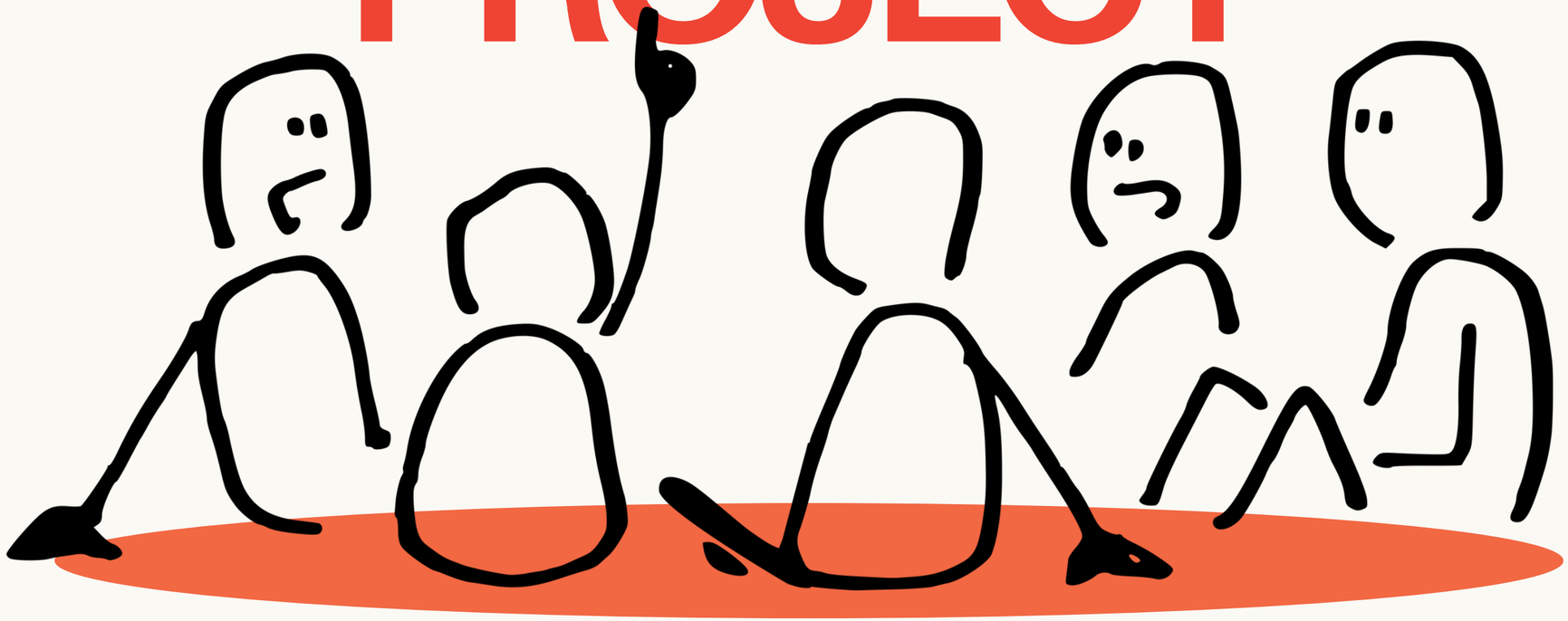
AT-CO-CREATION PROJECT



Mole in the Hole

ASSIST-HEIDI

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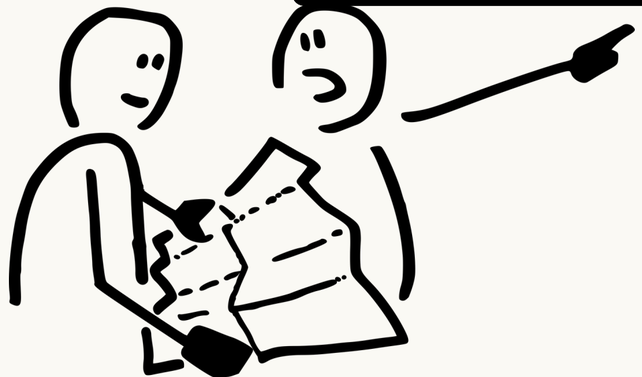
Contents: taks per person

Giorgia	Israel	Anna
Board designing and realization on CAD	Printing process	Rules printing
Documentation	Moles and cards ideation	Box designing
Presentation	Control version (GitHub)	Documentation

User request

- The objective was to reimagine the Ravensburger game Mole in the Hole as an inclusive experience, specifically designed to be accessible for blind and visually impaired players as well.
- The vision for this project was to create a version that is portable, rich in haptic features and genuinely fun for all players.
- A central focus of the project was to transform the game into an engaging educational tool, helping blind children master Braille in a natural, playful setting.



