

PROJECT

SPIDER - EGG DROP

DATT 2940 FOUNDATIONS OF 3D DESIGN AND FABRICATION BY MICHAEL LONGFORD

TERM

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NAMES

DENIS SCHORNIG & ROHIT SATTU

DESCRIPTION

In our egg drop project, our team of two had set out to test the resilience of designs when dropped from varying heights with egg as a payload. We explored two distinct approaches: one involving a complex, multi-component contraption, and the other adopting a minimalist, robust design both using wood sticks and cardboard papers.

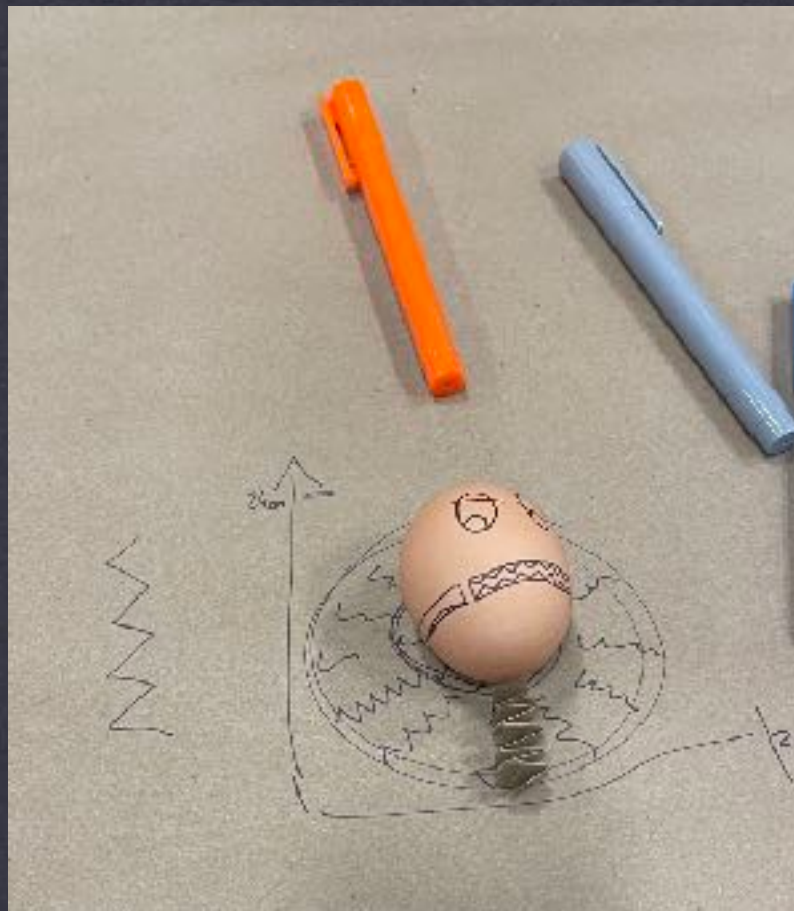
At first, our strategy was to build multiple layers around the egg and make an artistic piece. However, at the end we focused on saving the egg in our frame. Through our experiments, the egg in the streamlined, robust, minimalistic design not only survived but thrived, revealing the importance of simplicity and durability in design challenge. Our design was inspired from parachutes and utilised air resistance and slowdown the speed of the drop.

