



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.

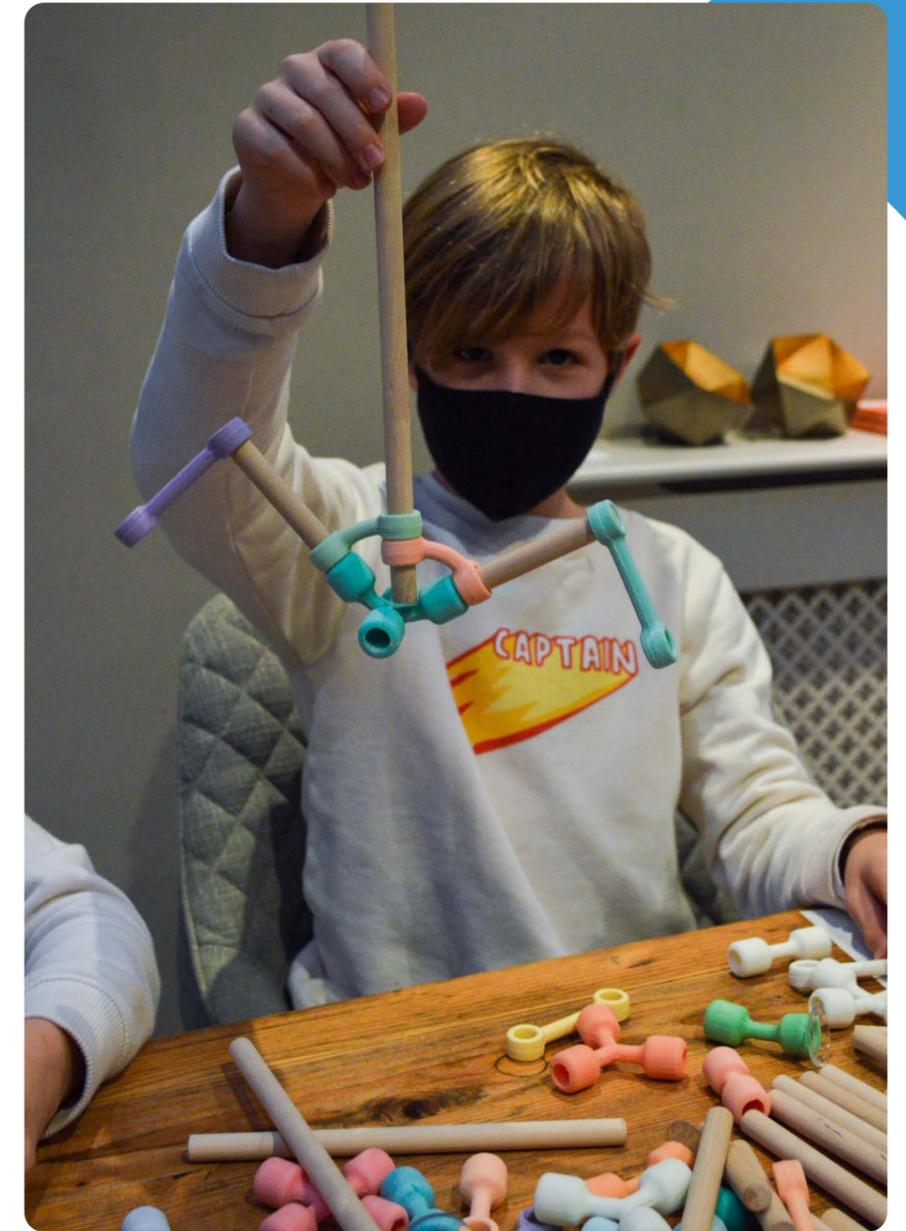
# Why Wiggle?

