

A close-up photograph of a child's hands playing with colorful wooden toys on a grassy area. The child is wearing a red t-shirt with the words "WORLD FAMOUS" and "HOCKEY" visible. In the background, a blue and red kick scooter is parked. The foreground is filled with various wooden toys, including a red bird-shaped rattle, a red cone-shaped rattle, a green and orange geometric block, and several colorful wooden wheels and spindles. The scene is brightly lit, suggesting a sunny day outdoors.

Design Futures Project

ImagiBlocks The Tiny Troupe

**Marie-Charlotte Roy
2025**



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Enquiry: The Brief

75%

of brain development happens before age 5.
(Harvard University Center on the Developing Child, 2011)

Subject Area (see extended text in appendix)

The previous project's research on the Spin'Bud puppets explored how interactive and character-like elements can help neurodivergent children engage with storytelling, emotions and playful learning in a classroom context.

Moving forward, the current project will focus on amplifying these puppet's benefits by reinventing them into open-ended building-block toys, therefore expanding the target audience to a general public of children aged 3-10. Studies show that free open-ended play enhances children's cognitive flexibility and problem-solving skills (Lego Foundation, 2021). It is crucial for children's healthy development, especially with today's decline in their attention span. They need a creative toy to build their imagination. The more modularity the better, because "adaptability enhances engagement and creativity" (Children's Museum Team, 2024). Following this, the toy will be a set of modular wooden puppet characters, a toy that allows for easy use, creativity, as well as fine motor skills and imagination development.

Research question:

How might we reinvent wooden puppets to encourage unlimited creativity in children's play?

The following will measure the success of the project:

Engagement – do children actively engage with it?

Creativity – are they using it multiple times, creating new stories?

Usability – can parts be interchanged easily?

Durability – is the design built to last?



Drawn by Phoenix, age 5

Enquiry: Research probes and insights

INTERVIEWS WITH PARENTS

Parks, museums
Asked: "What was your child's favorite toy?" - comparing market values (answers in appendix)

OBSERVATION

Play with children and hand out different prototypes throughout phases of project.
Observing body language, engagement. Asking them questions.

SURVEYS

After user testing, send survey to parents and children for feedback (appendix)



User testing with children



First prototypes



Use of magnets - but had to change later because of assembly constraints

Last prototypes



KEY INSIGHTS

Magnets are only assembled in one orientation - not enough freedom



Needs some sort of result or meaning at the end for the children to keep interest.

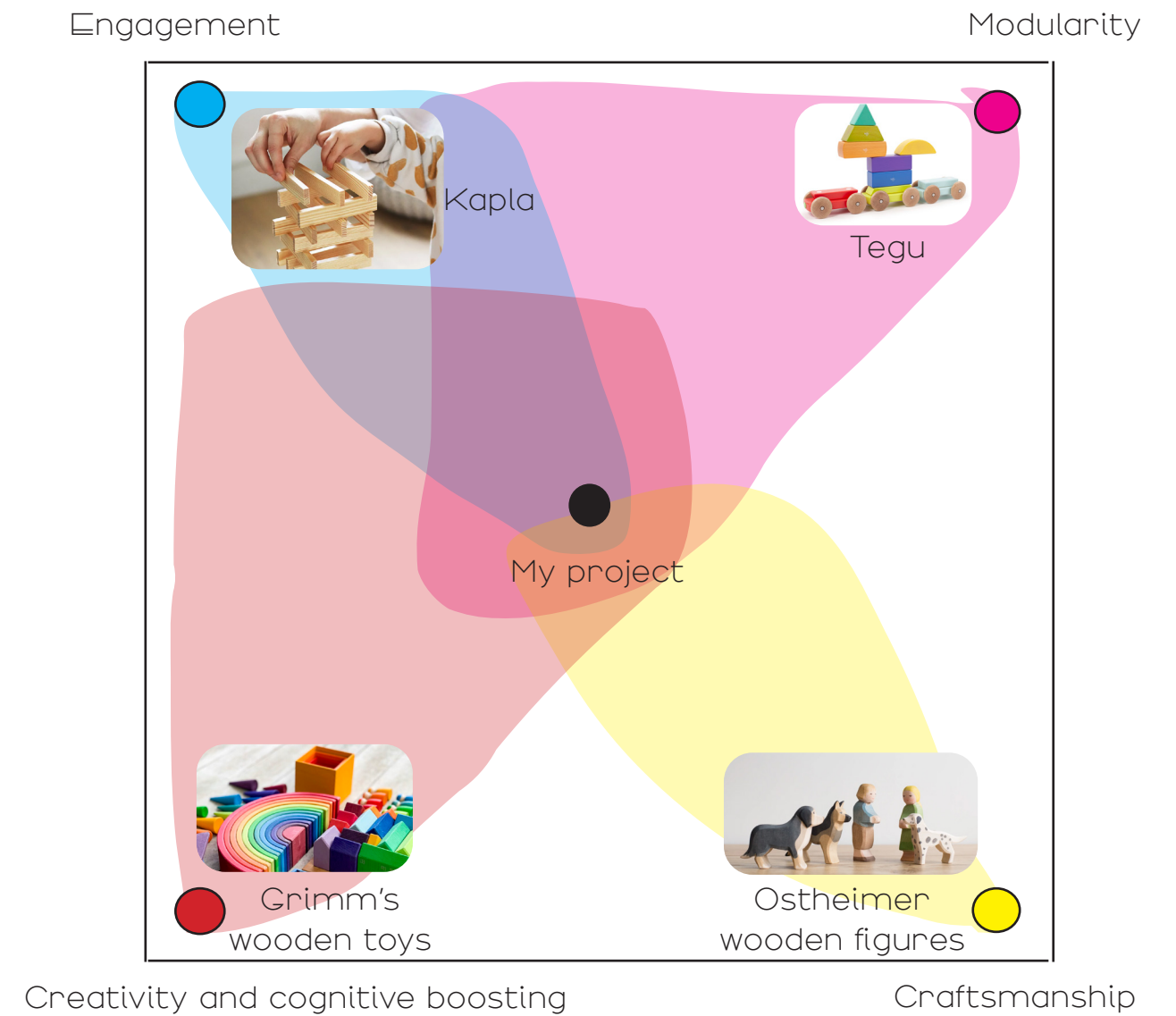
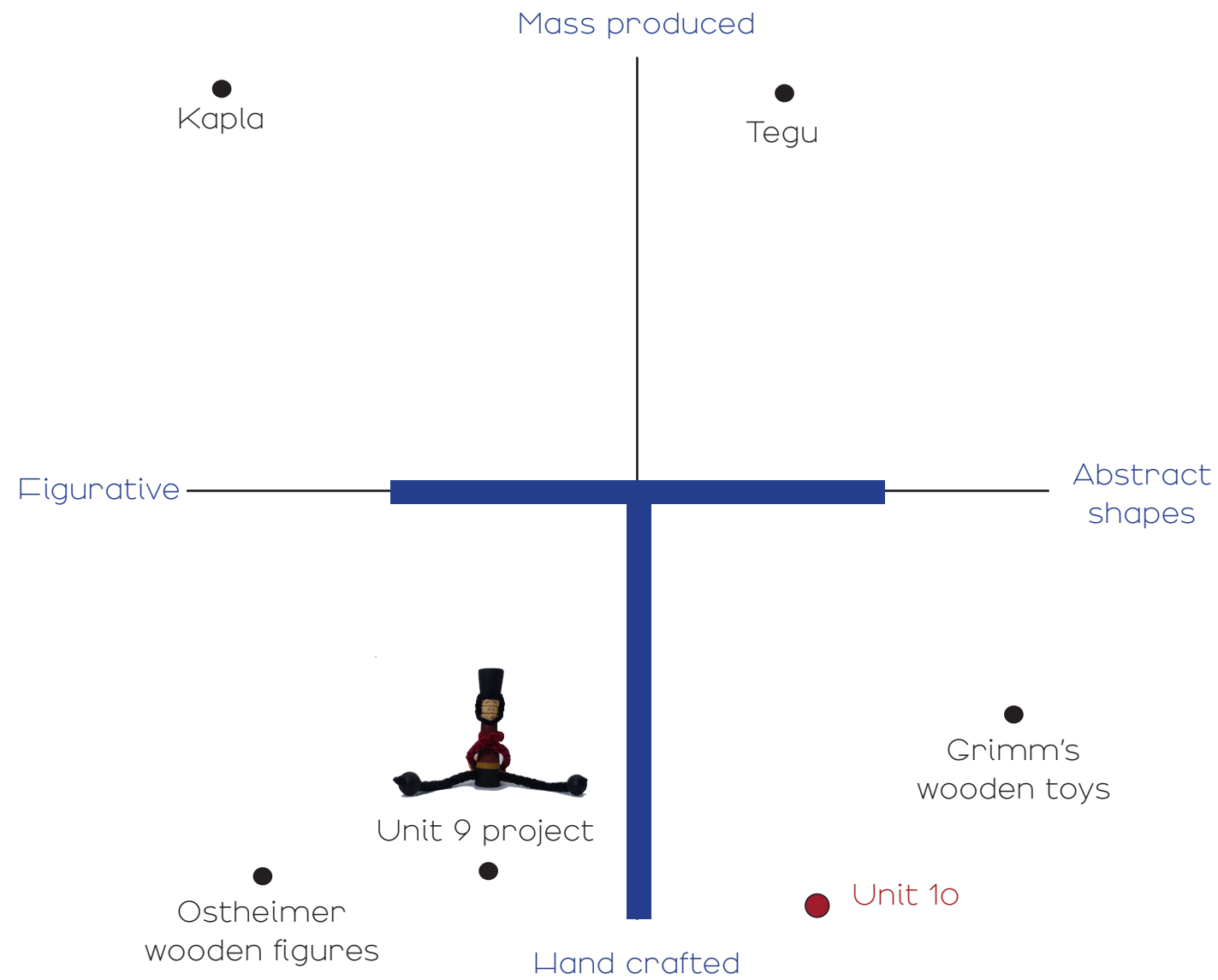


APPLICATION TO DESIGN

Switched to a stacking method with holes in both directions for more possibilities

Created circus storyline for children to have a "mission", a "goal" if they don't want to free play. More puzzle-like aspect, created environment to toy.

