



Wiggel is a flexible play system that uses silicone joints to create wiggly and bouncy structures and shapes, stretches imaginations, and promotes unconventional problem solving.

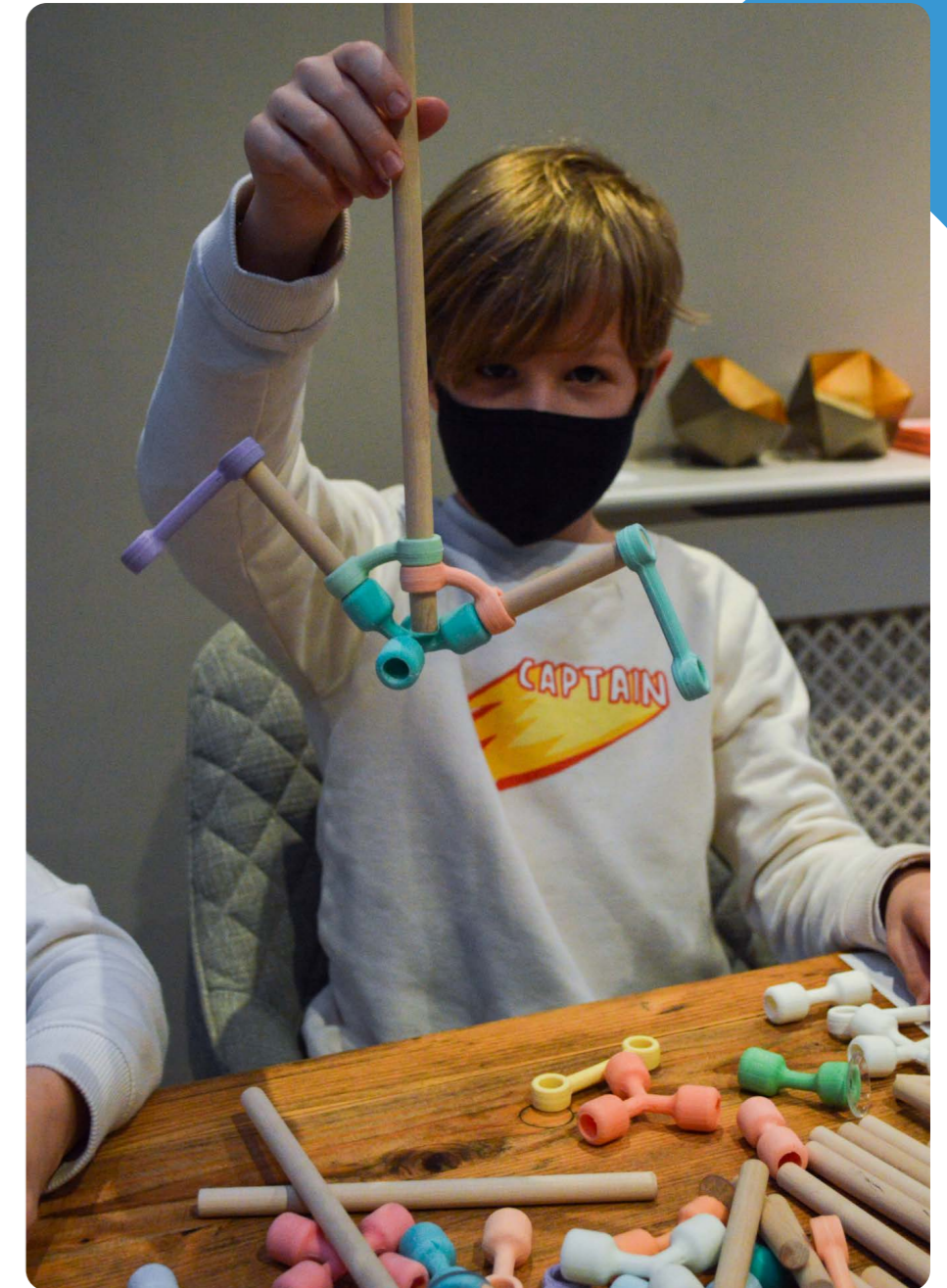
Why Wiggel?

