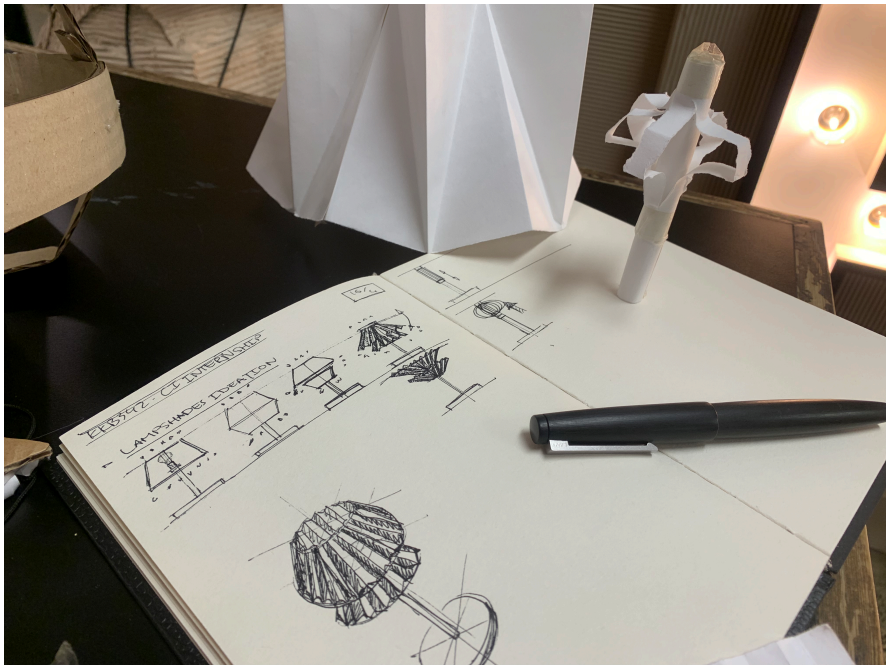
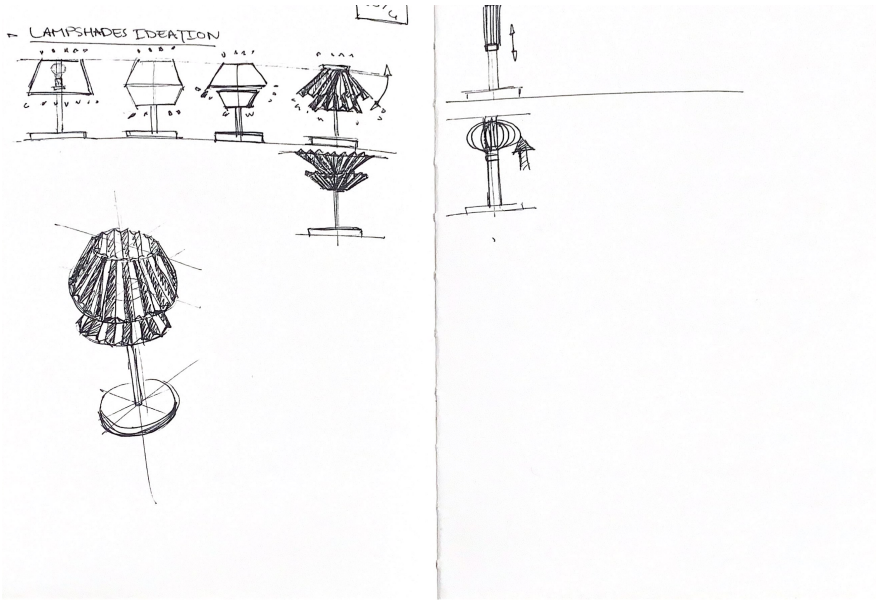
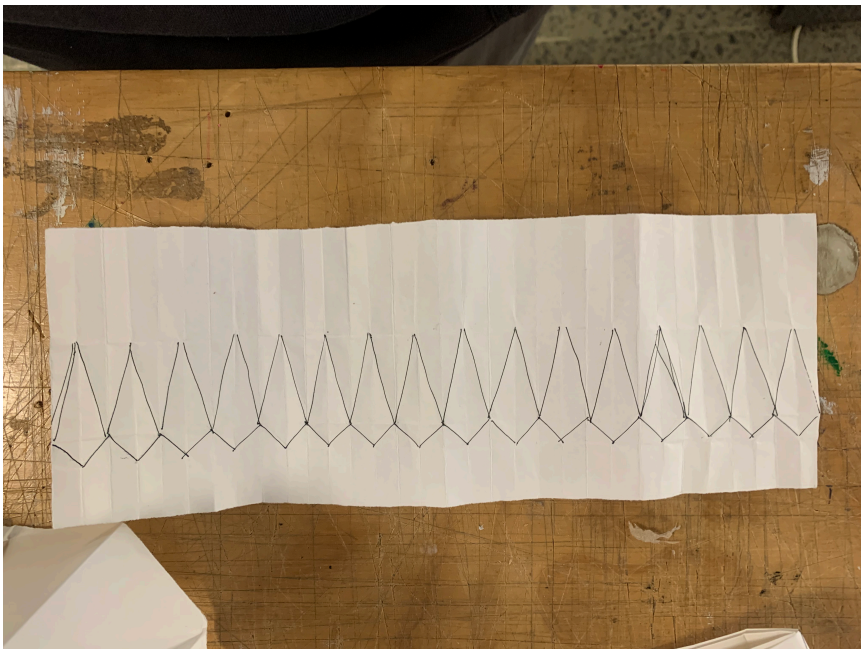
Movements
Upon reading about the lampshades element in the Grumpus Project, the idea of introducing movements to the design possibility of the lampshades and broaden the range of approach the end user/ participants would be able to utilise. The different kind of variations in movement were explored through generating different ideas with some types of movement being used in the lampshade.
With the material requirements for the end user/ participants to be able to construct the lampshades using cheap and simple material such as paper or cardboard, the ideations evolve around using similar materials to what the final package would be.



