ES115: Design, Innovation and Prototyping

Final Report of the Prototype

Team “Seven Mavericks”

Meet the “Mavericks”

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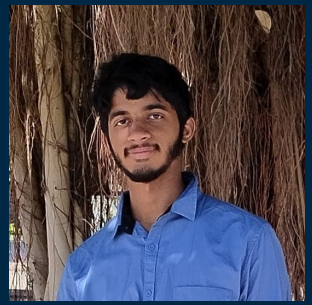

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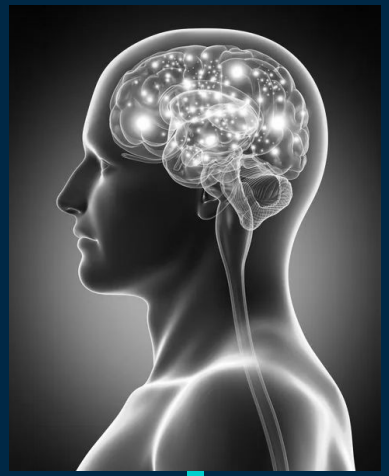
Project Statement

To design a memory-strengthening game for the elderly diagnosed with or at the risk of developing dementia and related disorders.



Design Opportunities

01 **PORTABILITY**
Lightweight & ergonomically designed for mobility

02 **TANGIBLE**
Non-digital to prevent asthenopia (eye-strain)

03 **SIMPLICITY**
Symmetric structure with minimal colour choices

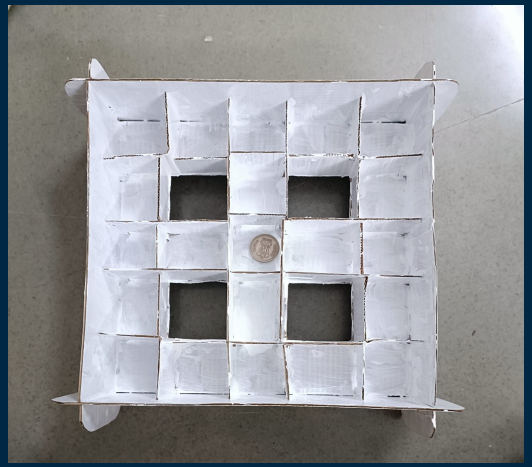
04 **GERIATRIC-FRIENDLY**
Smooth-edged with no sharp corners

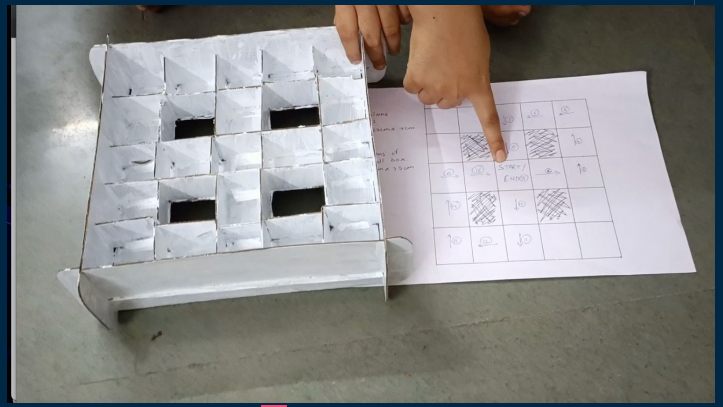
Concept 1: Wordie

- In Wordie, words are to be formed using lettered dice.
- Drop the die in the allotted slot, while the remaining slots are hidden.
- Press a push button which rotates the slots by one, thus opening different slots in every round to drop in a die.
- Finally, on completion of the word, the player will be able to check if they formed the intended word.