MATERIAL LIST

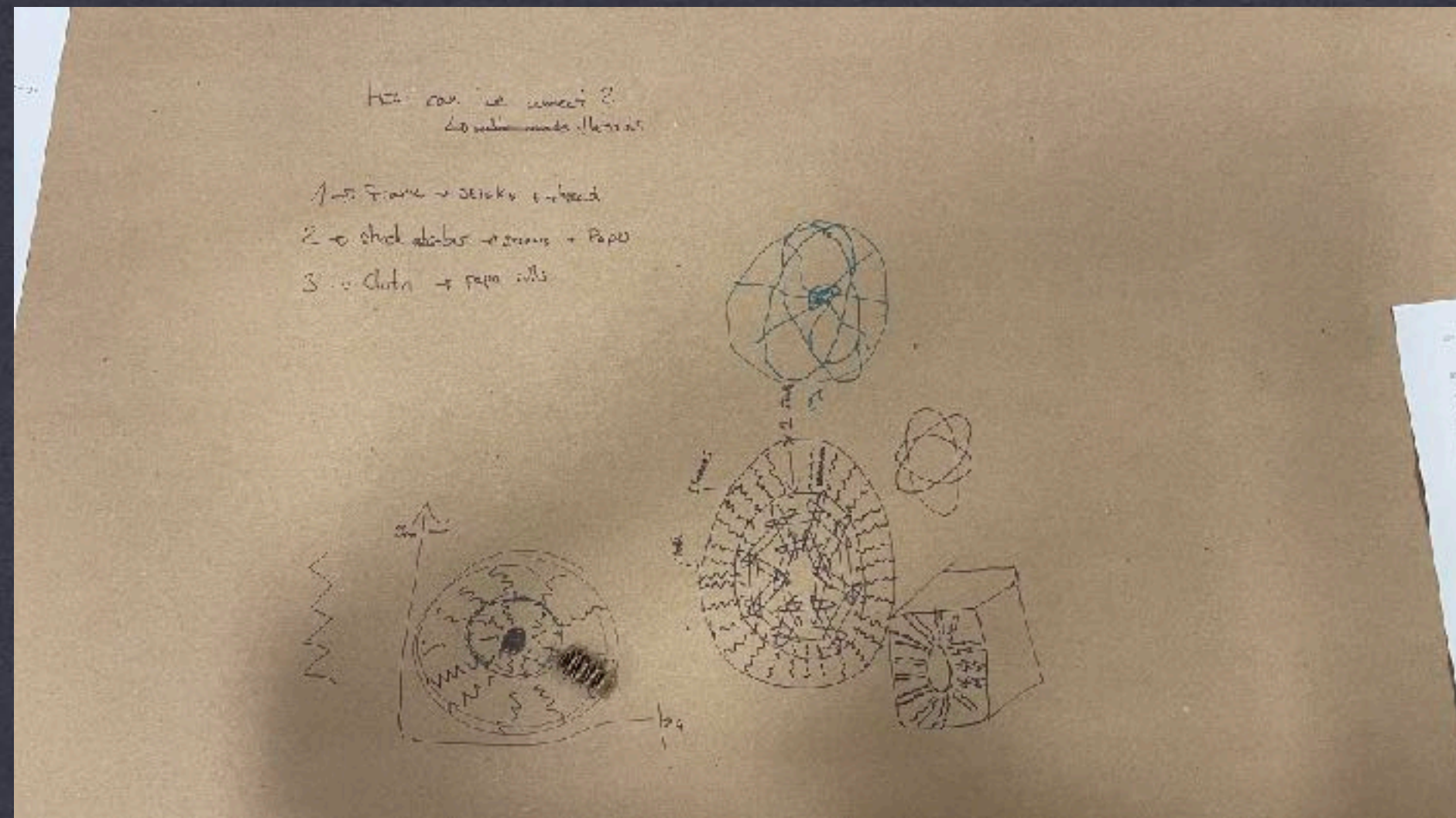
- WOOD STICKS
- THREAD
- ELASTIC BANDS
- BALLONS
- CARDBOARD



BRAINSTORMING & FIRST MODEL



Our prototype drawings were composed of egg in the middle and wood sticks or straws on the outside.



We tested our design with lemon.

Our first model involved packing the egg in a box like structure.

SECOND MODEL



We experimented with different materials and we wrapped the egg around the foam and did a drop test. Egg survived.

The foam material was not approved for this project.