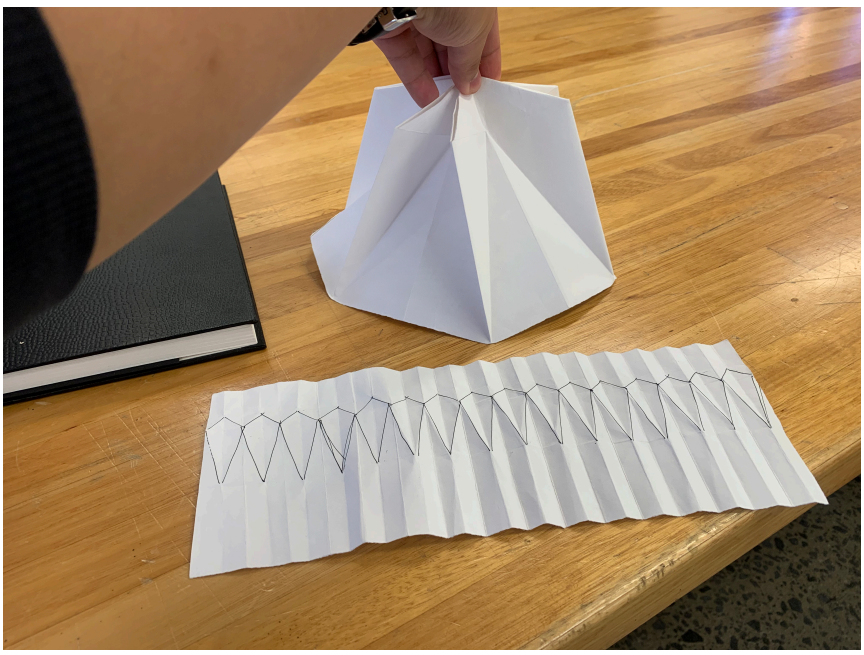
The first concept attempts to introduce movement through the lampshade being able to invert up and down. This is proven to require more research into how to manipulate paper or cardboard to behave in such manner that would allow the lampshade to move whist still able to remain intact.



The lampshade uses a pattern similar to how a simple origami fan is constructed with angled folds to create a flare in the lampshade profile.