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 Wiggle 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

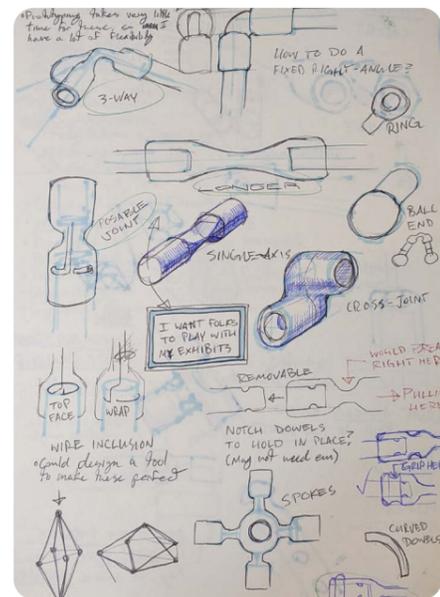
- A totally new play experience
- Simultaneously intuitive, satisfying, challenging, active, and engaging
- Promotes collaborative play
- Development of Gross Motor Skills
- Context: Families with multiple children ages 4-12, primary schools, child interactive centres

## Empowerment

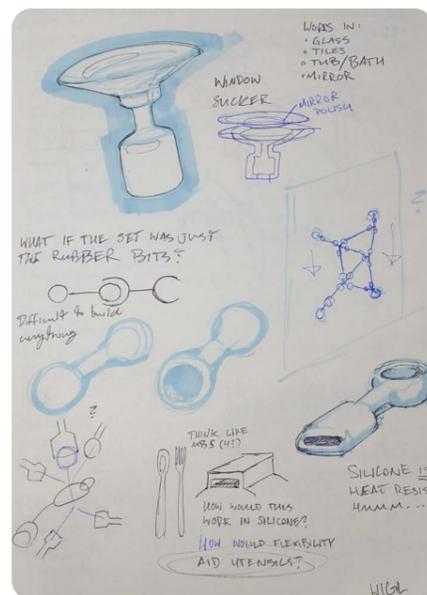
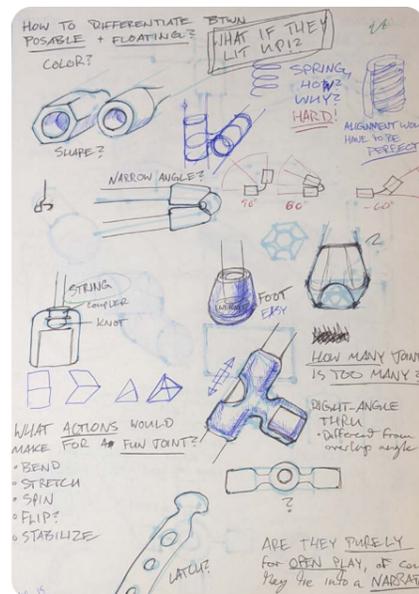
- An opportunity to challenge oneself and expand **kinetic, structural, and spatial thinking**
- Playtest Participants: kinetically active and unexpected
- Children Arts Educator: **"It's the challenge that makes it fun!"**



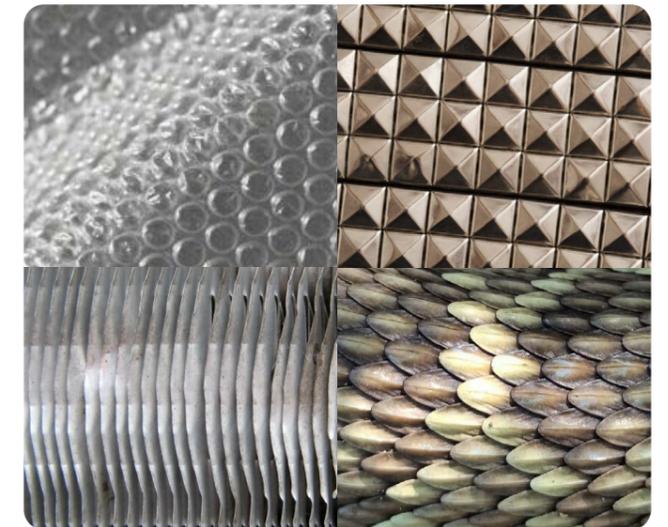
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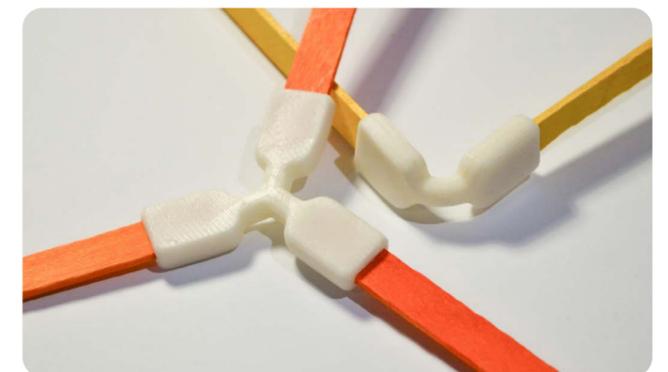
Initial Sketches