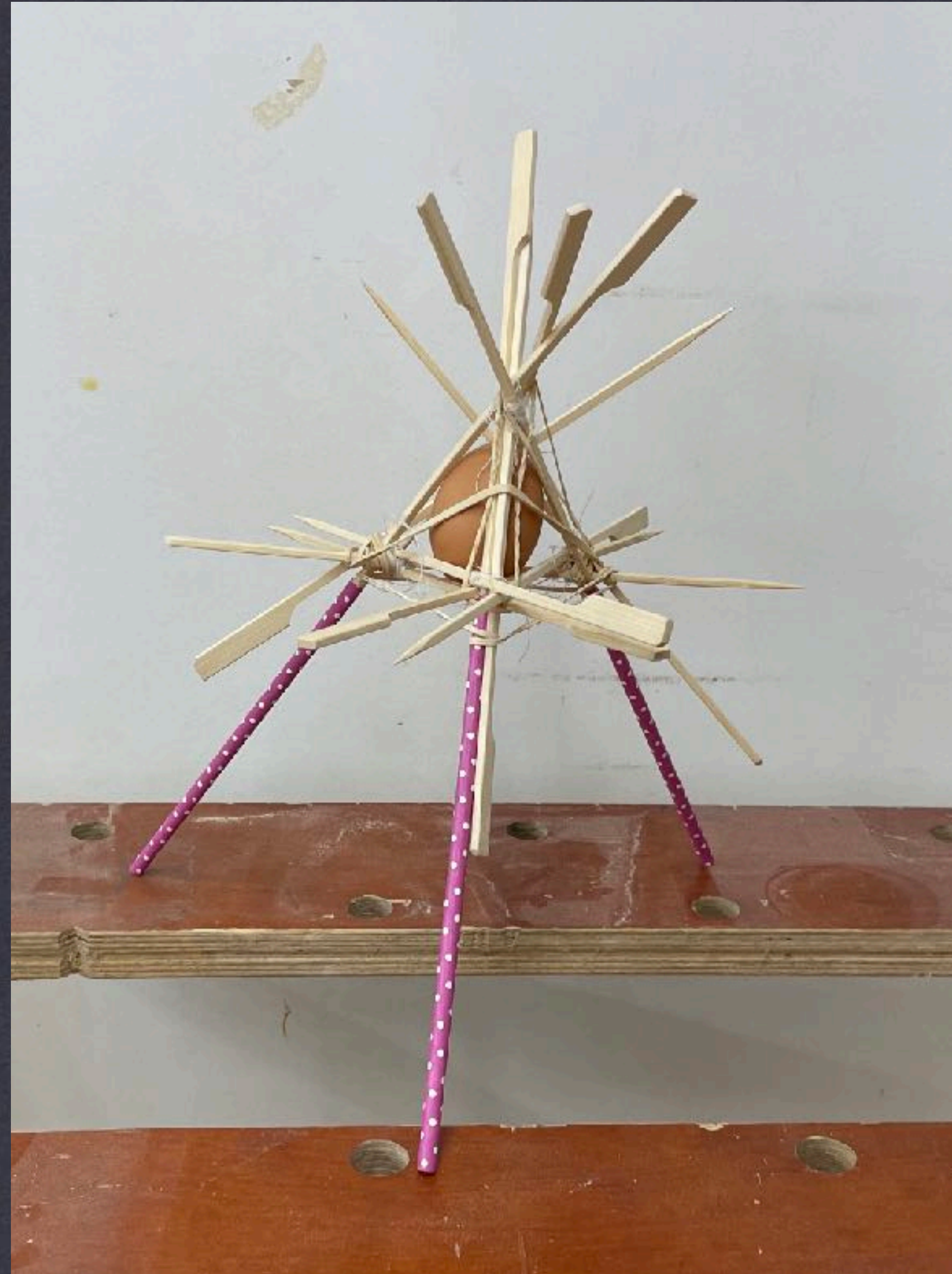


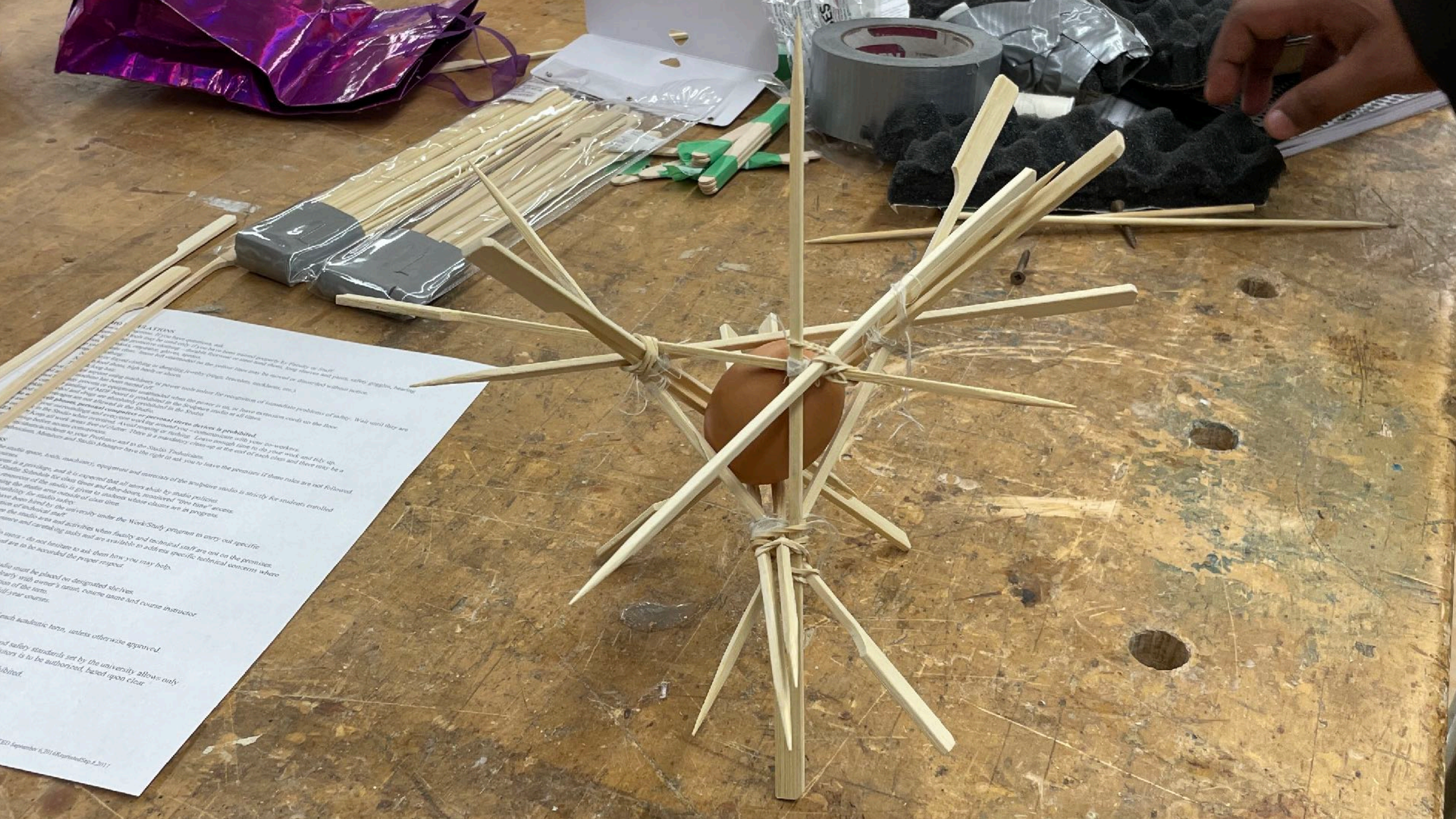
Our third prototype was composed of wood sticks, threads, elastic bands and straws. This prototype was more focused on artistic approach to the project.