Knowledge: Value framework and design values



Core values

Knowledge: Technical constraints, material finish

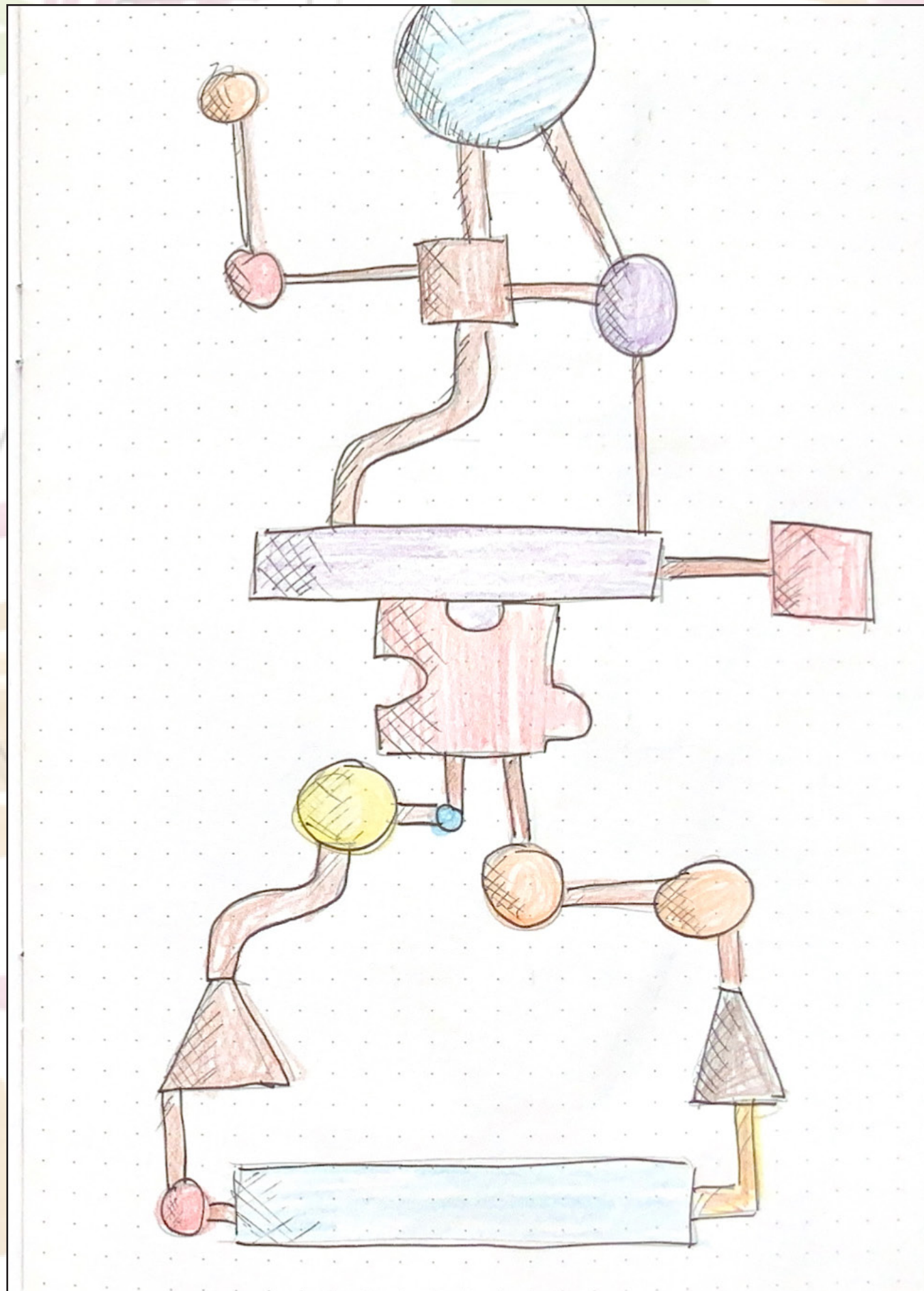
Factor	Criteria	Importance
Material	Hardwoods with food safe paints and finishing	Must be met
Safety and regulations	Small detachable parts - mandatory warning choking hazard and unsuitable for less than 3 years	Must be met
Modularity/adaptability	Allow for easy reconfiguration to the child's freedom	Must be met 
Longevity	Withstand frequent play without breaking or chipping	Must be met
Developmental benefits	Enhances fine motor skills, cognitive development, creativity, problem-solving skills	Must be met
Manufacturing	Handcrafted. Small batch production, less than 1000 made	Must be met 
Sustainability	Sustainably sourced local wood	Must be met 

Extended version in appendix



Process: Ideation, iteration and validation

Blindfolded to draw random shapes



Building blocks + puppets.
Abstract shapes? but attached together - looking for puppet aspect in nonsense shapes
Freedom and creativity, still inside a context

Abstract-like shapes - but with solid materials like wood?
Really trying to give the toy as much creative freedom as possible through shape

Secondary Research Quadrant

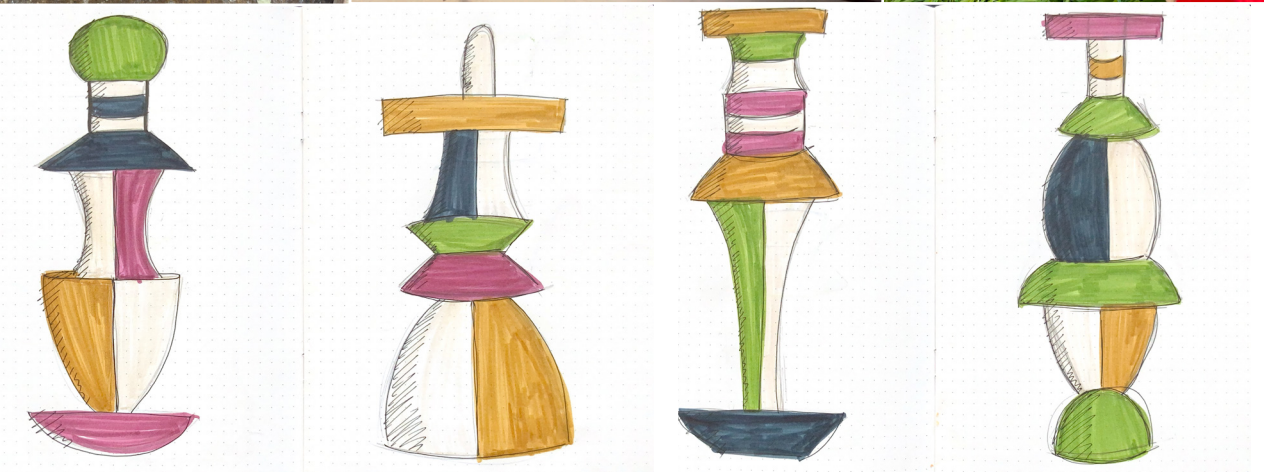
TOY

WOOD



ABSTRACT

CHARACTER-LIKE



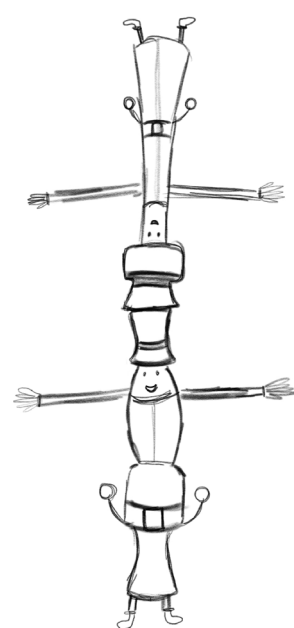
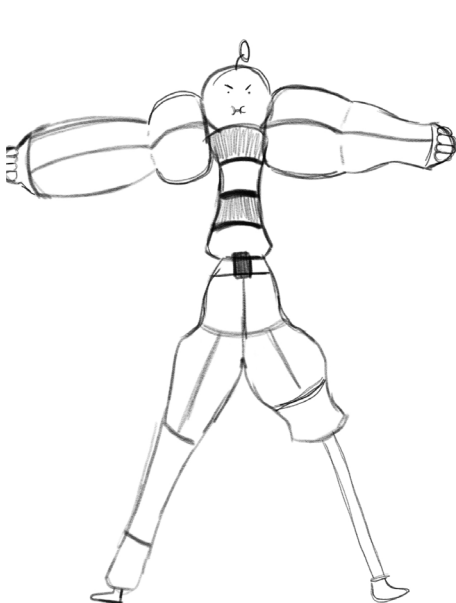
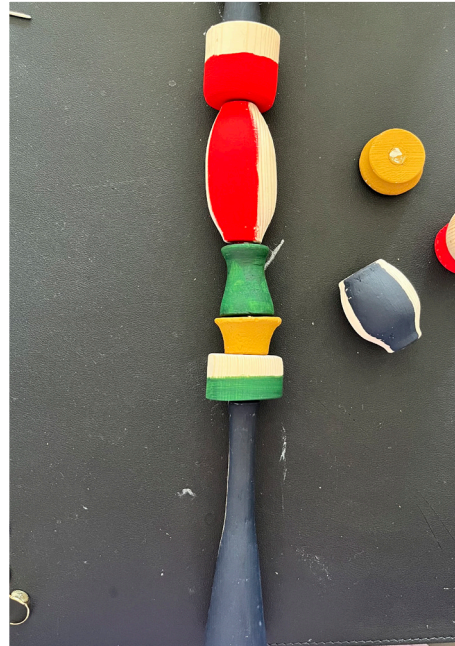
Testing different ways of making - lathe, carving, whittling for more abstract freedom and creative possibilities

Process: Experimentation, evaluation, expertise

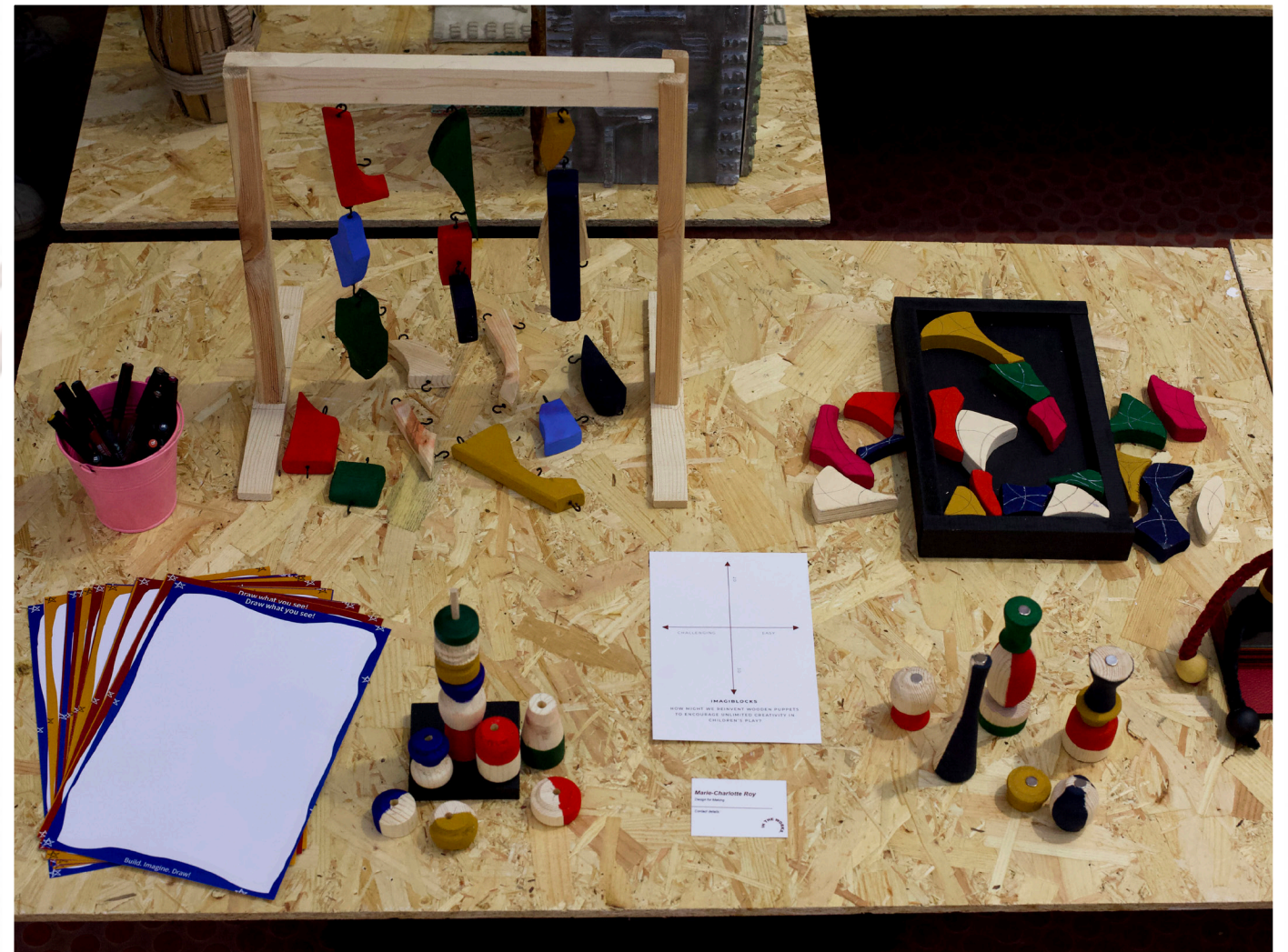


User testing with parents, children and classmates

Key insight - Magnets can only be assembled in one orientation - less possibilities