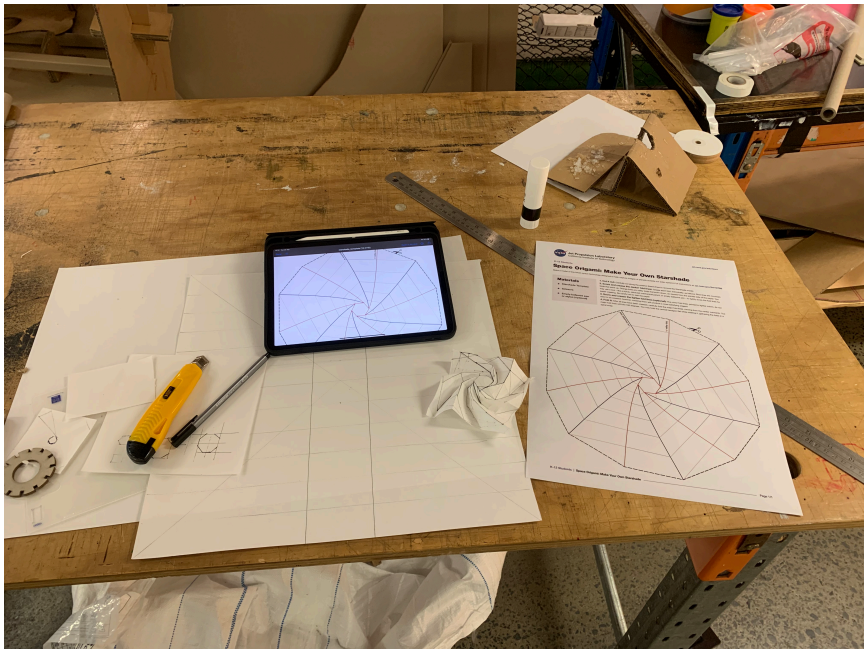


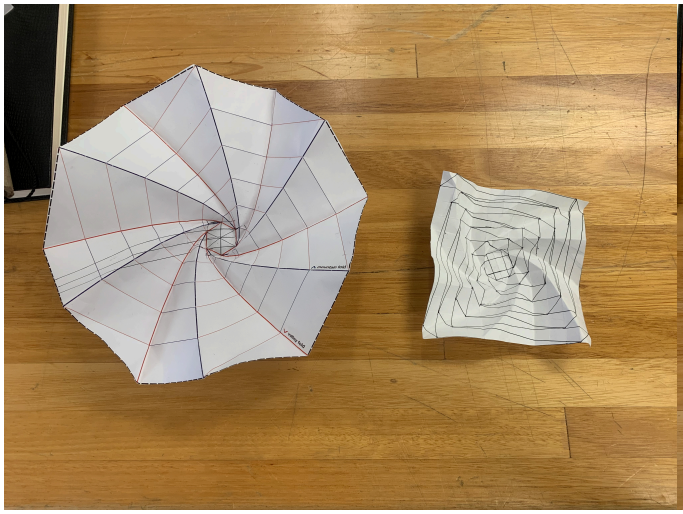
The pattern provides a stating point for some ideas that might utilise this technique of folding papers in a series of mountain and valley folds to create similar result.

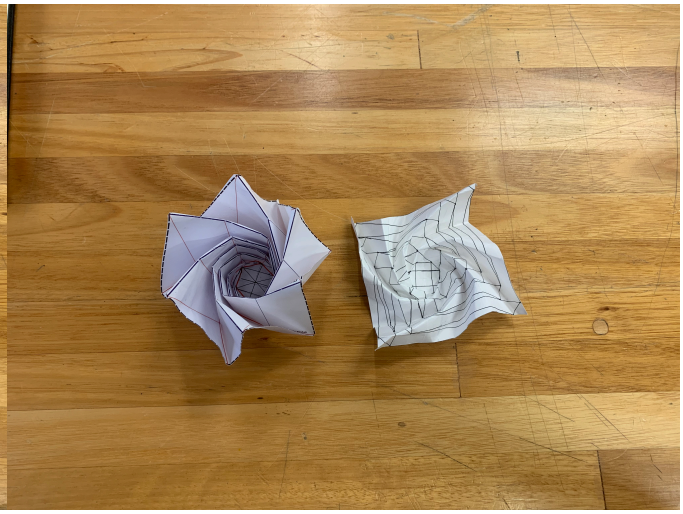


A different approach to introduce movement into the lampshade design was using NASA origami patterns that were developed for use in space. This approach aims to show the application of origami beyond art and into real world application, thus create interests for the participants.