Ideation: MUST- HAVES

Tactile Navigation

The entire board and all game components feature haptic elements allowing users to "read" the game state through touch.

Stable piece positioning

The moles use a "lock-in" mechanism to ensure they stay in place when touched, so that the setup is not accidentally moved.

Modular Assembly

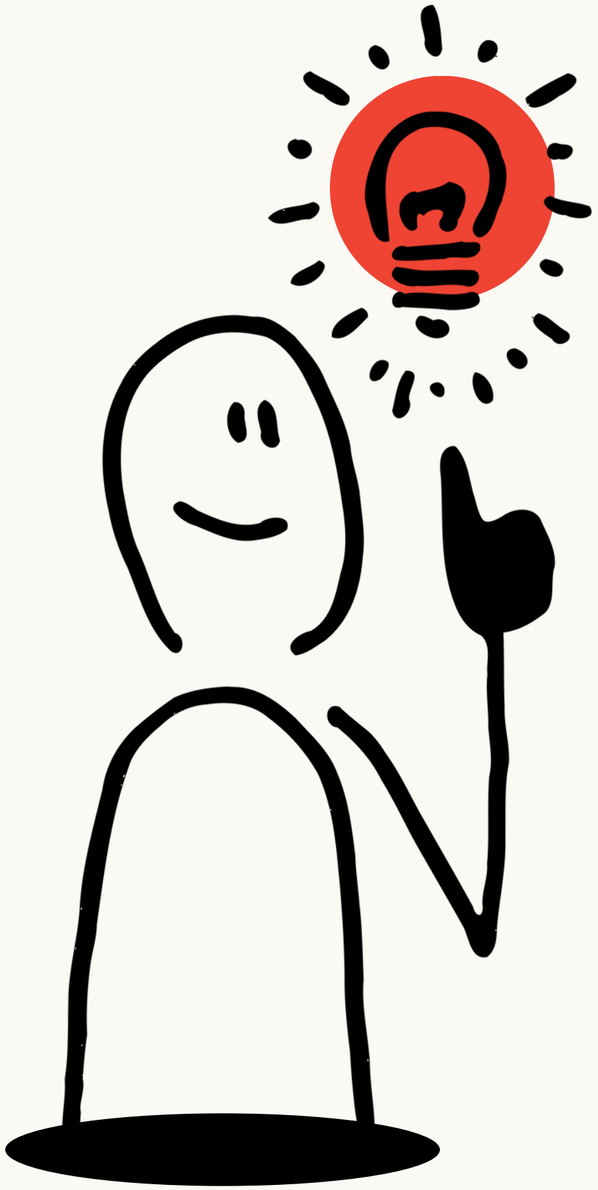
The board is built using a "protrusion-and-void" system, where users connect six individual slices to form each circular layer

Portability

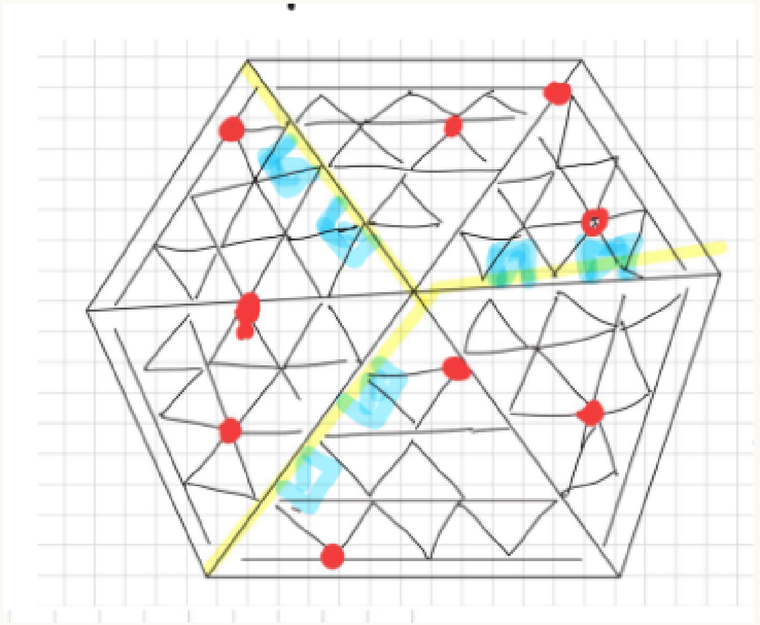
The structure is designed to be compact and easy to carry, making it a practical choice for travel or school.