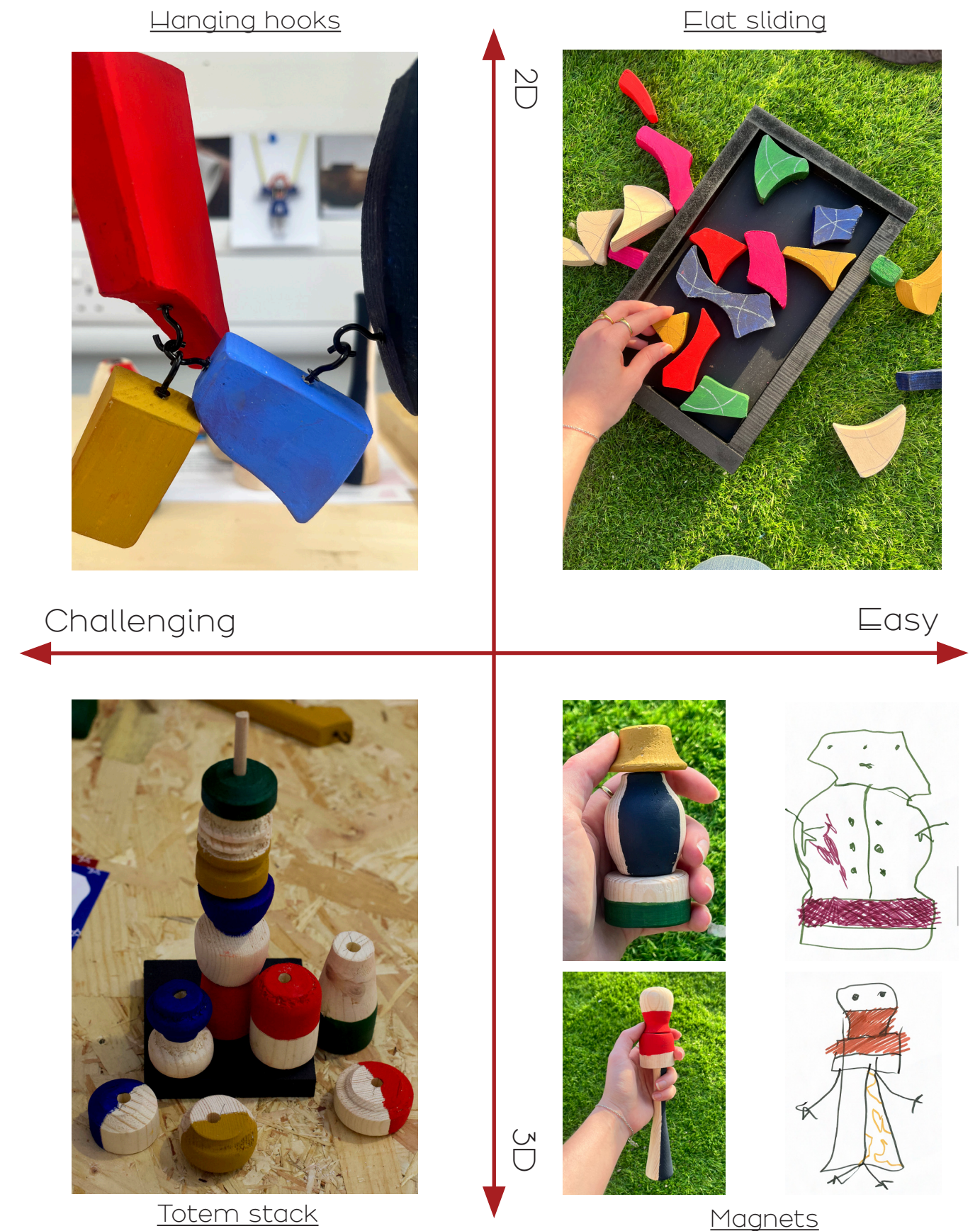
First example sketches of "draw what you see"



4 different ways to assemble shapes freely.
How it was tested: explained concept and asked people to draw the character they just built as a creativity exercise.

How might we reinvent wooden puppets to encourage unlimited creativity in preschool children's play?

Communication: WIP Show Pitch Poster



Communication: User testing and feedback



WIP show feedback: original thing to do, forces the mind to see something and be creative
More possibilities than just characters/puppets. Can play with shapes and see cities, trees, build something completely different
Key feedback: Think about the after: what do they do with their character? How do they keep it "alive"?



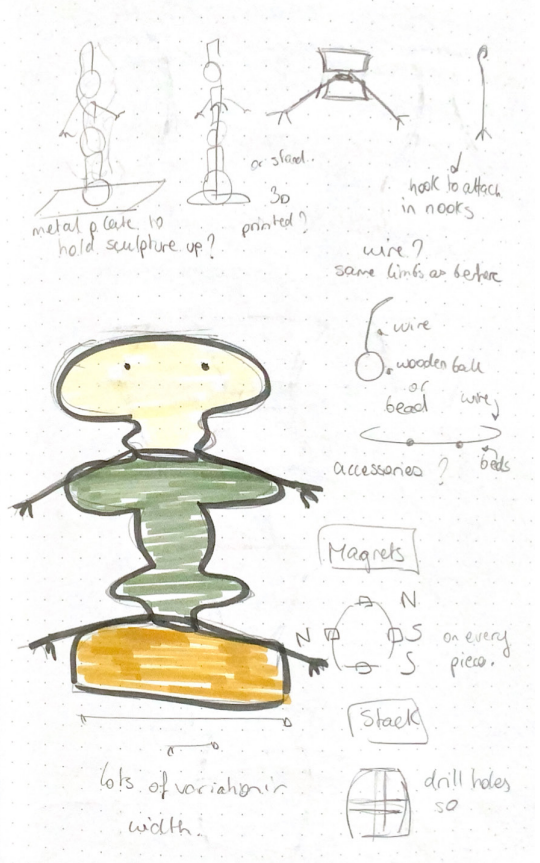
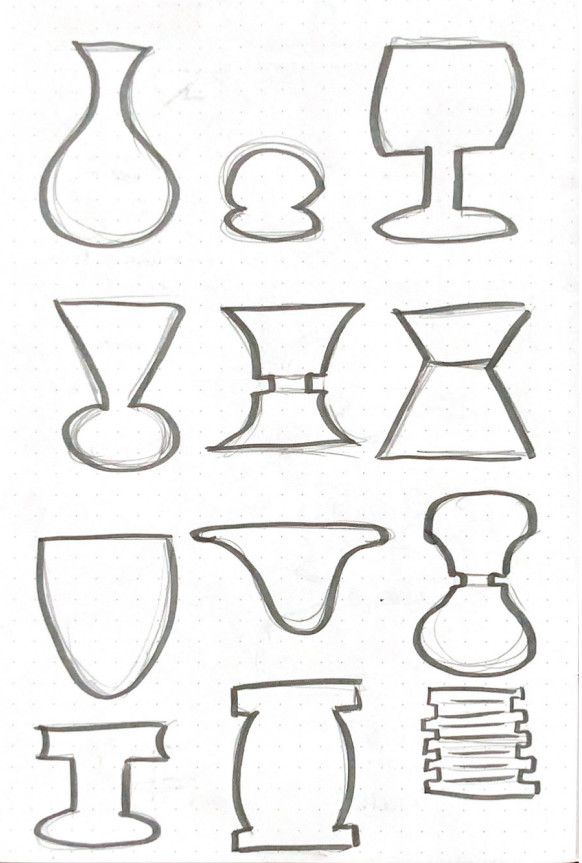
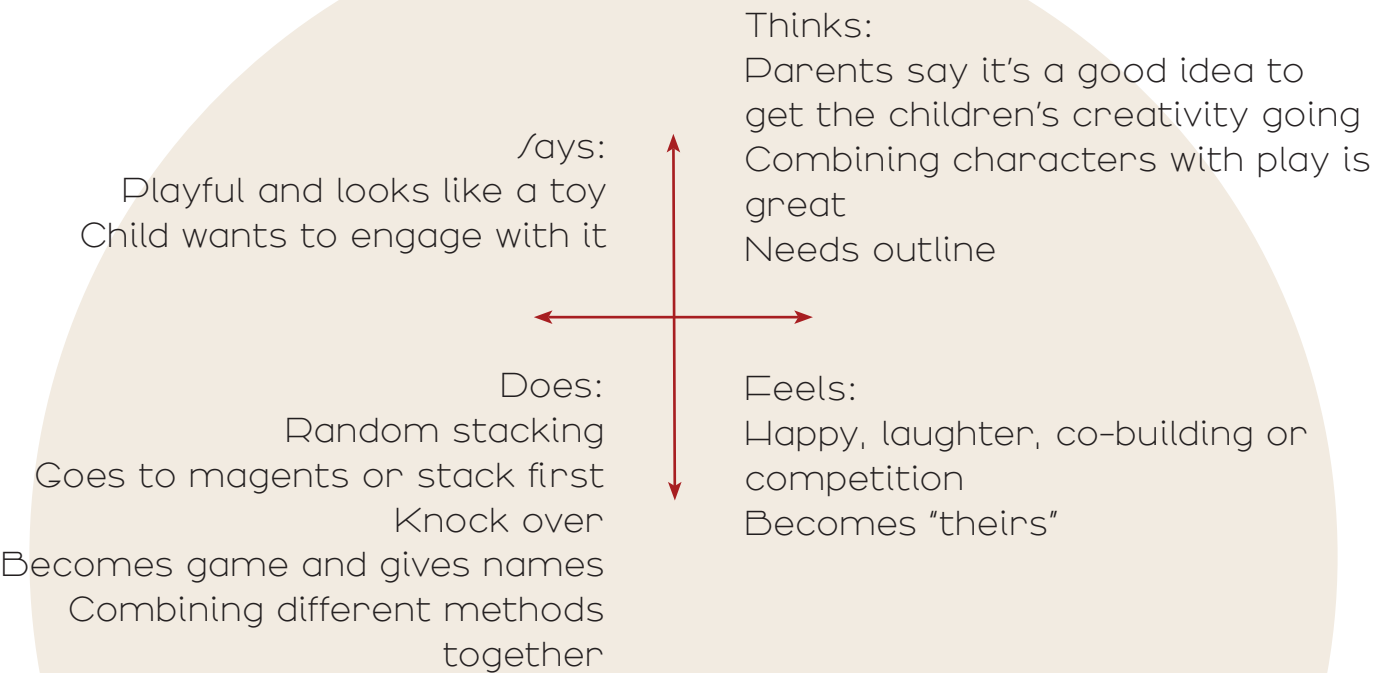
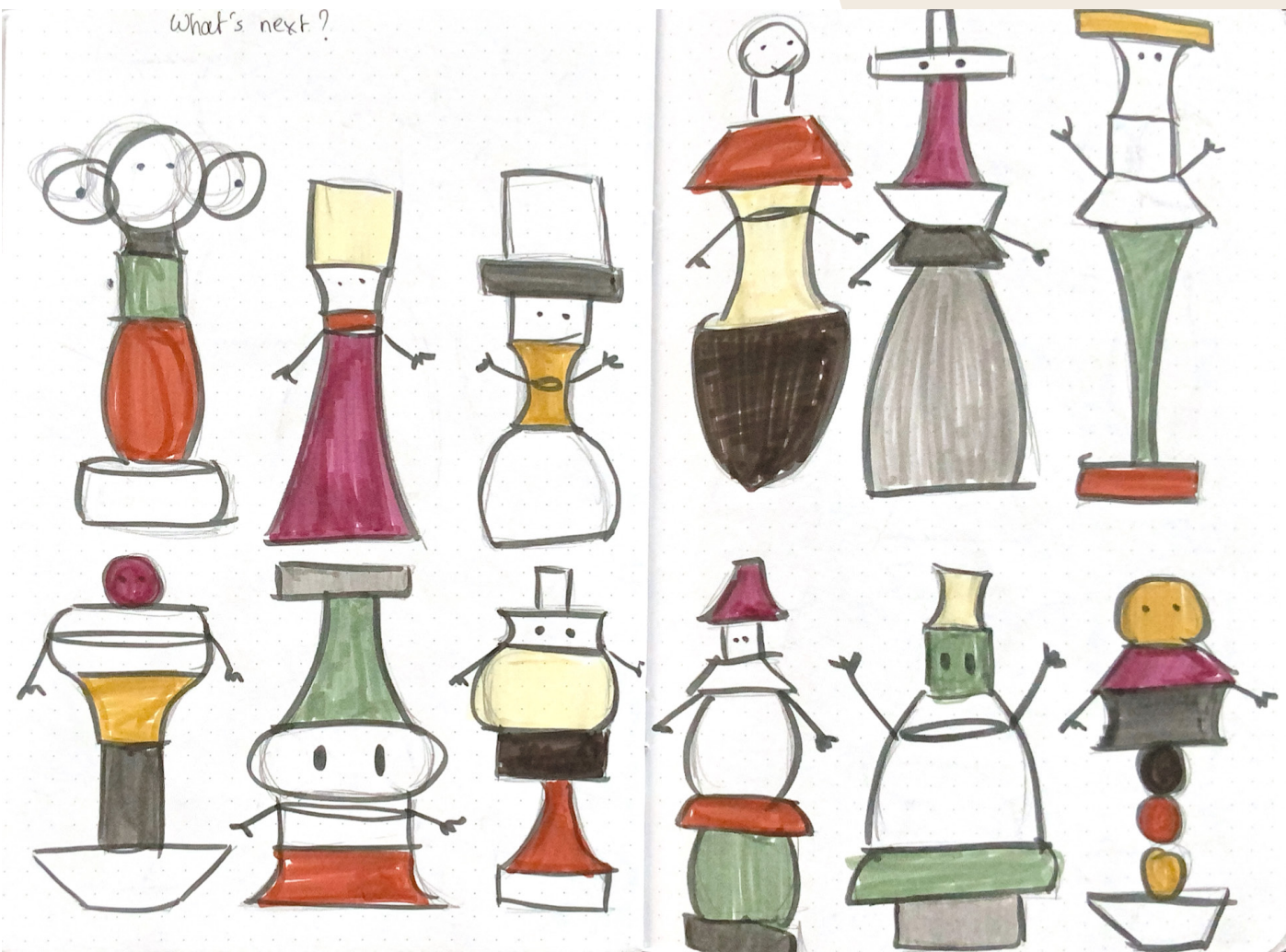
Exercise: create a character from what you see in the shapes in front of you.