The modular toy/construction set market is largely dominated by systems with **rigid parts**. The rigidity of the parts affords **predictability** in assembly and handling, and a more structured goal-oriented activity. **How could a non-rigid, flexible system challenge that play mode?**



Design Process

In exploring a **DIY silicone compound** as a means of repairing joints I discovered how easily it could be molded, and quickly iterated an assortment of parts to build 3D structures. Investigations into **domestic/educational contexts, play testing, and co-design** revealed how the system could evolve, and what would make the product more **joyful to use, collaboratively engaging, and imaginatively unexpected**.



[All images used with permission]

Watch the Demo!



Proposal

The Wiggel system offers a challenge to the usual modes of **constructive open play**. It introduces lessons on **structural stability, compression, and tension**, while also having an element of unexpected **kinetic charm**. It benefits greatly from **collaboration of multiple hands and creative minds**.

Social Impact

User Benefit

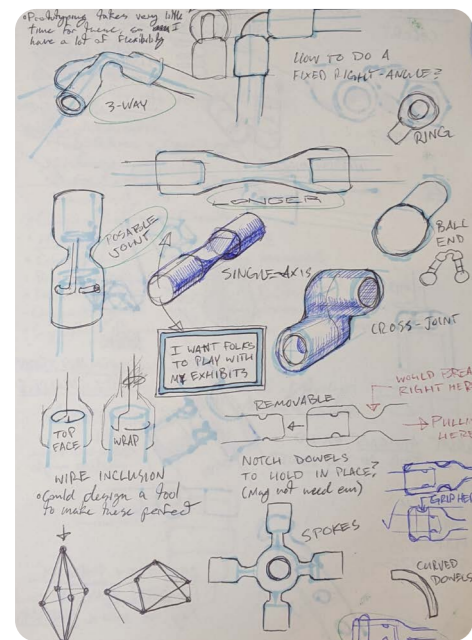
- A totally new play experience
- Simultaneously intuitive, satisfying, challenging, active, and engaging
- Promotes collaborative play
- Development of Gross Motor Skills
- Context: Families with multiple children ages 4-12, primary schools, child interactive centres

Empowerment

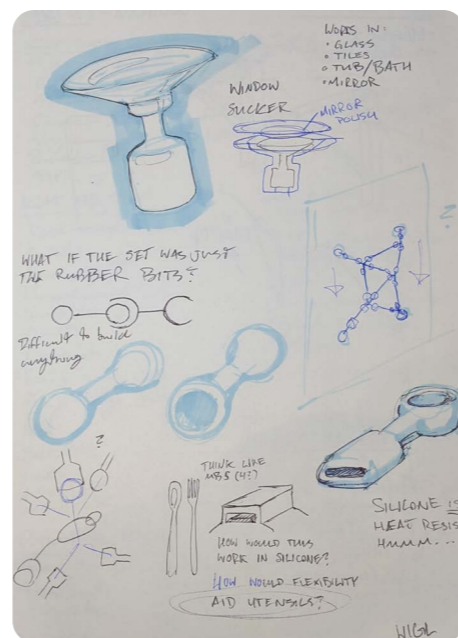
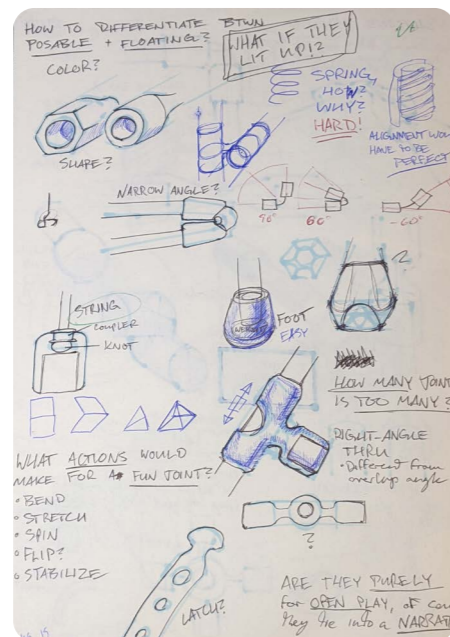
- An opportunity to challenge oneself and expand **kinetic, structural, and spatial thinking**
- Playtest Participants: kinetically active and unexpected
- Children Arts Educator: **"It's the challenge that makes it fun!"**