Concept 2: Coin Slider

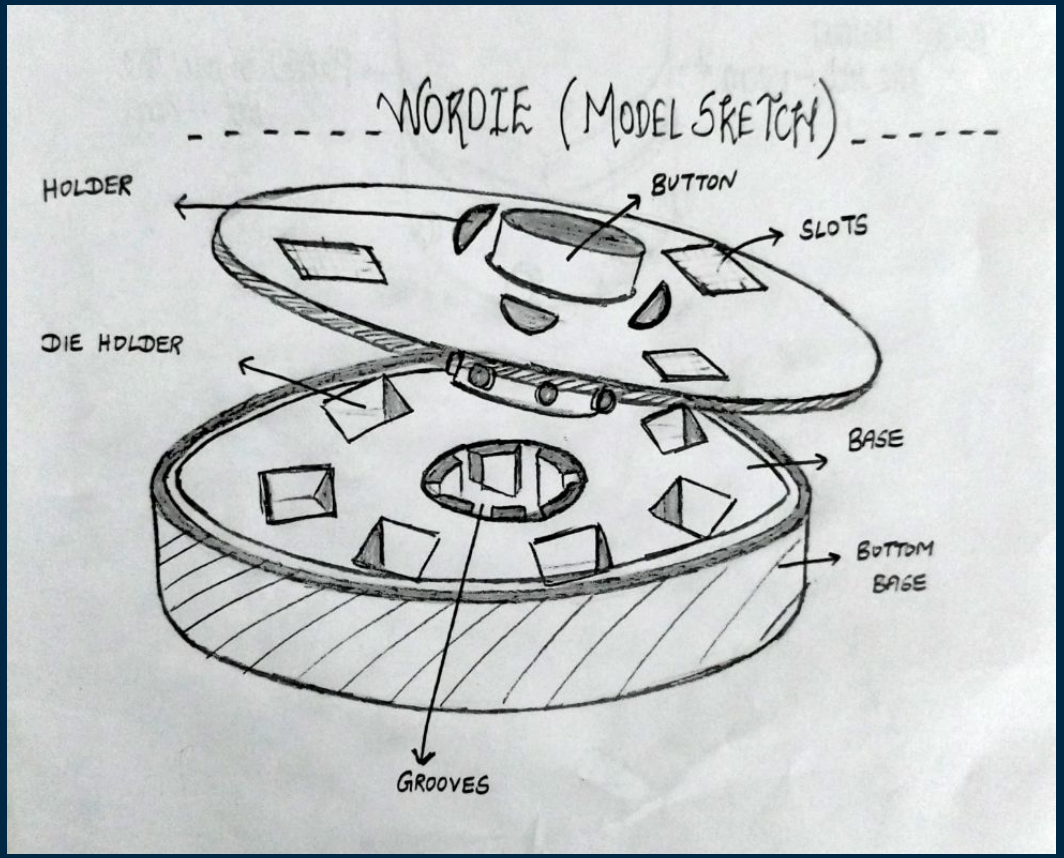
- Coin slider focuses on re-creating a shown pattern based on memory.
- The player's objective is to slide the coins through the slits inside the box, falong the pattern shown earlier.
- A string is tied to the coin so that the path of the coin is recorded and can later be verified against the original pattern.





Concept 3: Brain Buster

- The prototype depicted engages the player by making them form a pattern using boxes
- Multiple patterns are provided on a sheet inside the lid of the box. One of the patterns can be chosen.
- The players' motive is to slide and rotate the boxes to obtain the desired pattern.



Hand-drawn sketch

FINAL CONCEPT

1. Wordie addresses the issue of short term memory loss. The player is expected to remember the most recent letter added and the slot it was added using.

FINAL CONCEPT

2. If one succeeds in recalling the above two factors in every round, they would find the expected word on opening the lid finally.

Designed with Autodesk Fusion 360

FINAL PROTOTYPE

Making Words using Dice

PORTABILITY

Small and portable
(radius 11 cm and height 5 cm)
Easily fits in an average person's hand

GERIATRIC-FRIENDLY

Grips on the surrounding case

Rounded corners on the dice

AESTHETIC DESIGN

Team Logo:
7 wrapped inside an M,
exhibiting our team name –
Seven Mavericks.

Push Button Mechanism

- The objective of the grooves is to ensure that the die holders move to their neighbouring position when the button is pressed once.
- The lambda style grooves do exactly that. When the button is pressed, the button extrusions slide through the triangular slope.
- When the spring exerts its force back, the button comes up resting over the adjacent triangular side, effectively rotating the base.

LEARNINGS FROM THE COURSE

- In the smallest of objects and the finest of details, we learnt that a huge amount of time, money and effort is invested.
- We learnt that people who have conflicting ideas also have to work together as a team, combine and/or debate the ideas, and strive to a united goal.
- When someone has a sense of responsibility towards something, we observed that they have a unique kind of motivation and passion towards it.
- Furthermore, some of the daily seen objects like door handles, railings have started catching our attention and made us ponder about their design and why it was crafted that way.

CONCLUSION

- Based on the reception and reviews we received during the exhibition, we can proudly say that Wordie enticed a lot of attention.
- On a personal basis, as the ones who worked on the product from scratch to touchline, we feel that every single molecule of the toy has been designed and constructed in an astute manner.
- Futuristically, we hope that this toy would be a booming success in the market, and actually help us on our noble cause for the elderly.

FUTURE SCOPE AND DEVELOPMENT

- For the making of the toy, we used PLA (Polylactic Acid) and ABS (Acrylonitrile Butadiene Styrene). Instead, with better quality 3D filaments, the durability and final finish of our toy can be enhanced.
- Implementation of a smoother and more accurate push button mechanism could be done.
- A more cost-effective and time-effective method of manufacturing the toy could be thought of.

ACKNOWLEDGEMENT

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