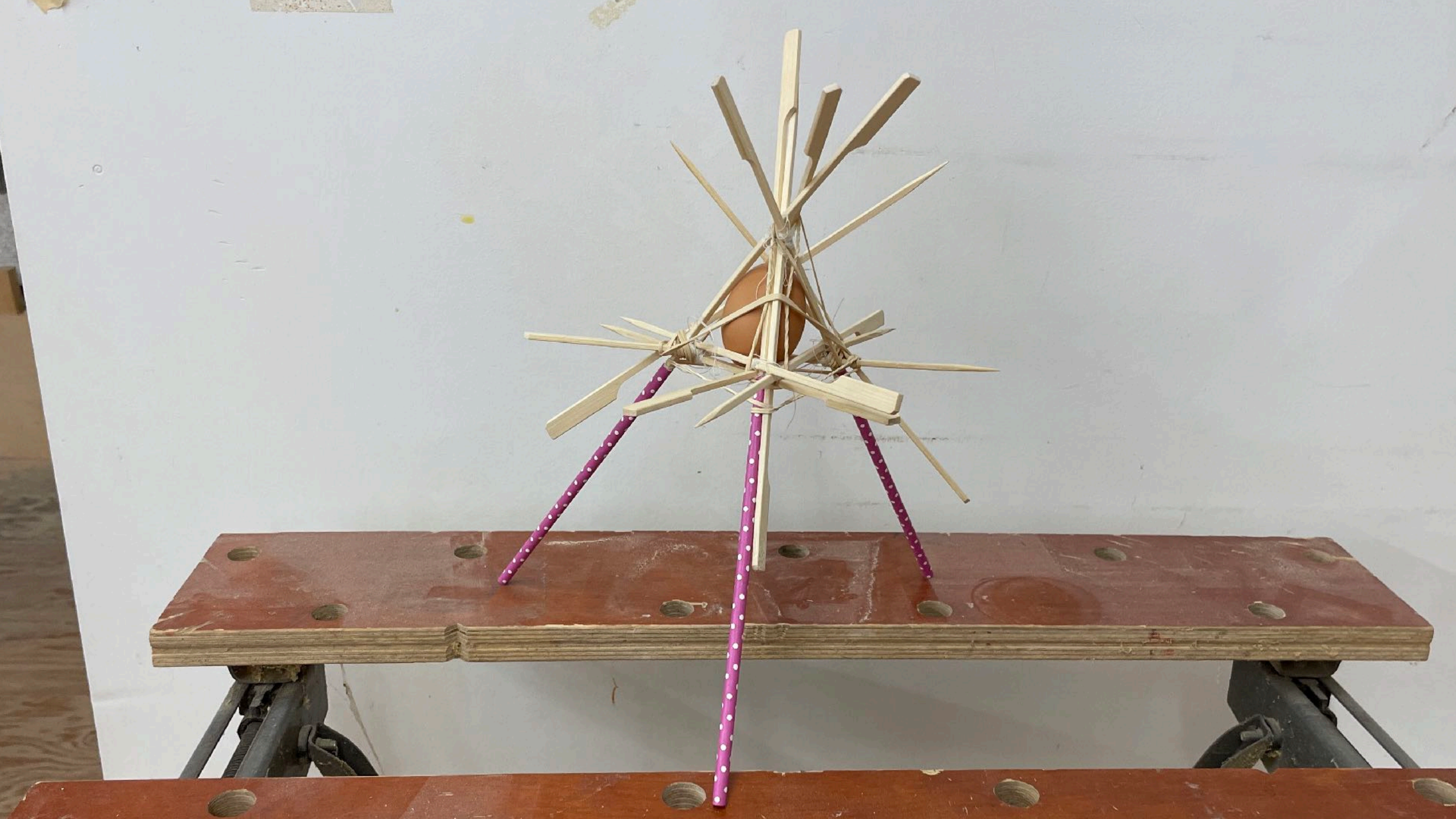
With this approach, the egg broke.