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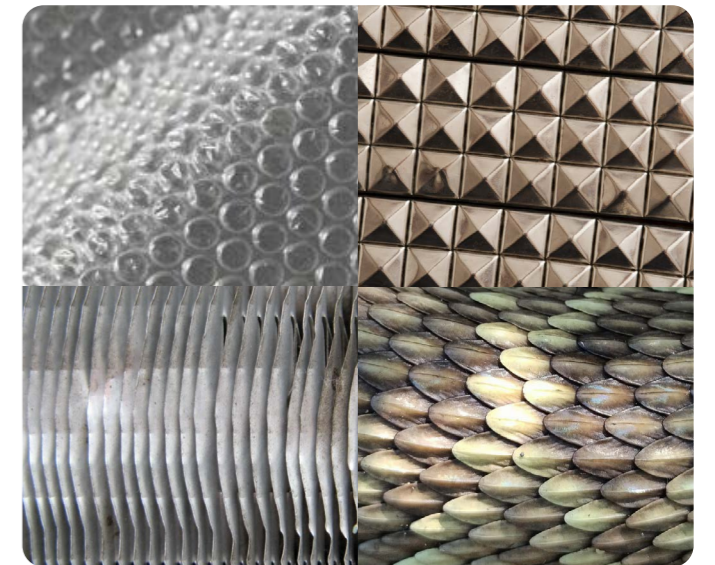
Initial Sketches



"Easy is boring!"
Cas Holman

Diversity & Inclusion

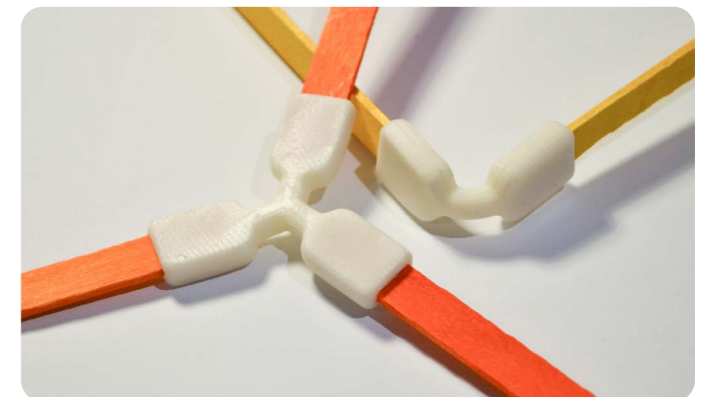
- Designed to be **aesthetically ambiguous** to avoid its genderization
- **Such play modes should be experienced by all children**, not just one select audience
- Could evolve into a more sensory-oriented experience to aid in **Play Therapy** and cognitive development in special-needs children
- System could be made **more accessible** through inclusion of **common materials**



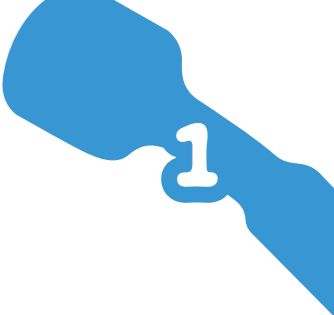
Potential Textures for Sensory Engagement



De-moulding Process



Popsicle Stick Joints



Research + Insights

Existing Trends

I explored **22 existing products** and projects within the realm of modular play systems, only a few had **a flexible kinetic element**.

While structure weight and composition is certainly important with systems like **Tinker Toys, K'Nex,** and **Rigamajig**, it is one of the key features that makes Wiggel that **much more exciting to use** when you're able to make a structure stand on its own or **figure how to build your vision**.

Key Insights

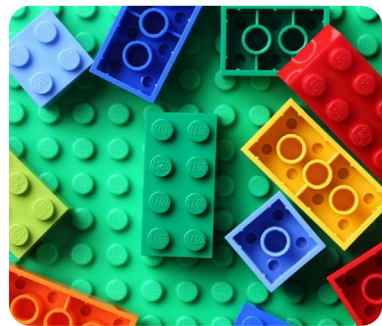
- **Play came first!**
- Wanted to explore a particular **low-cost, accessible material** in a playful context
- Knew I had something with great potential while **giggling over the first part** as it came out of the mold
- **Fun** of the Design process **present in every playtest** I conducted

People's Needs

- Focusing on **Play for Play's sake** allows children **openly and intuitively** explore things that excite them
- Insights came from wanting to make something that was **charming, silly, unexpected**
- Reflective of the five elements of a **joyful play experience**
- So long as I am able to **put a smile on a face** then that's a good start!

It is my hope that the users of Wiggel grow up to be the **next generation of Engineers, Architects, and Designers, and Problem Solvers** with a lifelong passion for play.