The pattern was acquired through NASA's Jet Propulsion Lab - JPL. https://www.jpl.nasa.gov/edu/learn/project/space-origami-make-your-own-starshade/
The problem faced with this approach stems from the shear amount of complexity behind the pattern acquired. Whilst look simple, it is hard to reproduce and scale up or down since the mathematic foundation is not understood and would probably be too complicated for the scope of this project.
Another issue face when using this particular pattern is that the mechanic of opening and closing the shade itself.

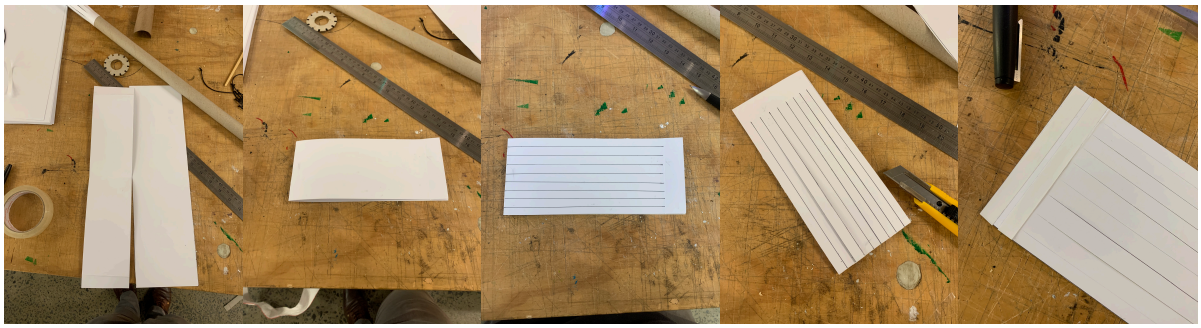




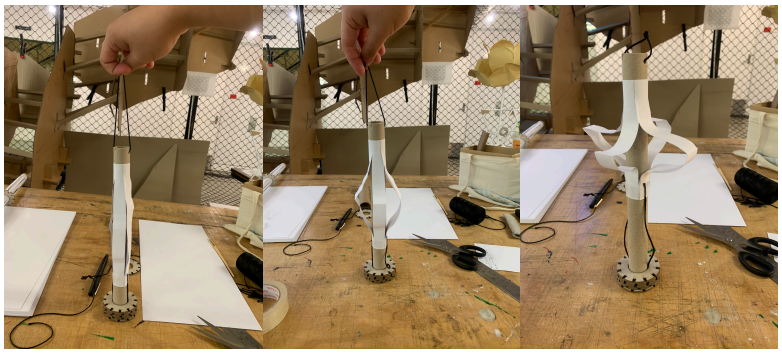


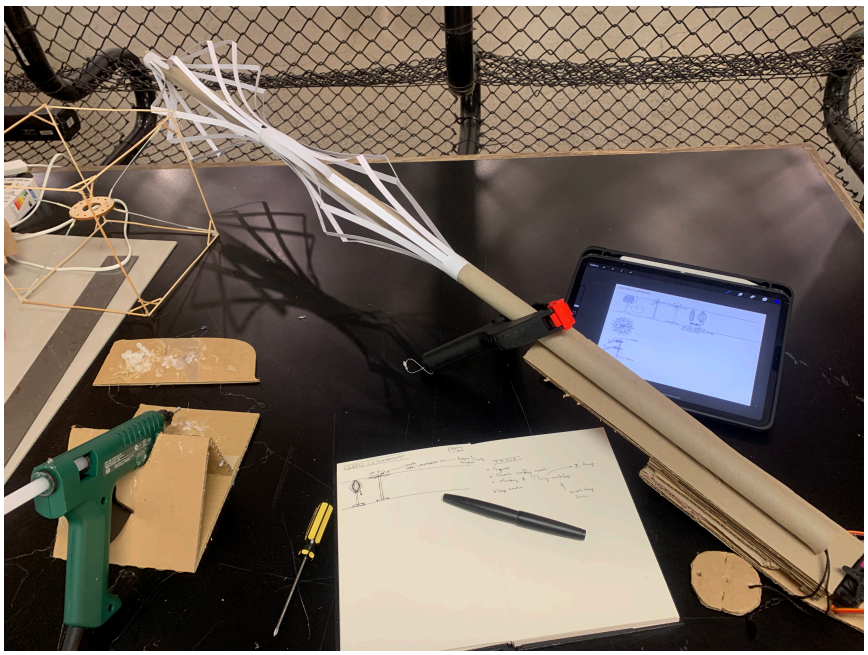
The third concept so far has been the most viable in terms of introducing exciting movement for the lampshade design whilst still being relatively simple to construct.