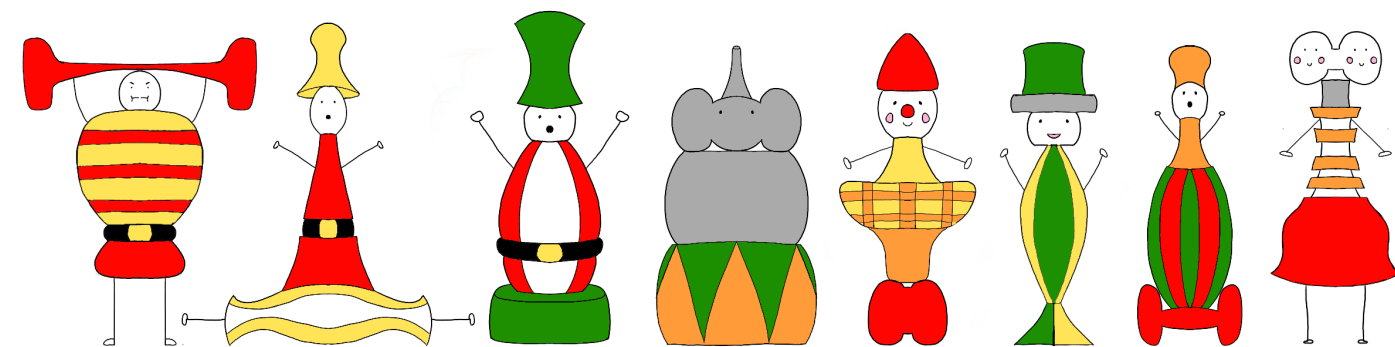
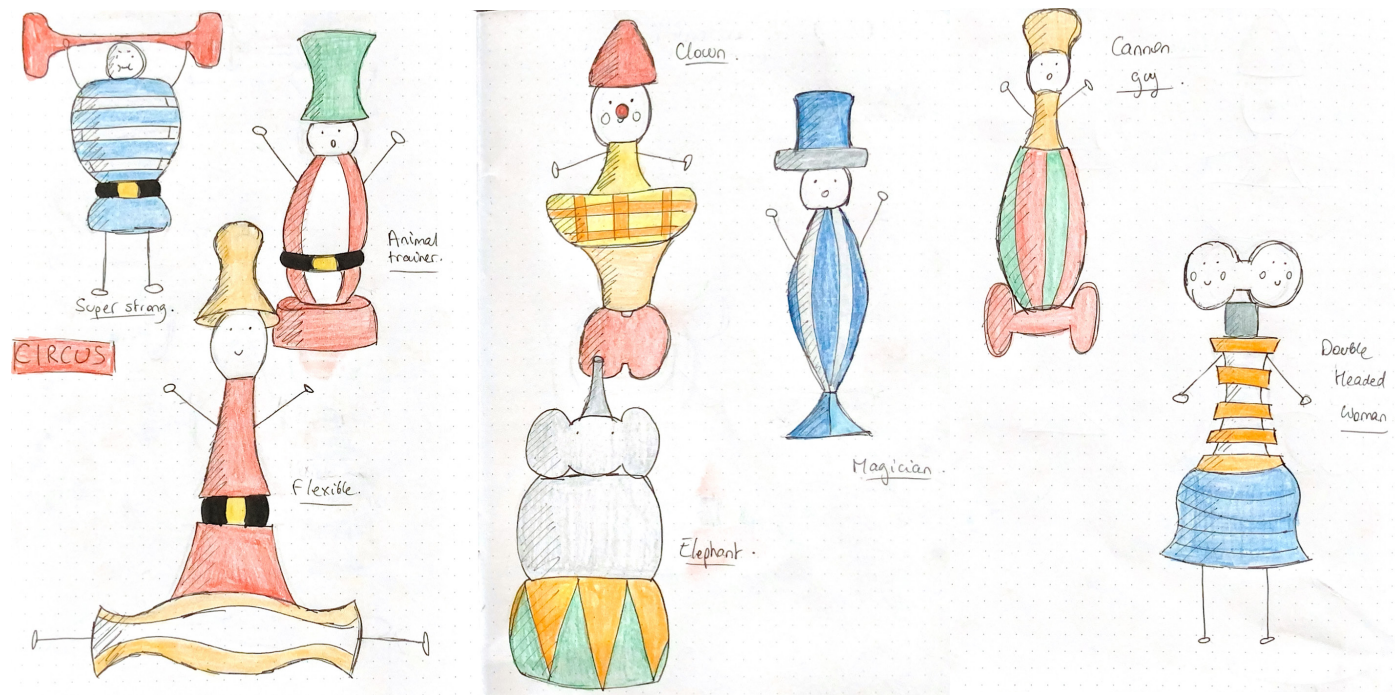
Key feedback: A bit confusing. Needs some sort of storyline or goal for children to understand and keep playing.

First prototypes

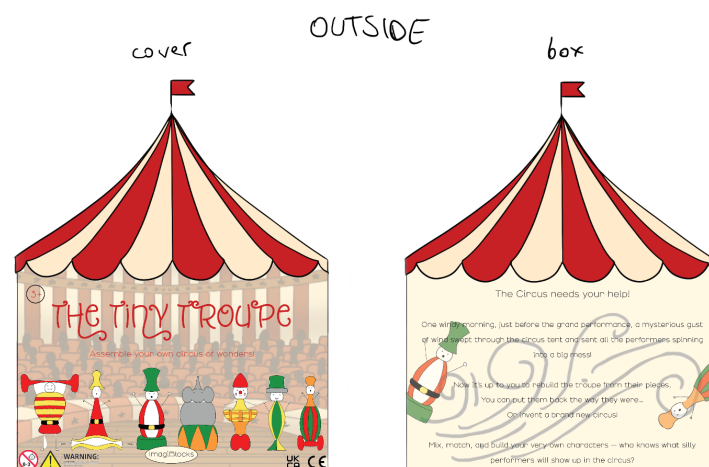


Drawn by the children





KEEPING PLAYFUL SHAPES,
ADDING STORYLINE
Building shapes possible for lathe



After feedback from users:

- Changed to family of pre made characters for "end result" but children still have the possibility to build them however they want.
- Stacking method with two different drilled tunnels for more freedom.
- + create a solid storyline



SECOND USER TESTING
Successful toy!