THIRD MODEL

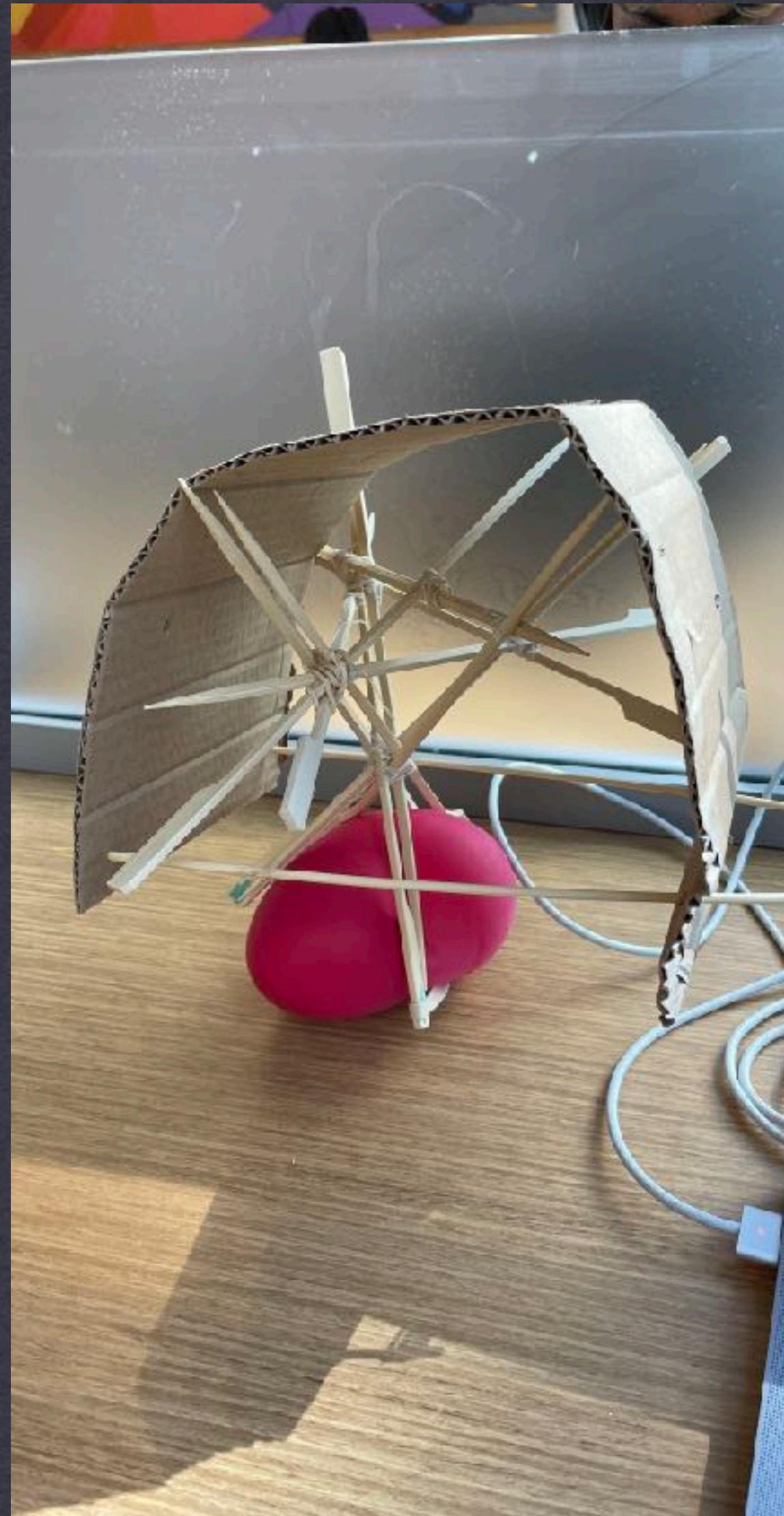






OPTIMISED THIRD MODEL

We added cardboard to utilising air resistance and a balloon to reduce the impact of the drop. The center of mass was not properly identified.