De-moulding Process



Potential Textures for Sensory Engagement



Popsicle Stick Joints

"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**

# 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.

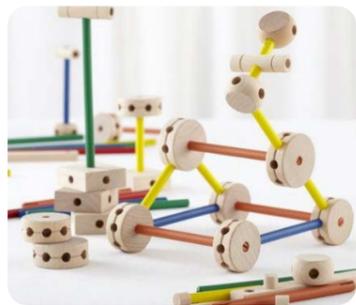
*Wiggel was born out of my love for making and playing within the Design Process.*



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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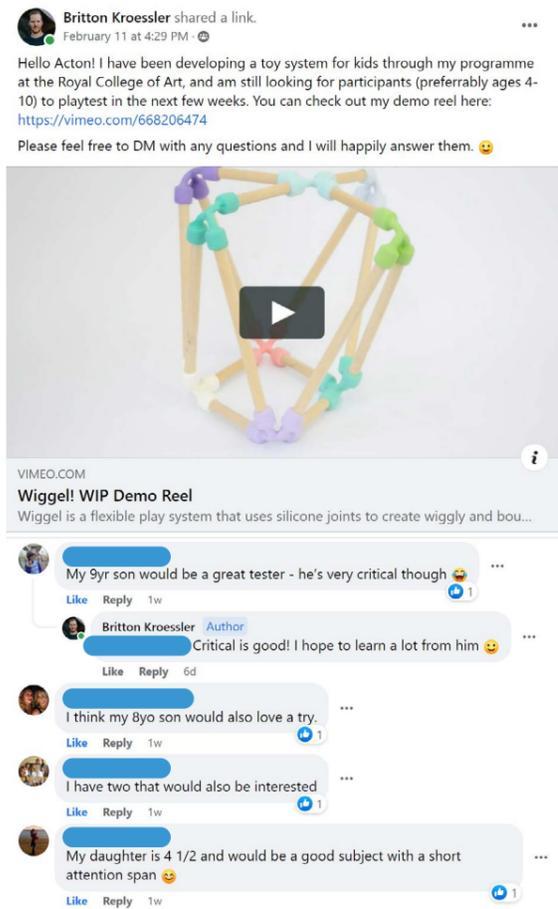
# Research Cont.

## 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

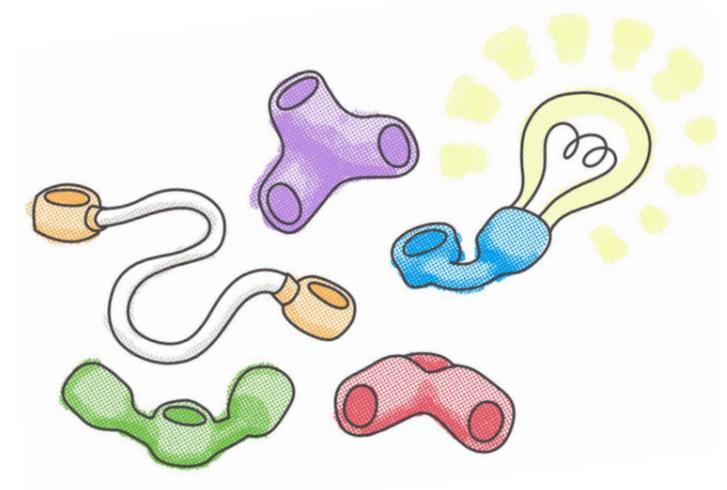
- Prototyped out of a **DIY mouldable silicone** compound (Oogoo)
- Explored potential of **flexible biomaterials** developed by a colleague—requires more developments
- **Accessibility** promoted by reworking the system to use **common materials** like popsicle sticks or cardboard tubes, rather than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



Current Wiggle 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

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## 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