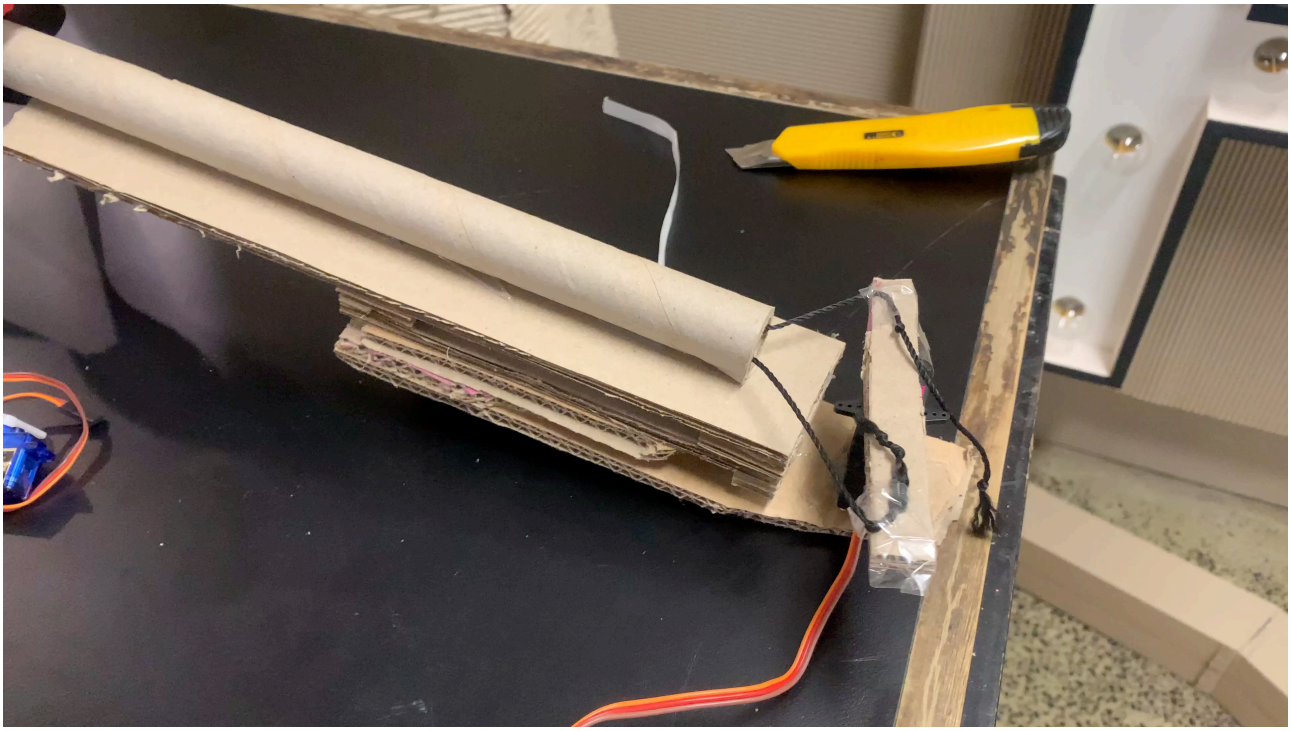
The lampshade itself was constructed to be expandable and collapsible depending on the distance between the top and bottom halves. For the lampshade to be able to move in a controlled manner, one end of the lampshade was secure to the post using double sided tape.



Strings are the preferred method to move the lampshade between its different states for it is cheap and easily accessible. One thing to note when using strings is the tensions need to be considered, if the tension is too loose, there won't be any movement, if too tight, the strings might snap.







Moving forward
Further ideas can use some of the examples shown to introduce moving elements into their design. This, whilst elevate the concept to be more exciting and fun, does add a level of complexity and extra manipulations in order to achieve. Possible workshop content that is curated to introduce movements to lampshade design is recommended.