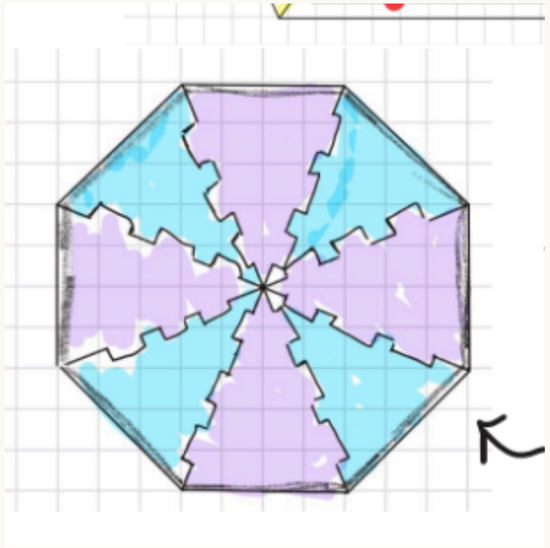
Dynamic Gameplay:

The original "falling mole" mechanic is preserved through the manual, perpendicular lifting of layers as the game progresses



First design Ideas





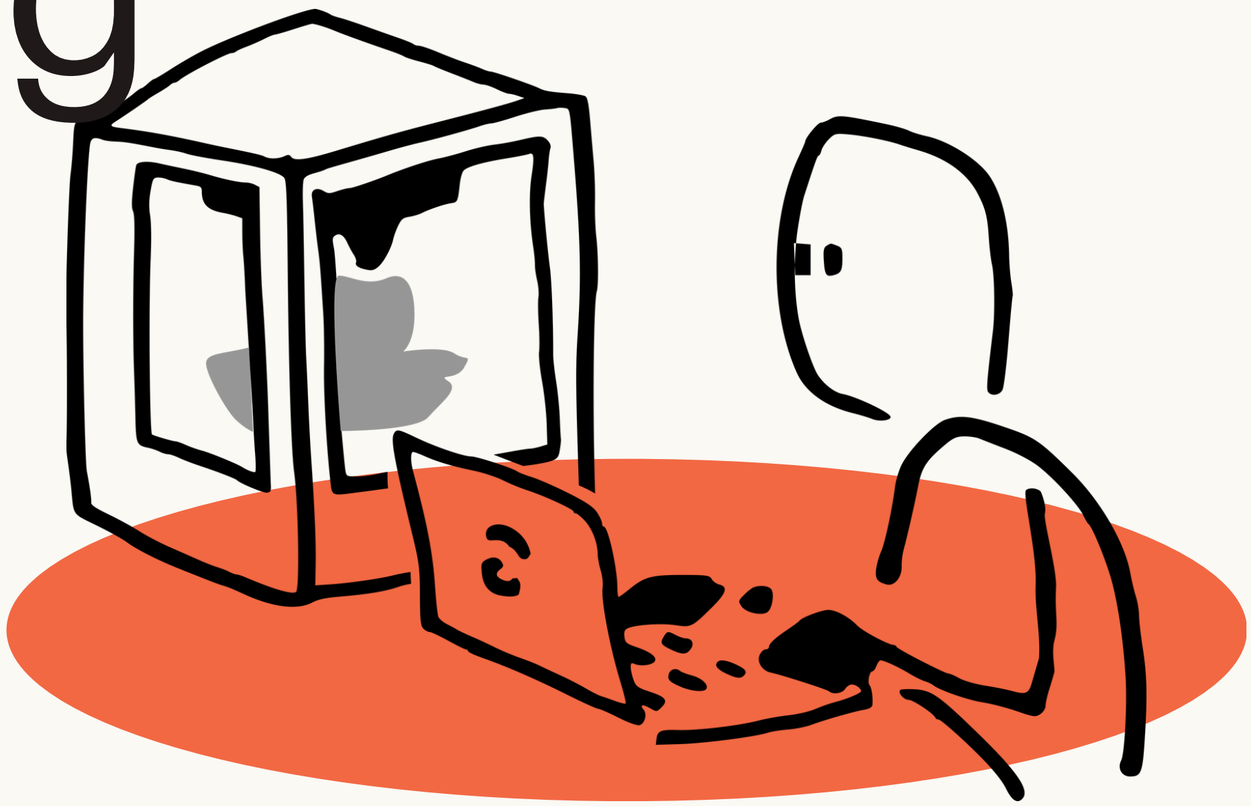
The initial design was less portable and lacked stability, as it relied on three large segments. We switched to a six-piece interlocking system to make the game easier to carry and to ensure the layers remain structurally sound when lifted.