MINIMALISTIC MODEL

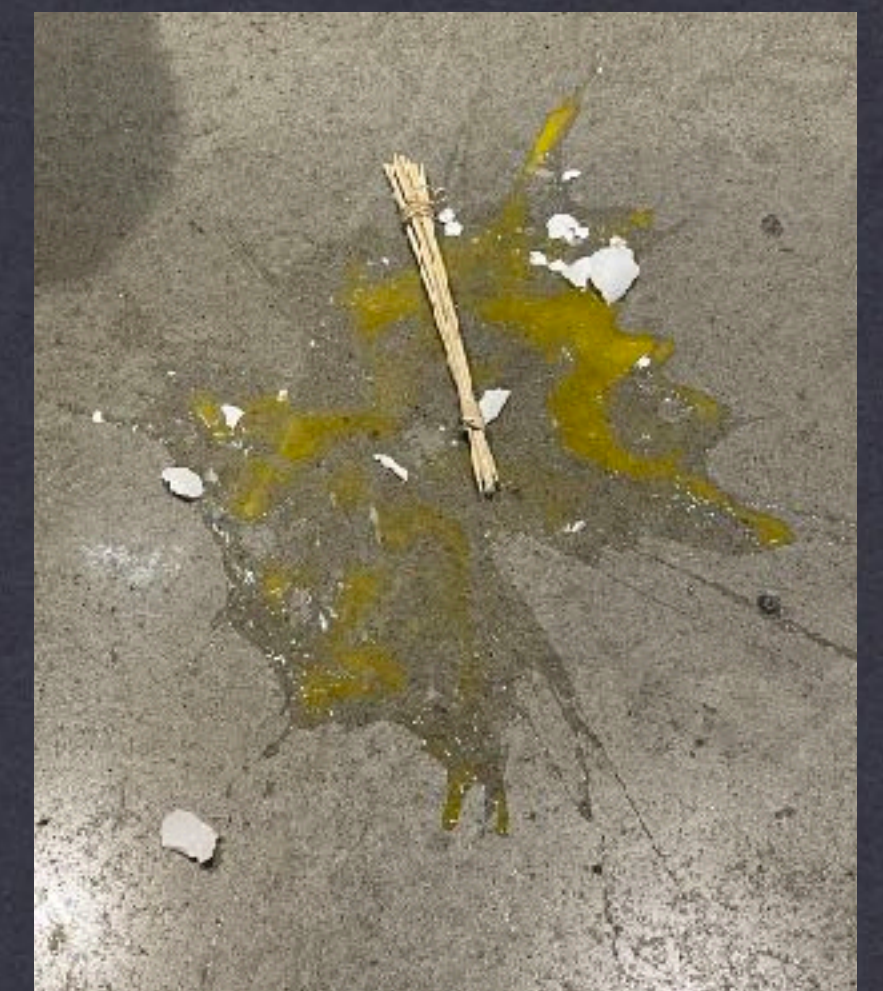
Our final design was minimalistic and used one 24 x 24 cm cardboard paper at the top, a smaller cardboard paper in the middle, connected with wood sticks and secured with elastic bands.

