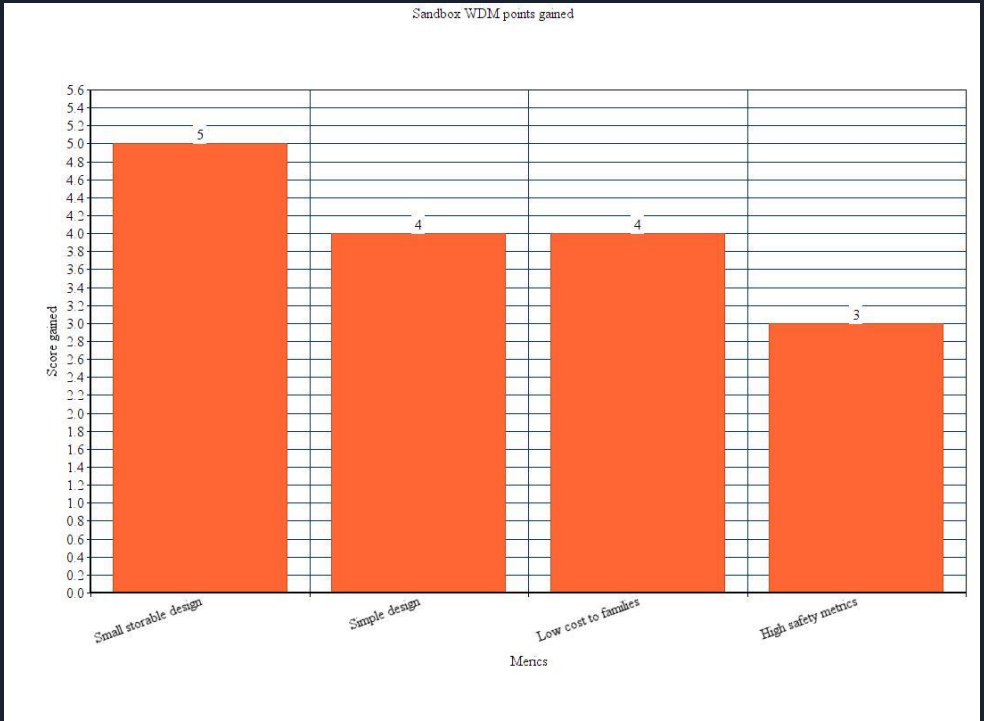
# Research Data

We conducted experiments and collected data and decided to use kinetic sand due to the following reasons.

1. It is non toxic and doesn't stick to one's hand.
2. Its polymer coating helps make more legible characters. This is very important as the more clarity in the characters, the more clearly the concepts can be grasped.

90–98% of children with developmental and learning disabilities have problems in getting to  an average level of handwriting proficiency for their age.
Repetitive writing practices helps develop motor skills and instills muscle memory which aids them in becoming better writers and hence improving their academic performance.

# Research Data




Meets the defined need of helping the consumers get over the educational hurdle, by improving their muscle memory and spatial awareness when writing.

Uses textile feedback from the sand while also building character knowledge, which helps maximize the benefit of the product.

# Final Remarks

Our group concluded with respect to our solution:

- Dysgraphia is a rather unknown condition that has drastic effects on its victims.
- We wanted to help shed light on dysgraphia by promoting a solution that could be utilized for a low price point.
- We designed the solution with children in mind as they have untapped potential that is hindered by not treating dysgraphia.

# References

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# Thank you for listening.

Questions?