Computer Prototyping

https://www.onshape.com/en/

CAD & PDM System

Prusa 3D slicer and Printer

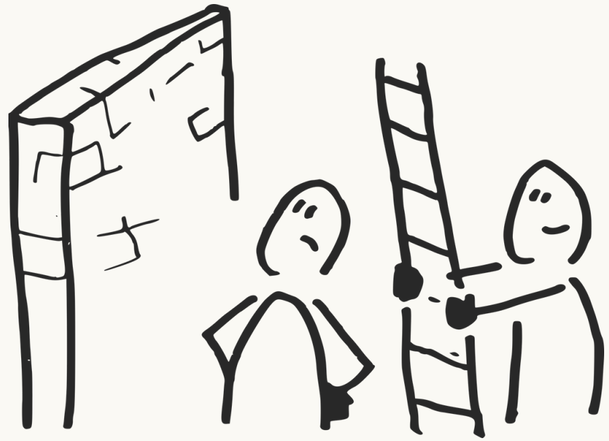


Challenges & Opportunities

The Challenges

we struggled to find a design that balanced durability with a slim, portable profile still having to figure out how to deal with support material.

We also had to prototype the moles several times, adjusting their dimensions through trial and error before finally achieving the perfect size for both handling and stability.



Rules and braille documentation

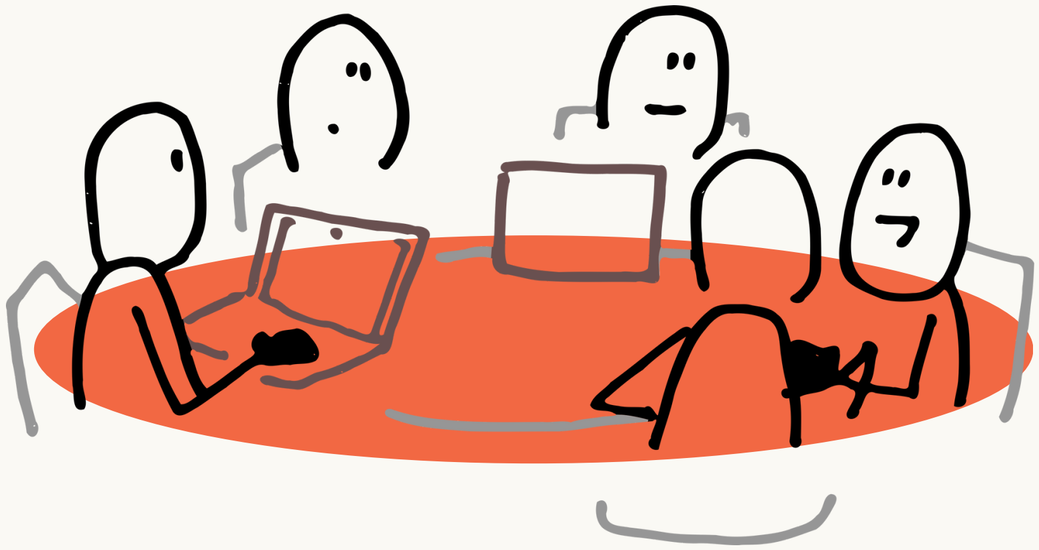
The rules for Mole in the Hole – Tactile Edition were written in Braille in English and German so blind and visually impaired players can play independently.