Too complex for a 1 year old: 3+ age
range is correct

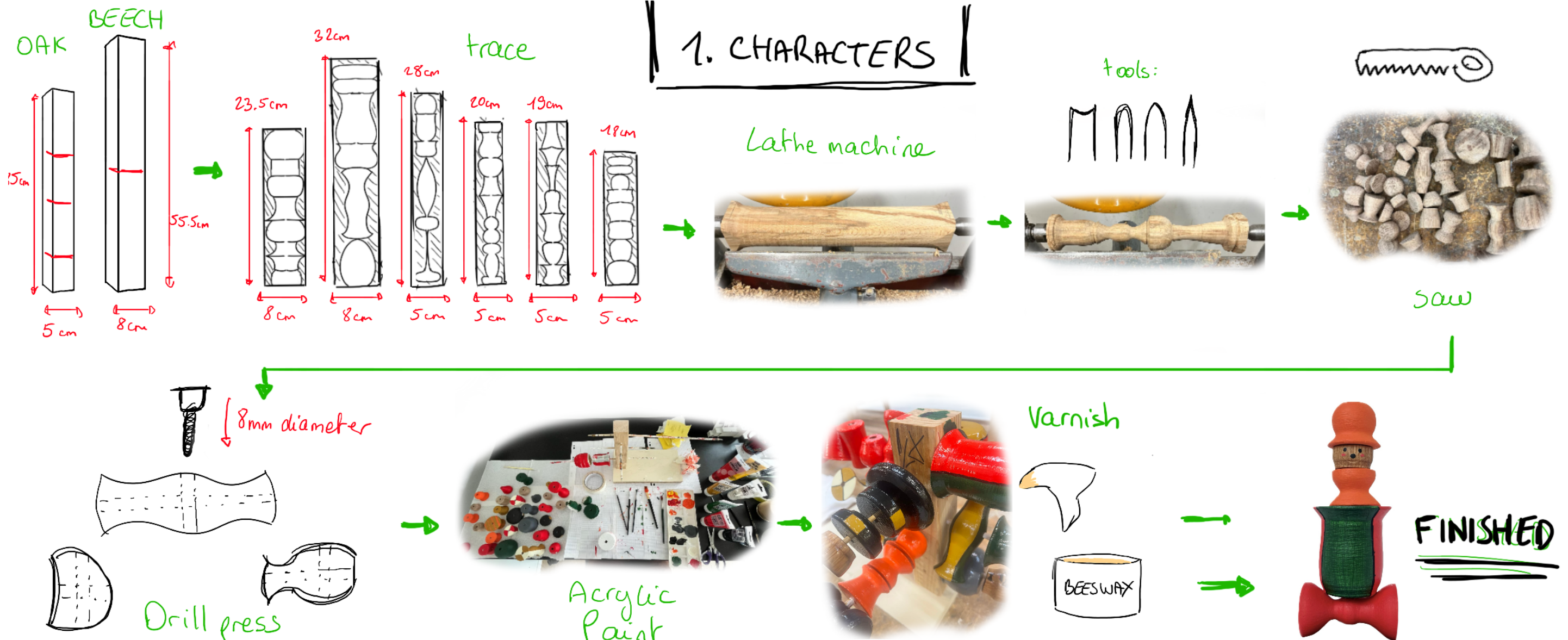


Realisation: End of life and sustainability

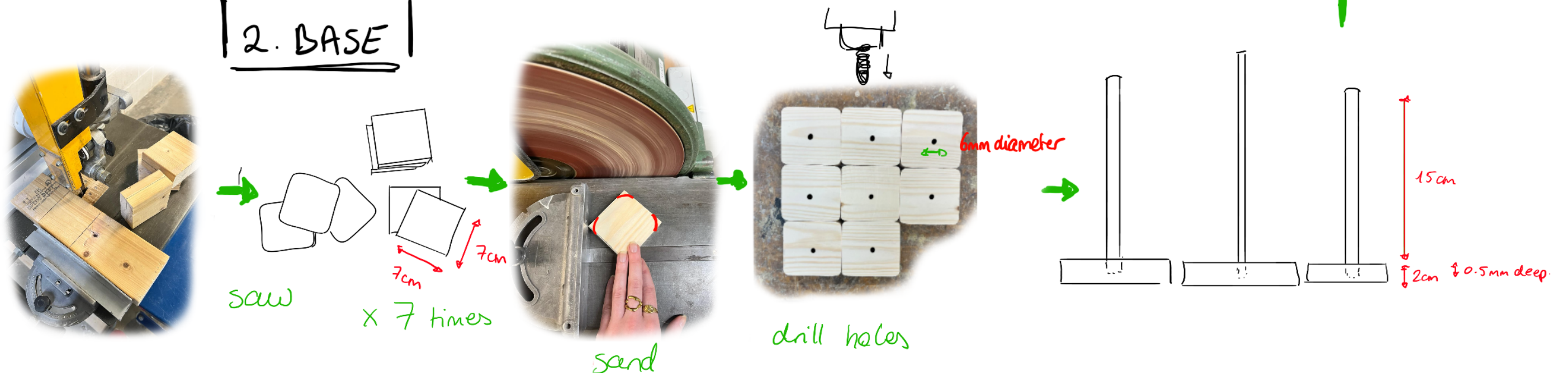


Realisation: Production, manufacturing, making

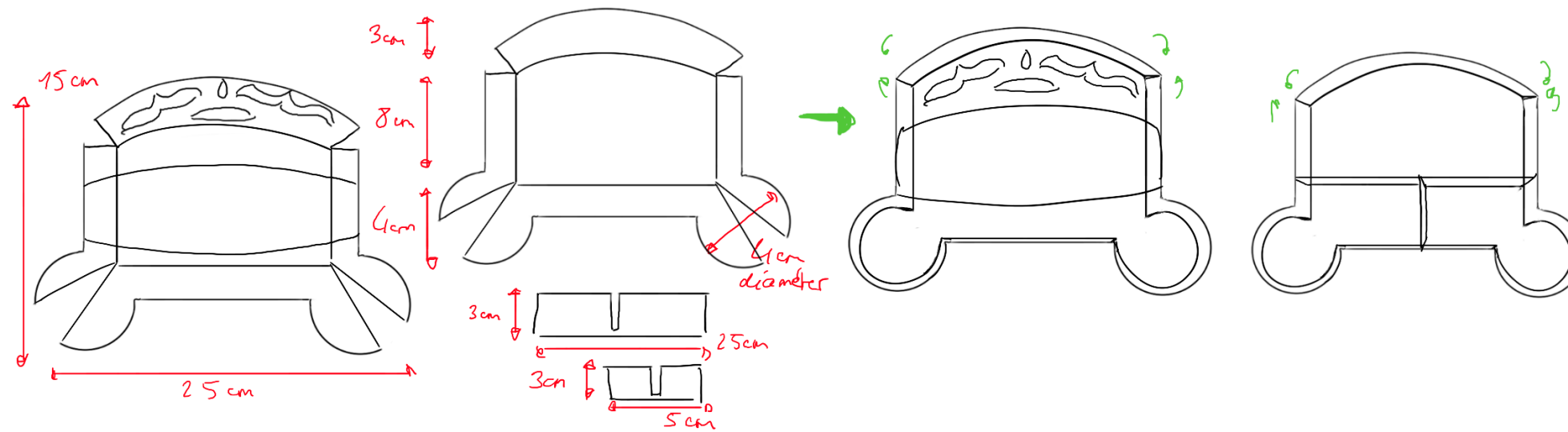
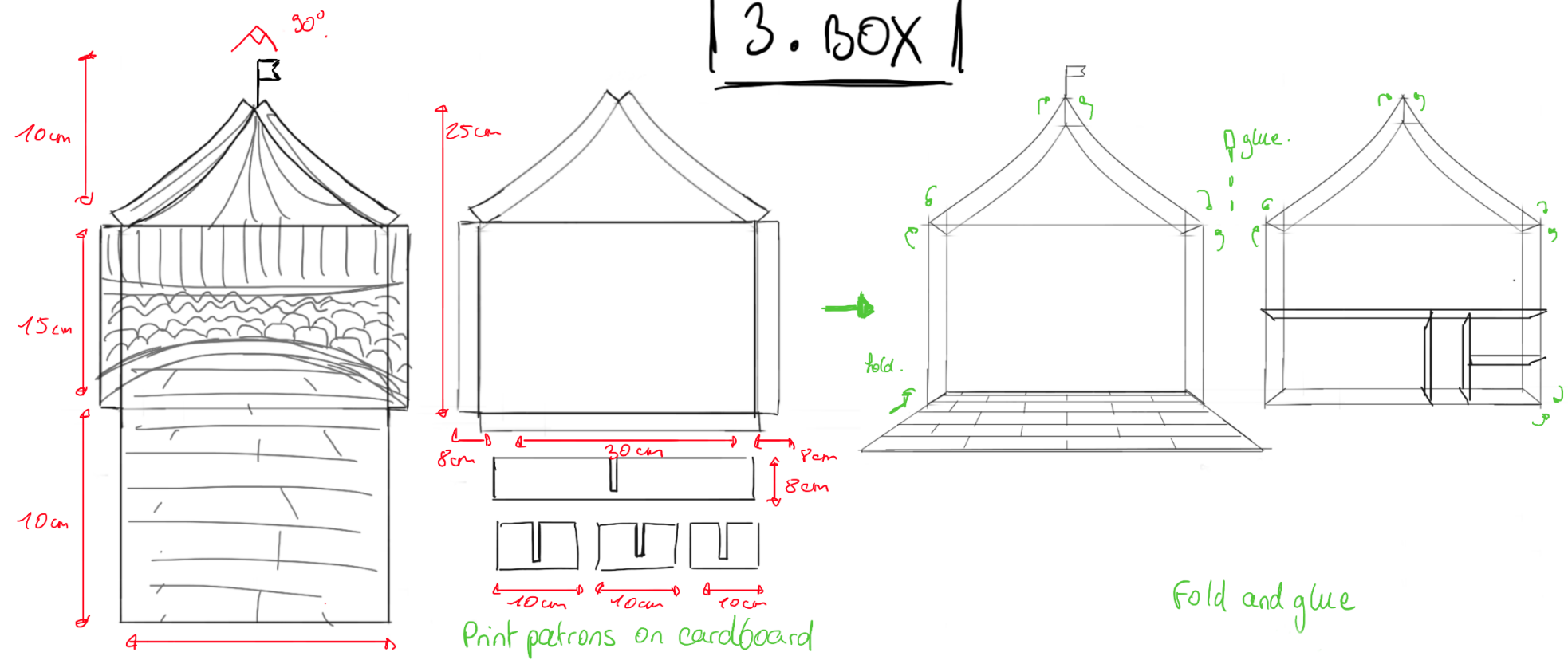
1. CHARACTERS



2. BASE



3. BOX

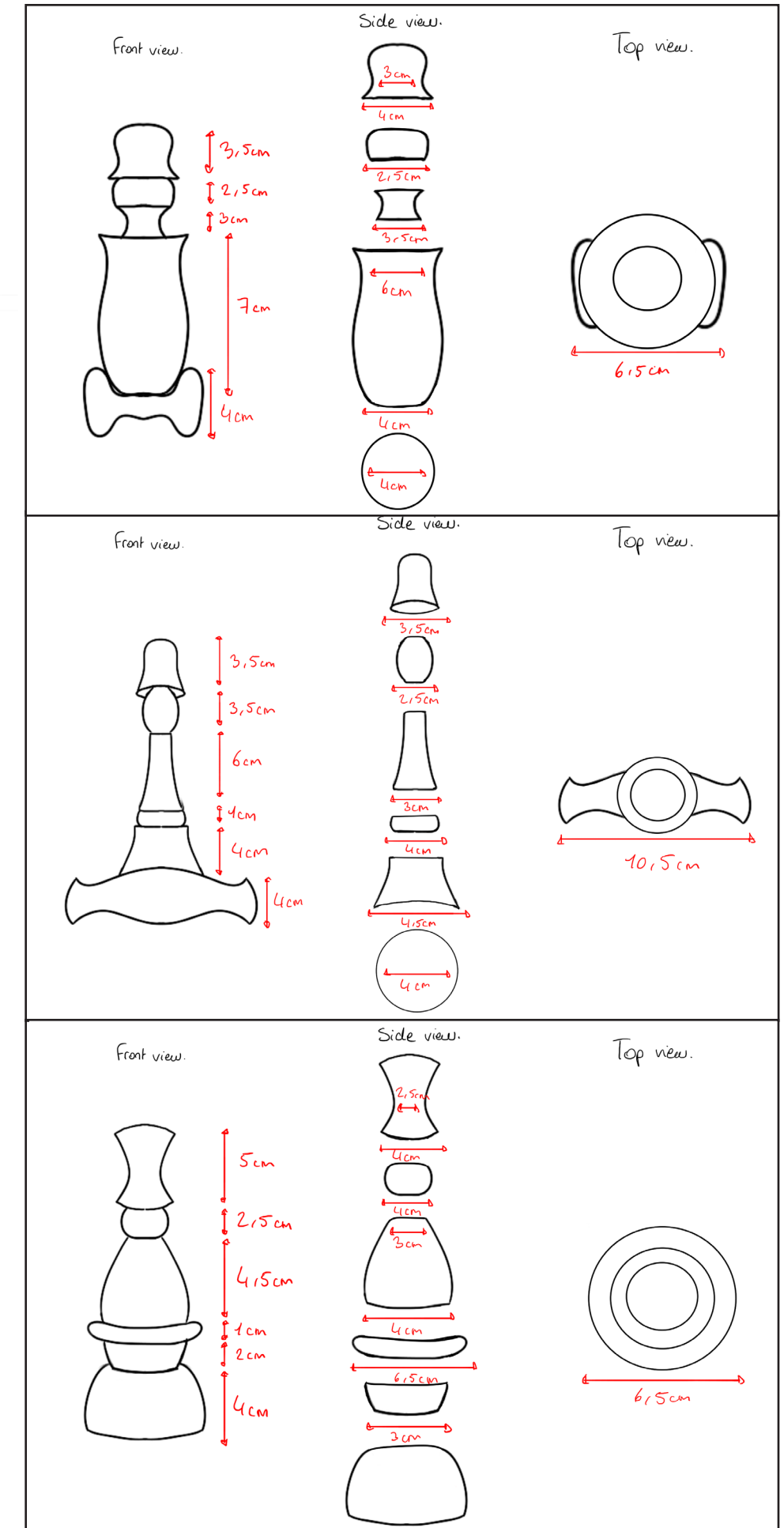


SMALL BATCH PRODUCTION by a small group of makers. <1000 toys made.

What I would change now:

Would use stains instead of paint to let the beautiful wood grain show more and make it look more natural. Would also look more expensive and fits more into high-middle class boutiques.