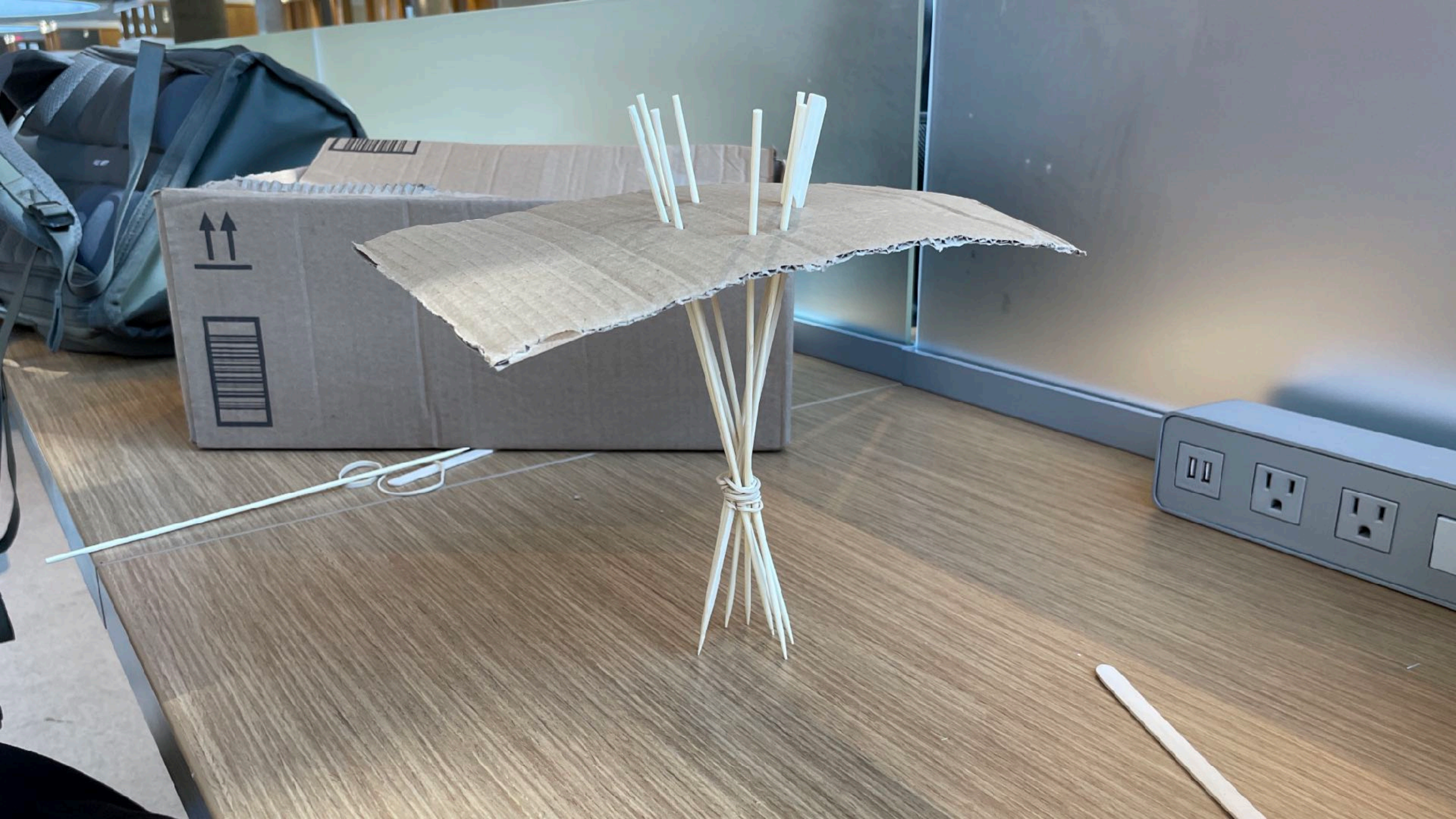


The final design survived the drop from 2nd floor and 3rd floor.

When smaller cardboard was removed, the egg still survived.

However, when both the top cardboard and small cardboard was removed, there was only sticks left. Therefore the egg broke.









ATTEMPT REPORT

MODEL	ATTEMPT	HEIGHT	REMOVED	RESULT
Opti. third model	1.	2nd Floor (15.6 inches)	-	BROKE
Minimalistic model	1.	2nd Floor (15.6 inches)	-	SURVIVED
Minimalistic model	2.	3rd Floor (29.6 inches)	-	SURVIVED
Minimalistic model	3.	3rd Floor (29.6 inches)	middle cardboard	SURVIVED
Minimalistic model	4.	3rd Floor (29.6 inches)	big cardboard	BROKE

VIDEO LINK

[HTTPS://YOUTUBE.COM/SHORTS/ BMM1VE7N-Q](https://youtube.com/shorts/BMM1VE7N-Q)