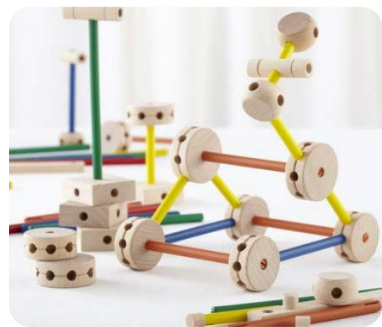
Wiggel was born out of my love for making and playing within the Design Process.



LEGO



K'Nex



Tinker Toys



Rigamajig



Clixo



Strawbees



More hands and minds to problem solve and build!

Joyful

Actively Engaging

Meaningful

Iterative

Socially Interactive



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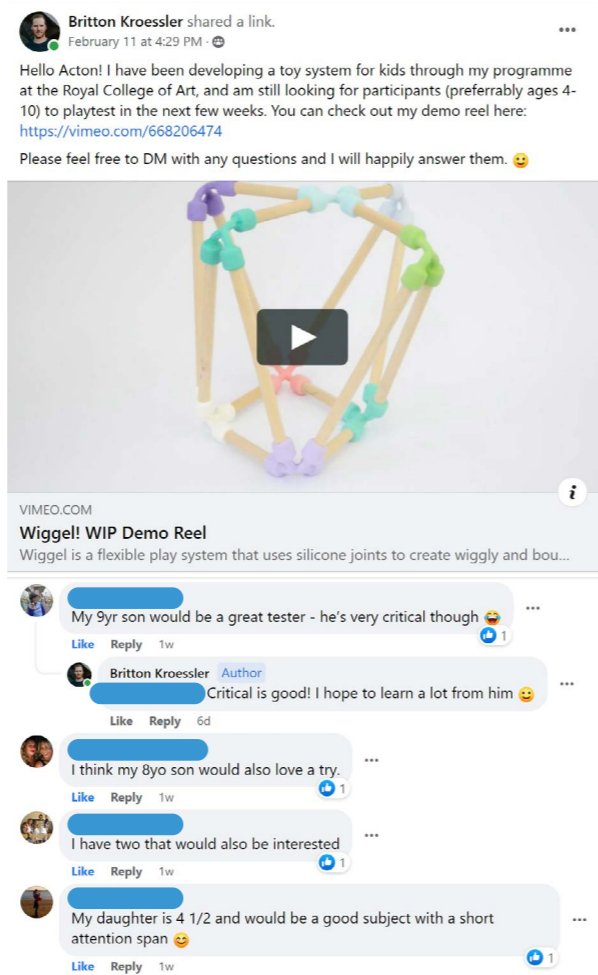
Research Cont.

Feedback + Iteration

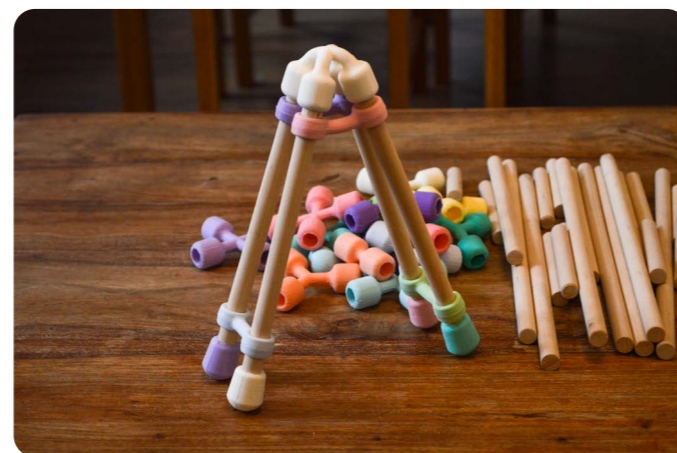
- Tutors, peers, and colleagues
- Playing with the system **hands-on** revealed what else it needed
- **Social Media outreach** for organizing Play tests
- **Co-Design** with Playtest Participants
- Ideas for new parts came **rapidly**; variance in number of sockets, length, rigidity, posability, angle, direction, function
- New pieces could be conceived, designed, produced, and tested within a day or so
- The possibilities were **near-limitless!**



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Facebook was helpful in organizing play tests with local families.



My own play tests made me understand the rules and function of what I was creating...