Elevations for manufacturing



Appendix

Bibliography

Lego Foundation (2021) *How Imaginative Play Sparks Learning and Growth*. Available at: <https://www.lego.com/en-gb/preschool/article/learn-and-grow-with-imaginative-play> (Accessed: 10 May 2025)

Children's Museum Team (2025) *The Importance of Independent Play for Toddlers*. Available at: <https://www.cmosc.org/independent-play-for-toddlers/> (Accessed: 10 May 2025)

HFL Education (2023) *Open ended play – the possibilities are endless*. Available at: <https://www.hfleducation.org/blog/open-ended-play-possibilities-are-endless#:~:text=Some%20of%20the%20Benefits%20of,resilience%20from%20an%20early%20age.> (Accessed: 10 May 2025)

Harvard University Center on the Developing Child (2011) *Experiences Build Brain Architecture*. Available at: https://developingchild.harvard.edu/resources/videos/experiences-build-brain-architecture/?utm_source=chatgpt.com (Accessed: 10 May 2025)

List of Figures

Figure 1: Hollow&Form (2025) '*love is in the details.*' [Instagram]. 11 February. Available at: <https://www.instagram.com/p/DF61YWFgQwB/> (Accessed: 24 May 2025)

Figure 2: Mclauchlan, E. (2024) '*Favourite thing i've made all year!*' [Instagram]. 19 December. Available at: https://www.instagram.com/p/DxEVqAlycD/?img_index=1 (Accessed: 24 May 2025)

Figure 3: Sasaki, M. (2025) '*Hand-carved wood forms, abstract sculpture inspired by fundamental truths.*' [Instagram]. 22 January. Available at: https://www.instagram.com/p/Fl8e8oSH_G/?img_index=1 (Accessed: 24 May 2025).

Figure 4: Rubeda, J. (2024) '*Colección Mundos Interiores Madera*' [Instagram]. 3 November. Available at: <https://www.instagram.com/p/DB6CGAHIEZf/> (Accessed: 24 May 2025)

Figure 5: Marlitoys (2024). '*We have a surprise for you. Here are our new characters*' [Instagram]. 30 September. Available at: <https://www.instagram.com/p/DAIfNjzO0k5/> (Accessed: 24 May 2025).

Figure 6: Loropiana (2024). '*The wooden figurines of @loropiana that currently inhabit the windows of @harrods as part of their workshop of wonders installation are just such precious beauties.*' [Instagram]. 25 November. Available at: https://www.instagram.com/p/DCy3GC1Dl/?img_index=1 (Accessed: 24 May 2025)

Figure 7: Beeldbazen (2022). '*Dog*' [Instagram]. 22 June. Available at: https://www.instagram.com/p/CeTNCPqqYNB/?img_index=1 (Accessed: 24 May 2025)

Enquiry: The Brief extended text

Subject Area

The Unit 9 research on the /pin'Bud puppets explored how interactive elements and character-like elements can help children engage with storytelling, emotions and playful learning. This shows that interchangeable features encourage creativity, allowing users to shape characters freely.

Moving forward, the Unit 10 project will sit at the intersection between children's play-based learning, creative exploration, and modular design. /udies show that open-ended, hands-on play enhances children's cognitive flexibility and problem-solving skills (Lego Foundation, 2021). The goal is to design a set of fully modular wooden puppet characters with interchangeable body parts. This gives children more freedom to create and experiment, encourages a free imagination and self-expression. It allows them to explore creativity in a dynamic, open-ended way. Adaptability enhances engagement and creativity (Children's Museum Team, 2024). This will ensure that the puppet remains intuitive and playful, leading the project towards a toy that allows for easy adaptability, boosted creativity, as well as fine motor skills development.

"Opportunity to encounter challenges and find solutions on their own. This natural problem-solving approach aids in developing critical thinking skills and resilience from an early age" (HFL Education, 2023).



Personal business cards

PARENTS INTERVIEWS ANSWER "What toy did your child use most?"

maison forestiere building blocks
tangram
lego duplo
opera house paper sets
magna-tiles
magformers
brio builder
smartmax
kapla
tegu magnetic toys
soft shapes
gear building sets

they are all easy to use and modular,
often incorporation magnets and 3D
shapes



USER TESTING 8th April.

Age group 5-6 year olds.
Location, park, home.

MAGNET VERSION Keywords Parent Permission

Intuitive Magical?
Satisfying Quick
Funny

Quote: "Look, I made a robot!"

Good for shorter attention spans.

Overall laughter and will to play.

Children started building together!

HOOKS VERSION no drawings done.

Observation: confusion and puzzlement at first.
Hesitant to touch.

"Hard" Challenging

Quote: "Leo likes it I think, he's ~~one~~ of the enjoys challenges". "Older kids would benefit more from this".

Movements not controlled enough to make it stand. Kept falling. Overall fail!

TOTEM VERSION

Observation: used the dowel at first but then it became a game of stacking it the highest.

"It's gonna fall!" "Stop moving it!"

- very cooperative playstyle.

Competition?

"Super big godzilla monster!" → associate height with monsters.

SLIDING VERSION No drawings.

Observation: children move pieces around but don't really connect the dots with the drawings.

↳ looks too much like a jigsaw, children tried solving it.

"It doesn't fit!"

"I think it's not quick or engaging enough for him to be creative quickly."

Would be more for quiet activities, not imaginative play.

- Lots of collaborative play.

- Invented names and stories for their characters and wanted to play with them.

- Game: "Guess what I made!"

- Kept it quite literal in the shapes.

Names we got:
Space Alien Chef
Bat cat fish
Bubblebot 3000

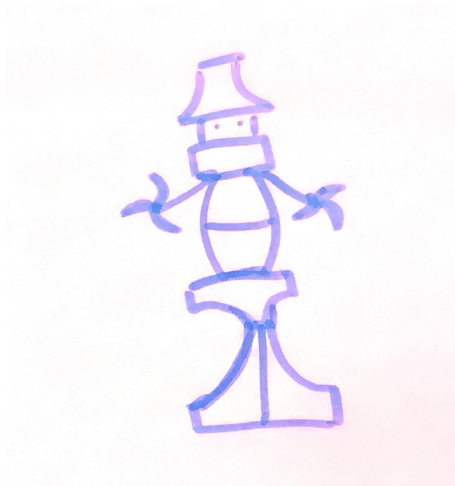
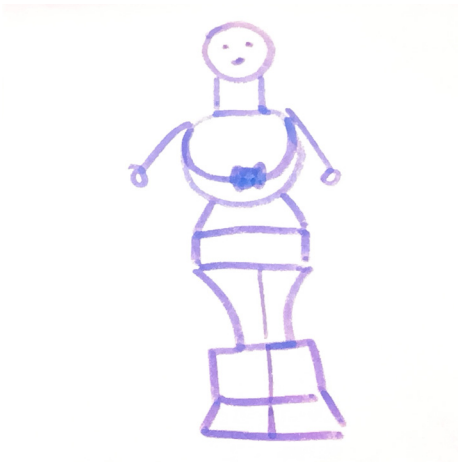
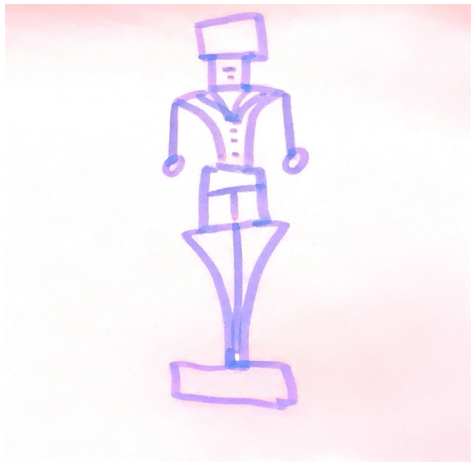
Parents stepped to help build together.
Child wants more to build its own character, turning away or swatting away.

Conclusion.

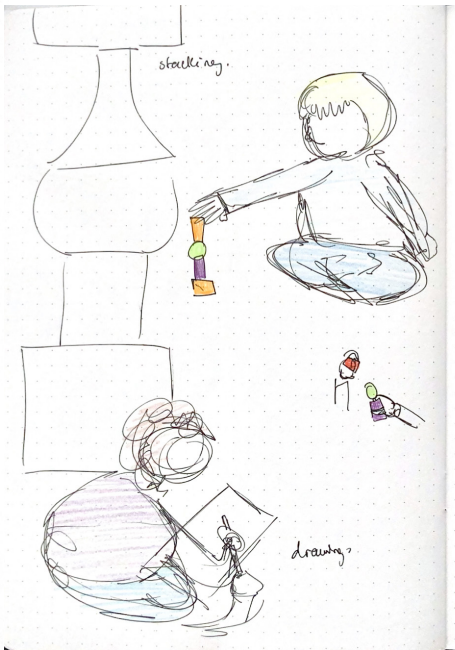
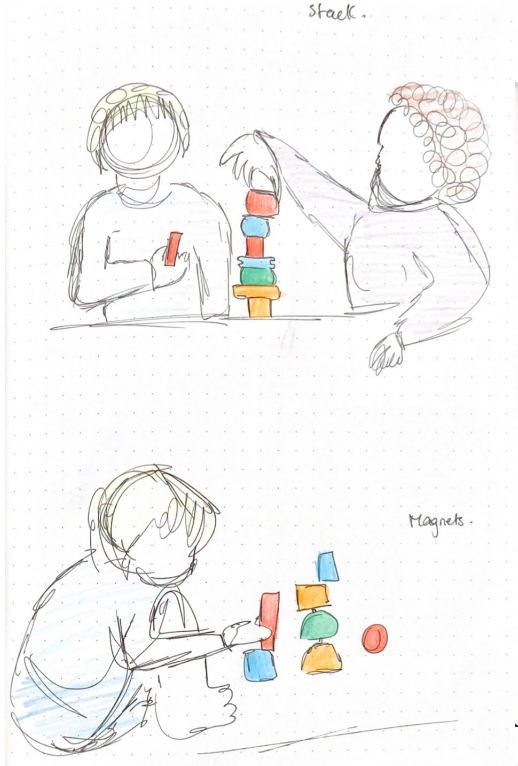
WINNERS: Magnets and Totem.

- Children wanted to combine elements from different prototypes.

"Can I use this one (magnetic) on top (totem)?"



Drawn by parents

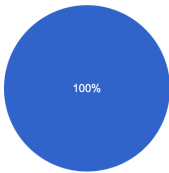


first user testing drawings

Did your child enjoy playing with the toy?

9 responses

[Copy chart](#)



yes
no

What did you/your child like most about the toy?

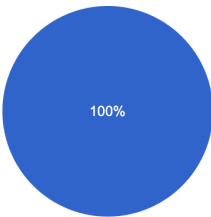
9 responses

beautiful bright colours
It's original and fun. The Colors and characters are so fun x
Being able to take them apart and put them together again, also the bright colours.
Having the creativity to make different characters using different shapes and colours.
I guess the ability to mix and match parts of it. Also it's colourful.
The shapes creating characters when they are assembled on top of each other.
It's very well made and you can assemble the same shape in multiple different ways.
The feeling the curves and the many colors it provided. He liked detaching it and reassembling it.
I think what they liked was that it was like creating their own toys, makes it a creative process more than a toy

Second user feedback survey

Was the toy easy to use and understand?

9 responses

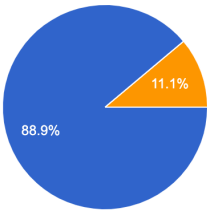


yes
no

Did your child create multiple different characters? Or just one?

9 responses

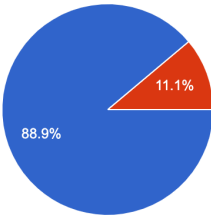
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multiple different ones
just one
He was very fond of the first one he made

Did the toy encourage your child to be creative or imaginative?

9 responses

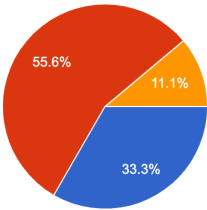


yes
no

How long did the toy keep the child busy for?

9 responses

[Copy](#)



More than 30 minutes
10 to 20 minutes
less than 10 minutes

Any suggestions for improvement?

7 responses

itd be nice if i could disassemble and assemble between different ones

Make more!

No suggestions for improvement, perfect as they are. So much fun and laughter was enjoyed as a family showing of our different characters.

My children said there should be more colour!

They are so perfect, the only thing I would say is to make more to have even more characters and fun!