How the Text Was Designed?

- Standard Braille rules were used in both languages
- Clear and simple sentences make the rules easy to follow
- The text was adapted to each language, not translated word by word
- Same words used consistently for **moles, holes, levels, and movement**

Important Points During Preparation

- Step-by-step structure: setup, gameplay, movement, levels, end
- Clear explanation of the two-level board and hole types
- Detailed but easy rules for movement with tactile and Braille discs
- All limits and special cases explained clearly



The final Braille texts were printed by the **Bundes-Blindenerziehungsinstitut.**

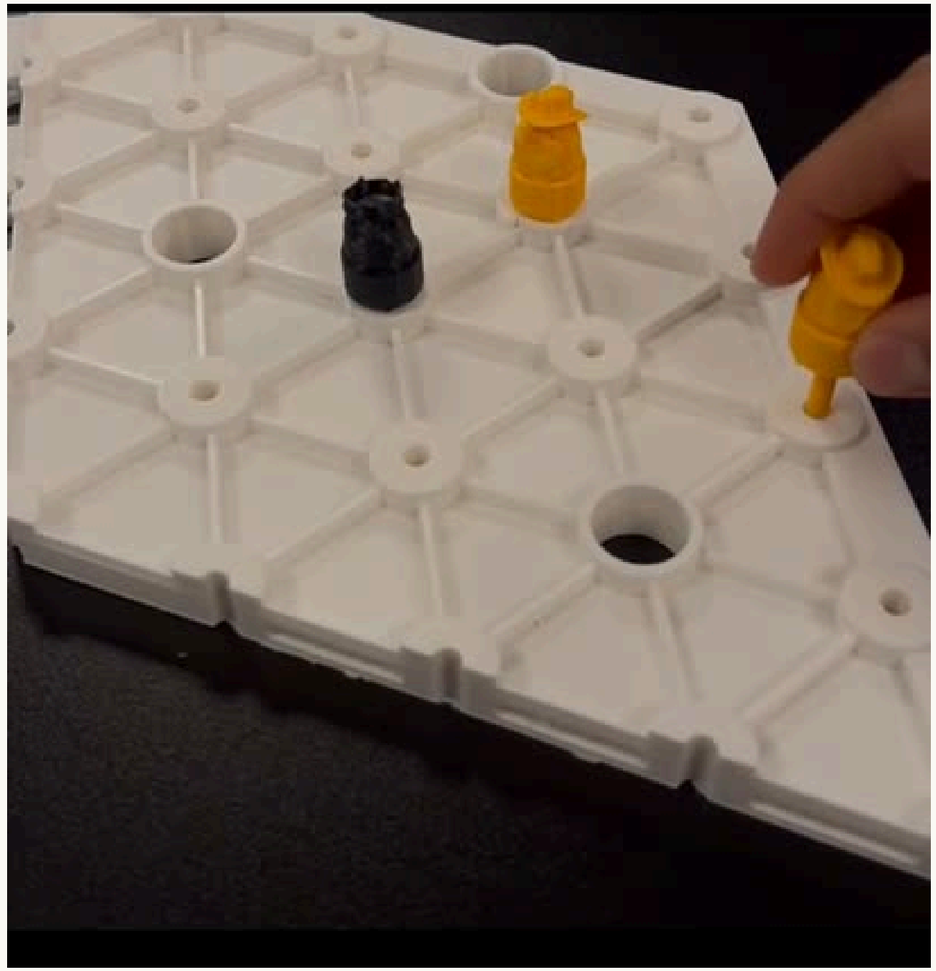
Documentation and license

We chose CC BY-SA 4.0 because the project includes modified parts from existing models licensed under CC BY-SA, which legally requires any derivative work to be shared under the same license.

This license also allows others to use, modify, and share the models freely, as long as they give credit and keep the same license, ensuring openness and compliance.

ASSIST-HEIDI---Designing-and-implementing-Assistive-Tools-for-people-with-disabilities

Demostrational video:



Thank you for your attention!
Do you have any questions?