Systems Thinking

BIG Picture

- Domestic + Educational Spaces
- **Accessorize**, develop new parts to sell as “booster packs”
- **Scale Up!** Make joints that can make bigger, sturdier structures
- Incorporate into **kinetic toys** or **electronic kits**
- **DIY Approach**, home kits received positive feedback when posed to playtest participants

Material & Processes

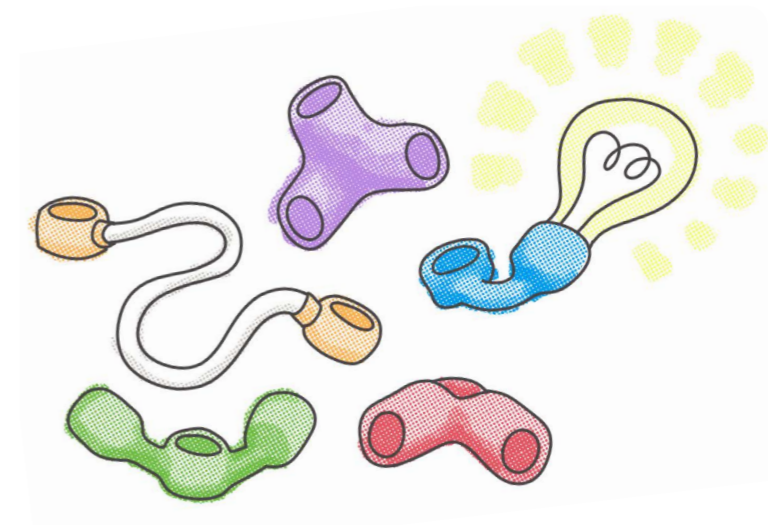
- Prototyped out of a **DIY mouldable silicone** compound (Oogoo)
- Explored potential of **flexible biomaterials** developed by a colleague—requires more developments
- **Accessibility** promoted by reworking the system to use **common materials** like popsicle sticks or cardboard tubes, rather than Maple dowels
- Designed for **Injection Moulding**

Consequences

- Silicone **linked with Fossil Fuels**, not the most environmentally friendly despite making **durable products**.
- Maple dowels introduce **new material into the product stream**, could instead opt for custom **cardboard tubing that can be more easily recycled**

BIG Challenge

- How to make **better problem solvers** and **collaborators** through play?
- What could make them **think with their hands** as well as their **minds**?
- How much of a **challenge** should **open-play** afford?
- What sort of **playful interactions** are not currently on the market?



Versatile Wiggel Experience



Current Wiggel Modules



Stells Specialist Cardboard Tubes - UK

Viability

Potential Models

- Marketable Product
- Base kit: 72 modules, material options for dowels
- Similar to Rigamajig's **inclusion into Children's Education**
- Physically Larger installation as part of a **Child-centered Experience**, such as Children's Museums or Interactive Play Centers

Funding & Sustainability

- **Crowdfunding**: start with a base set of parts, each part could be a milestone unlocked if the campaign gets far enough
- **Small-batch manufacturing** to further research and get kits into the hands of children, further develop system
- Release new parts as **"booster packs"**

Potential Barriers

- **Production costs**: modular systems can require a lot of specialized tooling. (Minimum £2,000/tool)
- Quality Testing: Being a kid-friendly product it needs to be **as safe as possible**
- Product Longevity: What happens when the system has reached its **end-of-life?** How long will it last?
- **Ecological Impact** of Materials (Silicone, Maple/new material)

Success is...

- Reflecting the Five Characteristics of a **Joyful Play Experience**
- A **lasting smile** on kids faces every time they pick it up
- The play experience **transfers to other domains** both in and out of playful modes
- Connection to Extracurricular and Educational Programming
- **Sustainable** Business
- Implementing a means of donating systems to those in need; **play should be for all**, not just those who can afford to

Innovation

4

What's so SPECIAL?!

- Kinetically Charming
- Flexible Imagination
- **Soft**, unlikely to harm your foot if you step on a piece or cause injury
- **Promotes collaboration**; works best with a second set of hands to steady a structure while it is being built

SURPRISES!

- Exactly how **fun** it was to document and exhibit
- Play testing is an absolute **BLAST!**
- Pieces make a **satisfying "pop!"**
- The **texture was really pleasant**, a result of the 3D printed molds
- Even kids who were unsure of the system had fun!

"It doesn't just sit there like LEGO!"
Talia, Age 9

"I like that it is more challenging!"
Jess, Age 9



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"Your imagination chooses what it is!"
Finn, Age 11

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