I want to see more and would definitely buy ;)

There can also be modular pieces where they could create environements for their creations

PDS extended

Factor	Criteria	Justification (if needed)	Importance
Target age group	Children 3+ years old	The presence of small detachable parts is a choking hazard, according to the EN71 regulations any toys with small detachable parts are a danger to less than 3-year-olds.	Must be met
Material	Hardwoods for a more durable long-lasting use. Applying construction processes and finishes that promote safe handling and safe for children.	Market research showed that most wooden toys sold today are made of hardwoods like beech, oak, birch, maple.	Must be met
Safety and regulations	Comply with the European EN71 and English UKCA regulations. Because of small detachable parts: mandatory warning choking hazard and unsuitable for less than 3 years labels, of minimum 5mm height on toy box.	Worldwide toy manufacturing and selling regulations	Must be met
Modularity/adaptability	Allow for reconfiguration to the child's freedom. Parts should be sturdy and easy to switch.	User testing showed that the easier the modularity, the more engagement from the child.	Must be met
Longevity	Withstand frequent play without breaking or chipping.	Toy needs to be durable for passing down and refurbishing purposes	Must be met
Developmental benefits	Enhances fine motor skills, cognitive development, creativity, problem-solving skills.	Research proved that they are benefits of open-ended toys that are crucial for children's development.	Must be met
Manufacturing	Handcrafted. Small batch production, less than 1000 made. "Collectible" toy.	Personal values, keeping the art of craftsmanship alive.	Must be met
Sustainability	Sustainably sourced local wood, non-toxic food safe paint and finishes.	Personal values – the product should be least polluting possible both in materials and making/manufacturing.	Must be met
Storage and packaging	Easy to store, compact, recyclable box	Mandatory for transportation, and create a branding so toy is recognized and sold.	Should be met

How much would it cost realistically?

Materials	<p>Beech: 70x70x600mm = £21</p> <p>Oak: 50x50x1000mm = £23</p> <p>Acrylic paint: £16 Used half of it = £9</p> <p>Finishing oil: £23 Used 200ml of 1L = £4.6</p>	<p>TOTALS</p> <p>£21 + £23 + £9 + £4.6 = £57.6</p>
Machines cost	<p>Lathe: £3000 average UK price 1 fully completed toy in 3 weeks (made by one person) = 17 in a year = 340 in 20 years (life expectancy of lathe). 3000:340 = £8.9 for one completed toy.</p> <p>Drill press: £300 average UK price 1 completed toy in 3 weeks = 17 in a year = 170 in 10 years (average life expectancy) = £1.7 for one completed toy.</p>	<p>£8.9 + £1.7 = £10.6</p>
Labor	<p>20 hours of <u>labor</u> total for 1 fully completed toy.</p> <p>20 x 8.9 (minimum wage UK) = £178</p>	<p>£178</p> <p>NET PRICE 178 + 57.6 + 10.6 = £246.2</p>
Profit	<p>20% profit of £246.2 (246.2 x 20) ÷ 100 = £49.24</p> <p>246.2 + 49.24 = £295.4</p>	<p>FINAL PRICE £295.4</p>

Where would the toy be sold?

High-middle class boutiques like:
Harrods children’s toys section
The Conran Shop
David Mellor Designs
Sloane, Shoreditch



All my own pictures

BRANDING BOARD

Company name Arbotek Light

Title Tangelo BOLD

BODY Tangelo REGULAR

#d72638

#fff5e1

#f2b41b

#754b23

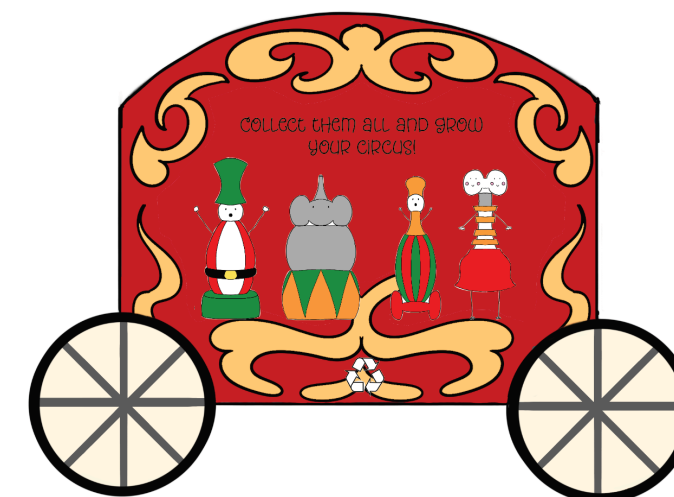
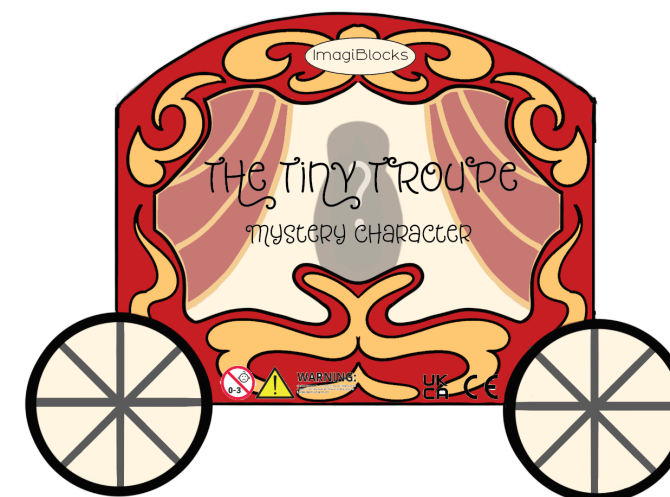
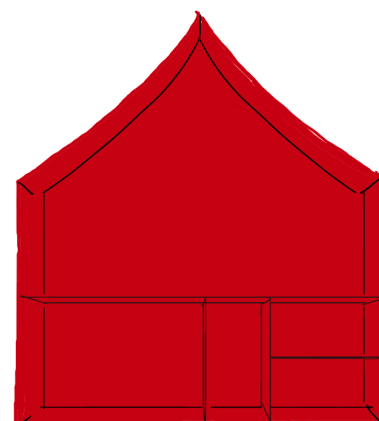
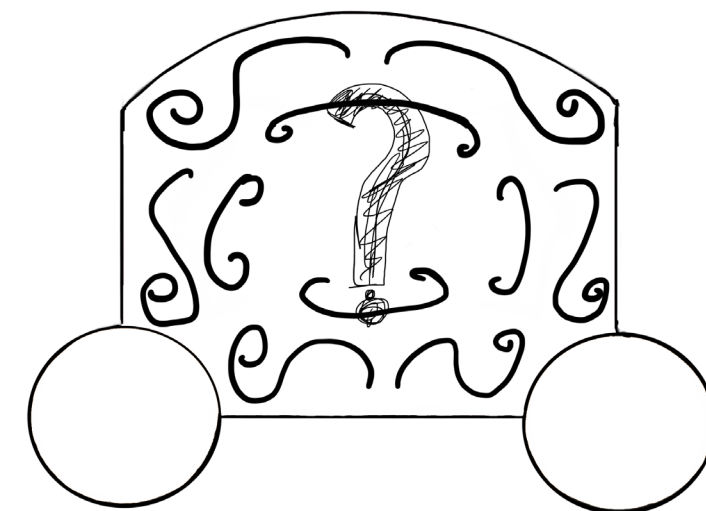
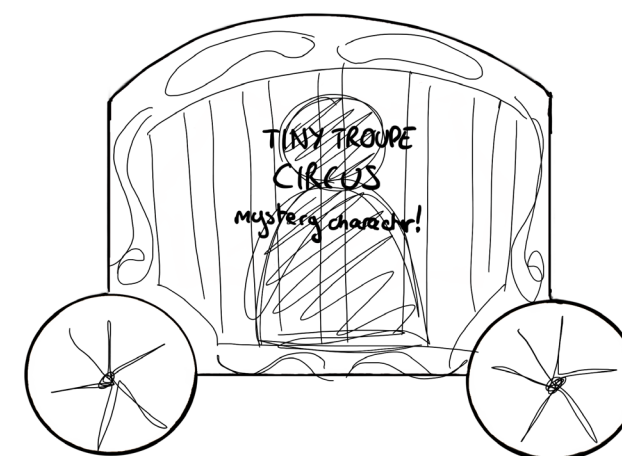
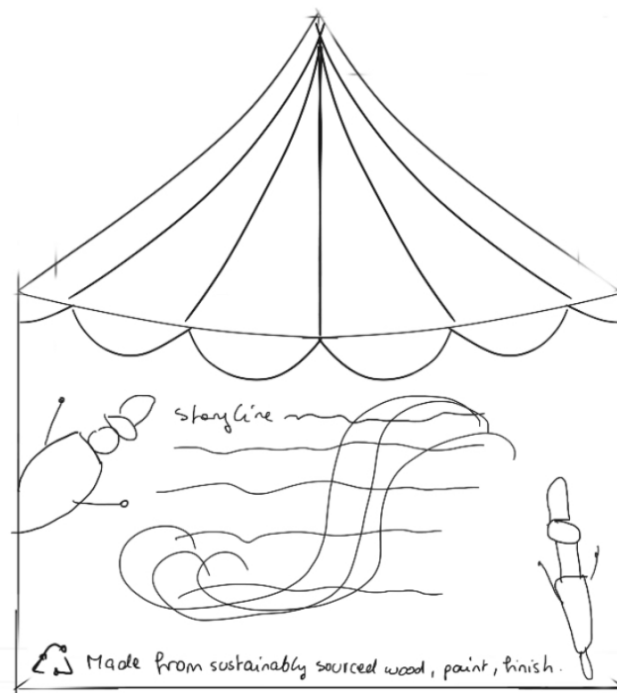
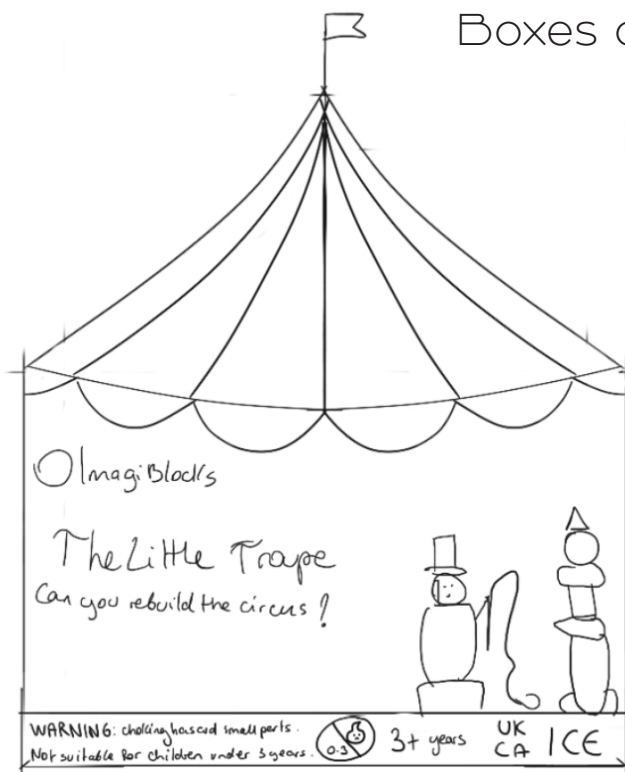
Visuals



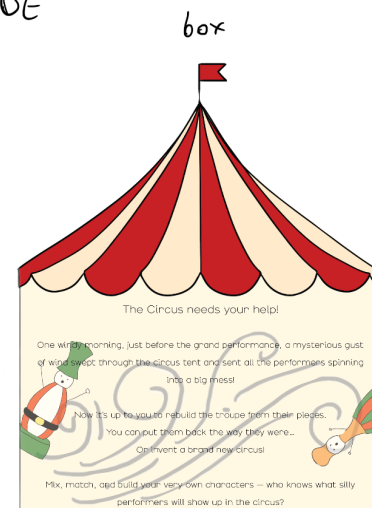
STRIPES

FRILLS

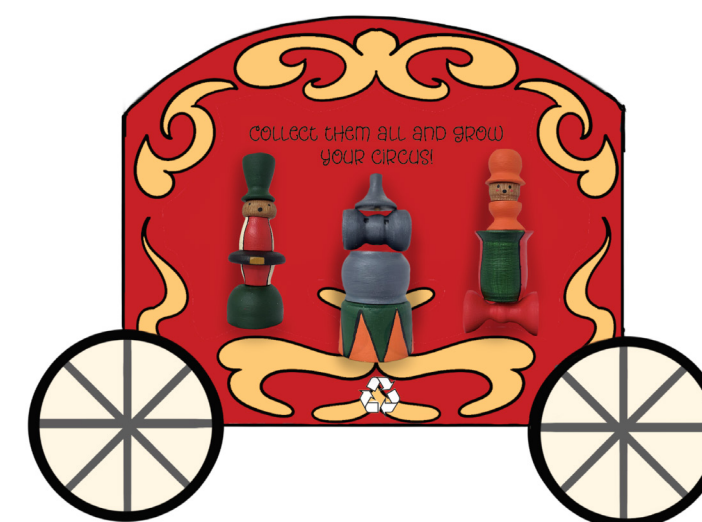
Boxes design sketches



OUTSIDE

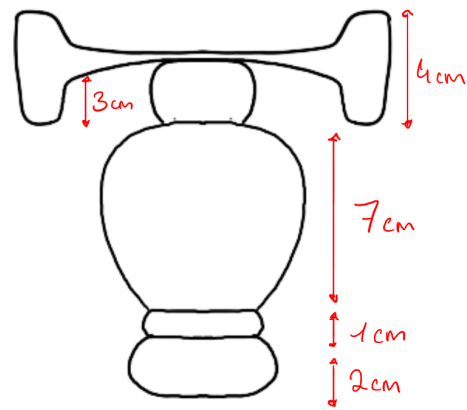


Main circus tent box

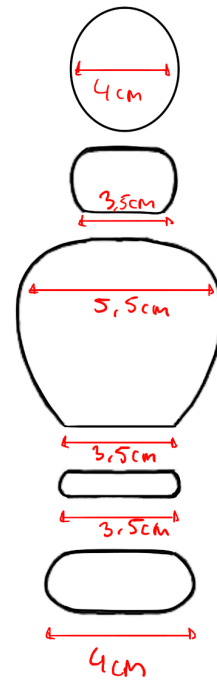


Collectible boxes

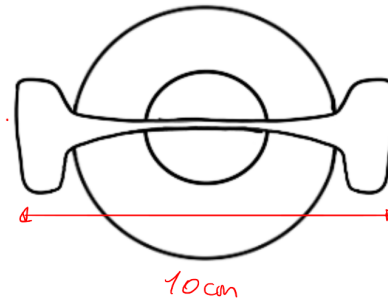
Front view.



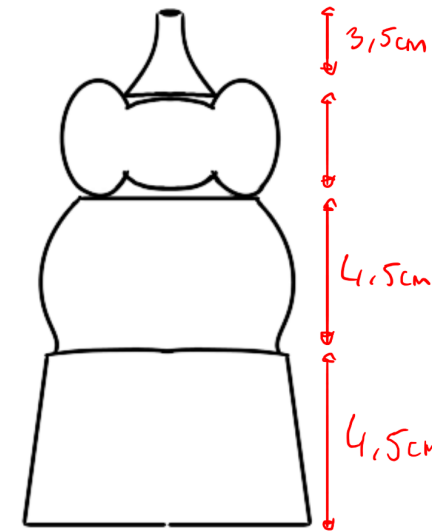
Side view.



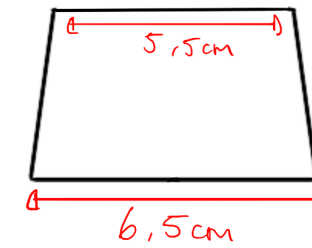
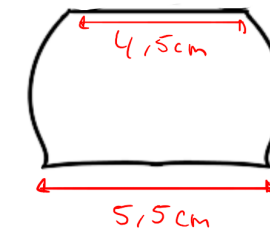
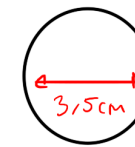
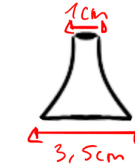
Top view.



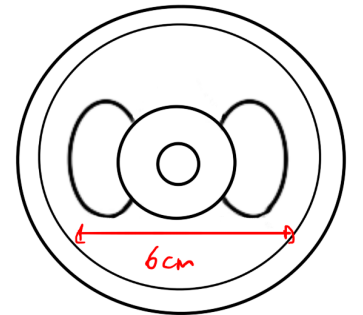
Front view.



Side view.

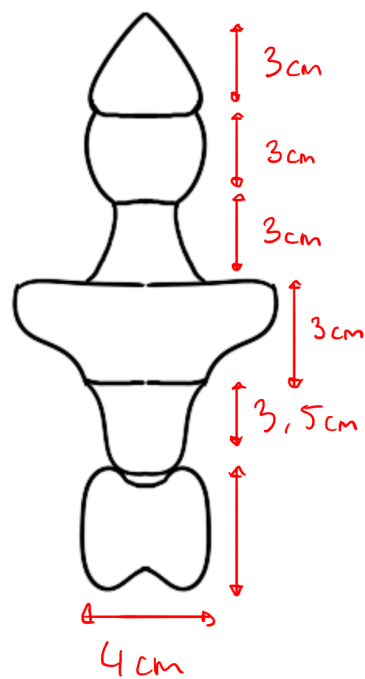


Top view.

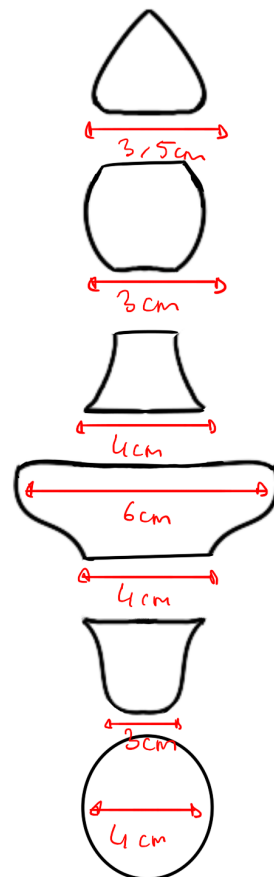


Measurements for the rest of the characters

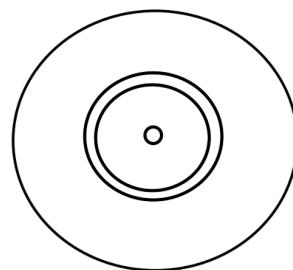
Front view.



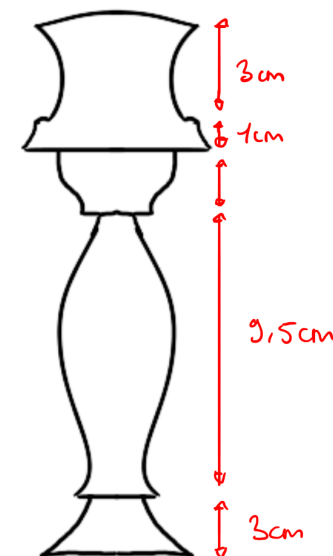
Side view.



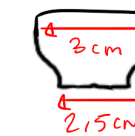
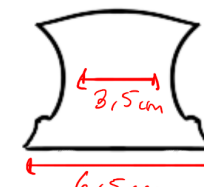
Top view.



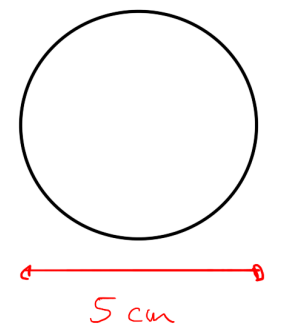
Front view.

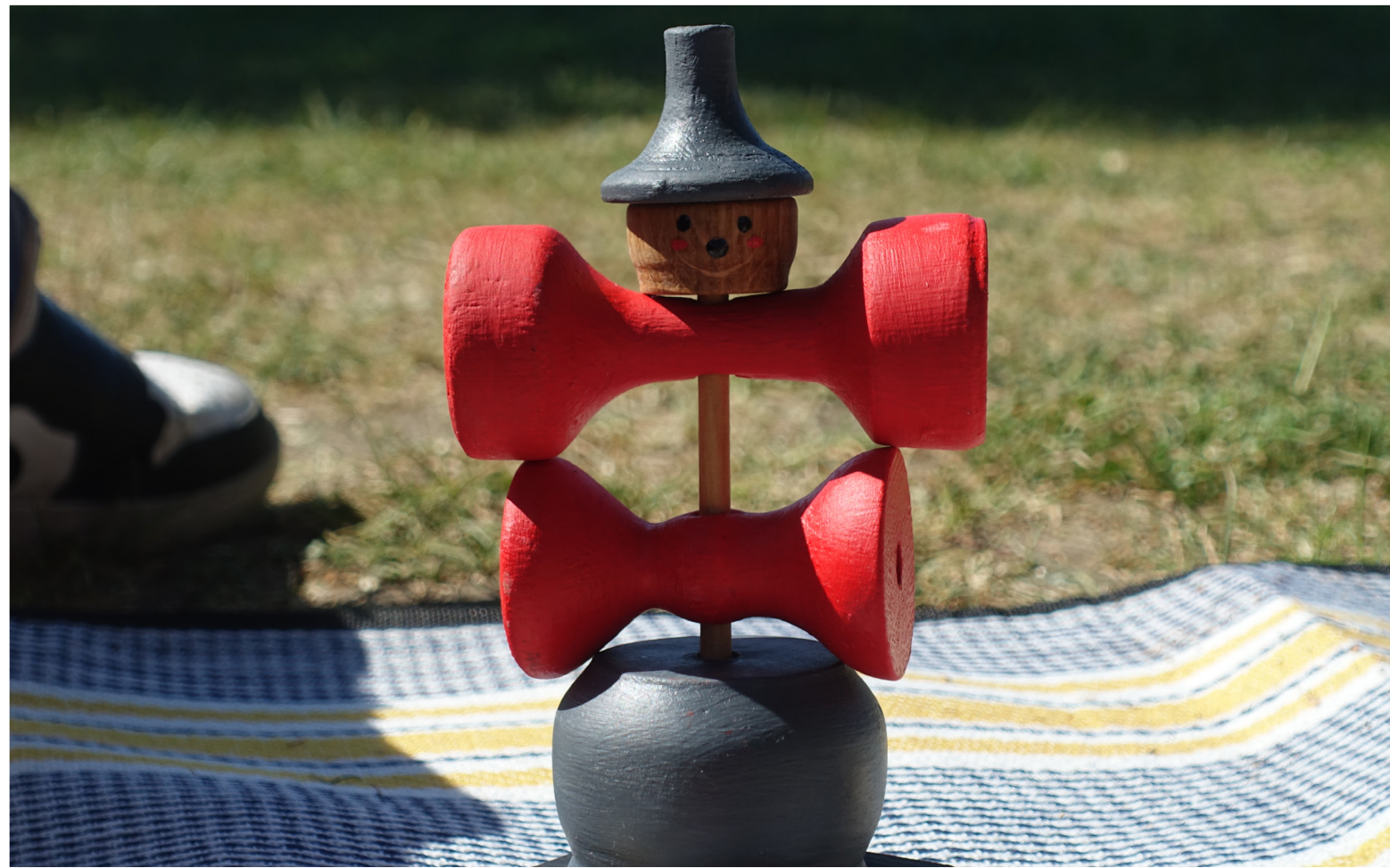


Side view.



Top view.





EXTRA PICTURES

Characters made entirely by Phoenix, 5 years old



Close-up packaging



Pre-made circus characters together



THANK YOU FOR READING!