

FINAL REPORT

PLAYGROUND/ RIDE-ON EQUIPMENT DESIGN

PRODUCT DESIGN 2



Ride on Dragon for your kids to enjoy.

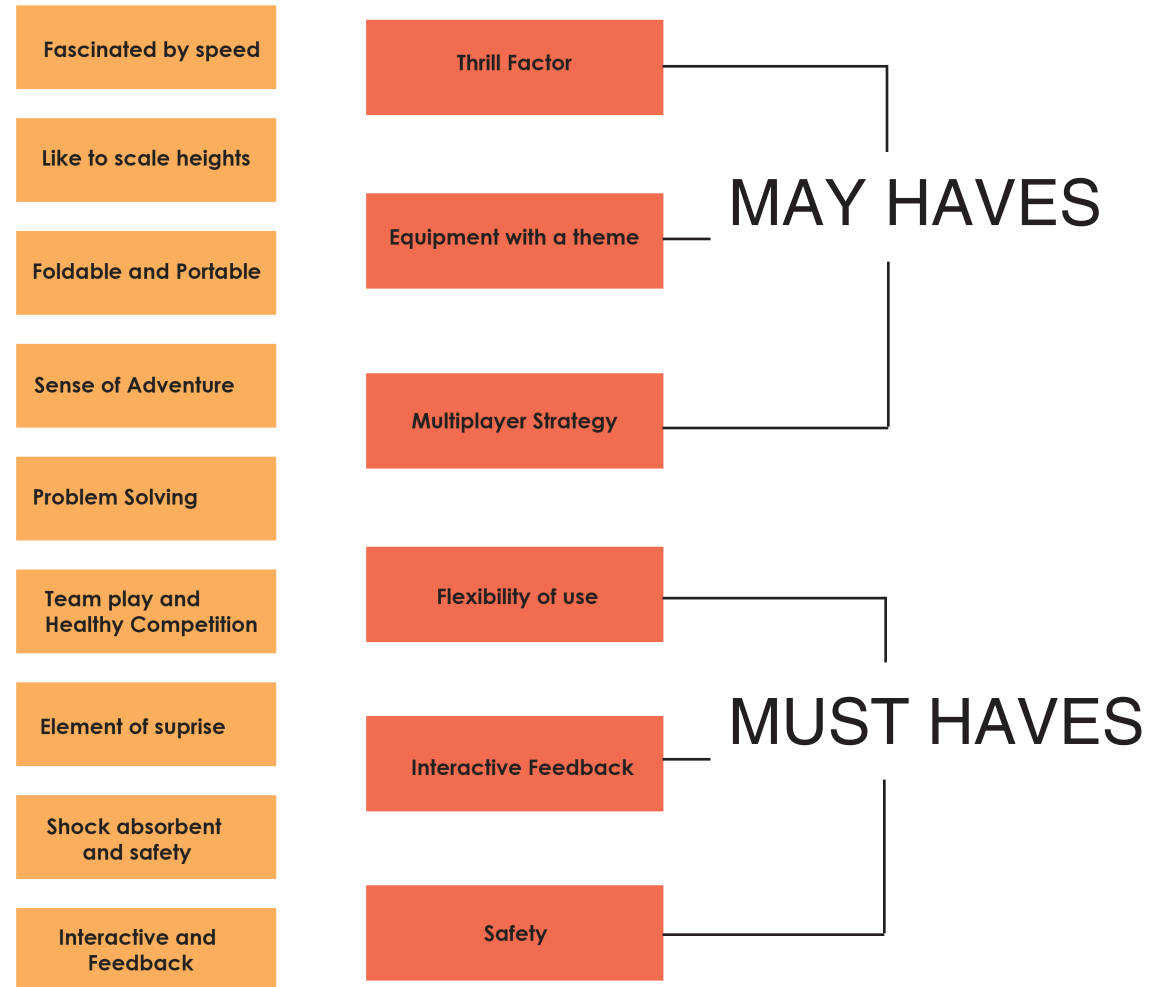
APURBA MONDAL
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M.Des 1st year
Industrial Design

INTRODUCTION

Children of all age groups like to play but specifically children of age group 6-12 years tend to engage in outdoor activities and use playground equipments such as swings, slides, see-saw, Monkey bars. The assigned task as part of the Product Design 2 module conducted by Prof. Vijay Bapat was to design a ride-on playground equipment for them which aids in their physical and psychological growth by taking inspiration from Biomimetics and Biomimicry.

INSIGHTS AND OBSERVATIONS

We visited various playgrounds around the IIT Bombay campus and in Hiranandani, we observed the behaviour and activities of children as well as interacted with the children and parents. Main point noted was that the children prefer using equipmentss like monkey bars more often as there are less options for them to choose from. Children above 10 tend to play group sports activities and the elemnt of team play is what interests them. Few of the key observations are highlighted below:



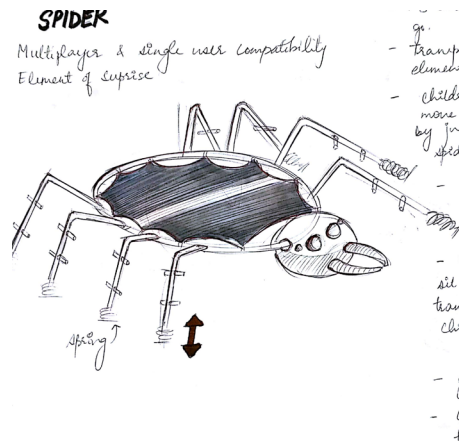
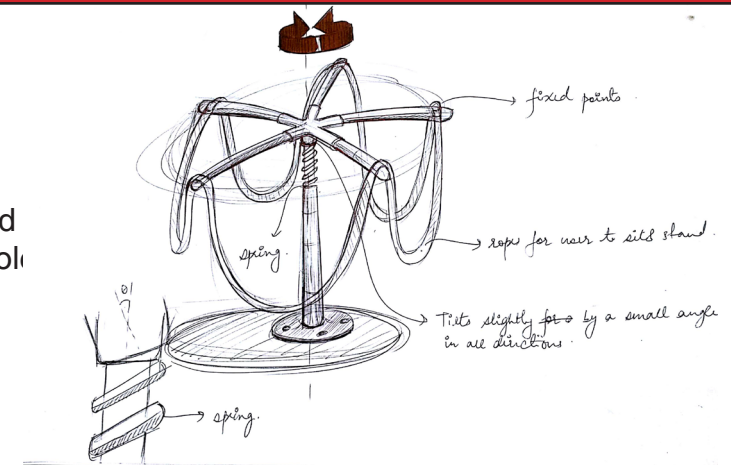
DESIGN BRIEF

To design a playground equipment for children of age group 6-12 years of age for a middle to upper class settlement. It would be a multiplayer equipment with elements of surprise and humor but can also be used by single user. It must be a ride-on equipment who's movement or/and form emulates an animal or Insect and is in full control of the user. The mechanism involved should be simple for the ease of manufacturing, maintenance and reduction of cost. The usage should be moderately difficult for the cognitive and physical development of the child. There should be an immediate feedback mechanism which aids in instilling confidence in parents as well as the child.

IDEATION

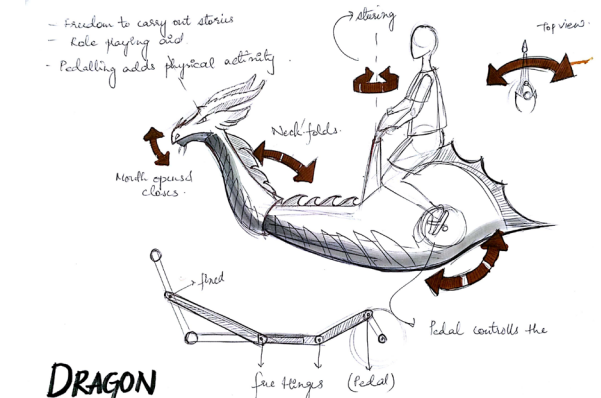
The Animal kingdom has fascinating behaviours and movements and after reading about them more, few animal behaviours and forms fascinated the most.

Monkeys hanging on from branches and swinging: The children would hang on to ropes and moves the merry go round by pushing the ground with their legs. Spring on the top of the pole would create a slight see-saw movement.



Spider: Different types of spider were read about but the form of the body is explored here. The legs become rods to climb on and the body becomes a trampoline making it a multiplayer interaction.

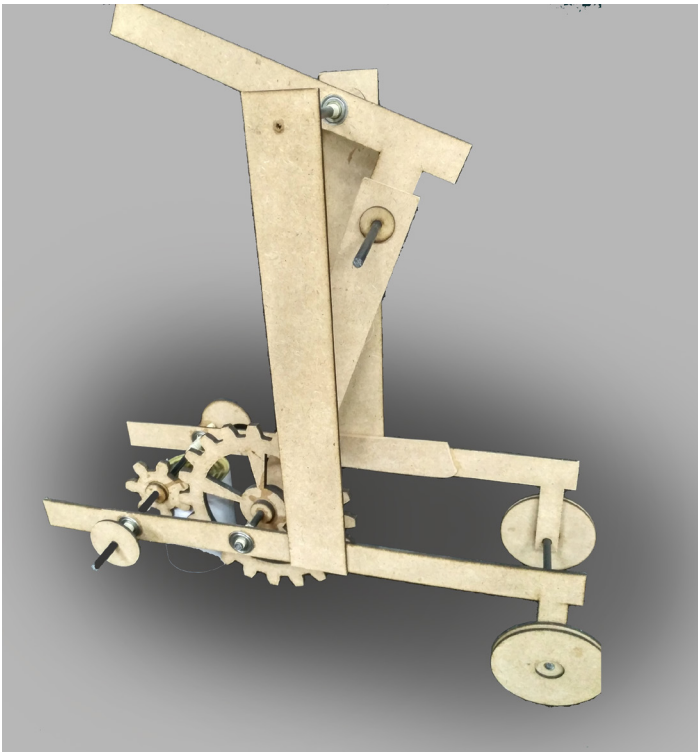
Dragon: The Mythical creature is known for its immense stride, wingspan and fire breathing. One of the most celebrated creature in chinese culture, the children could enact and do role play with a dragon ride-on toy which has dramatic head movement.



CONCEPT REFINEMENT

To understand what posture and movement and visual information would be good for the child's physical and cognitive development, different movements were studied and sketched out.

Concept generation started off by thinking of an alternative to the usual pedalling and incorporate a hands on movement. The forward only (unidirectional) movement of the ratchet was used to generate the first proof of concept model. But there were issues with transferring the ratchet rotation to the drive wheel directly and needed the use of tension based grip rope. Hence the second mechanism of the railway handcar was used.

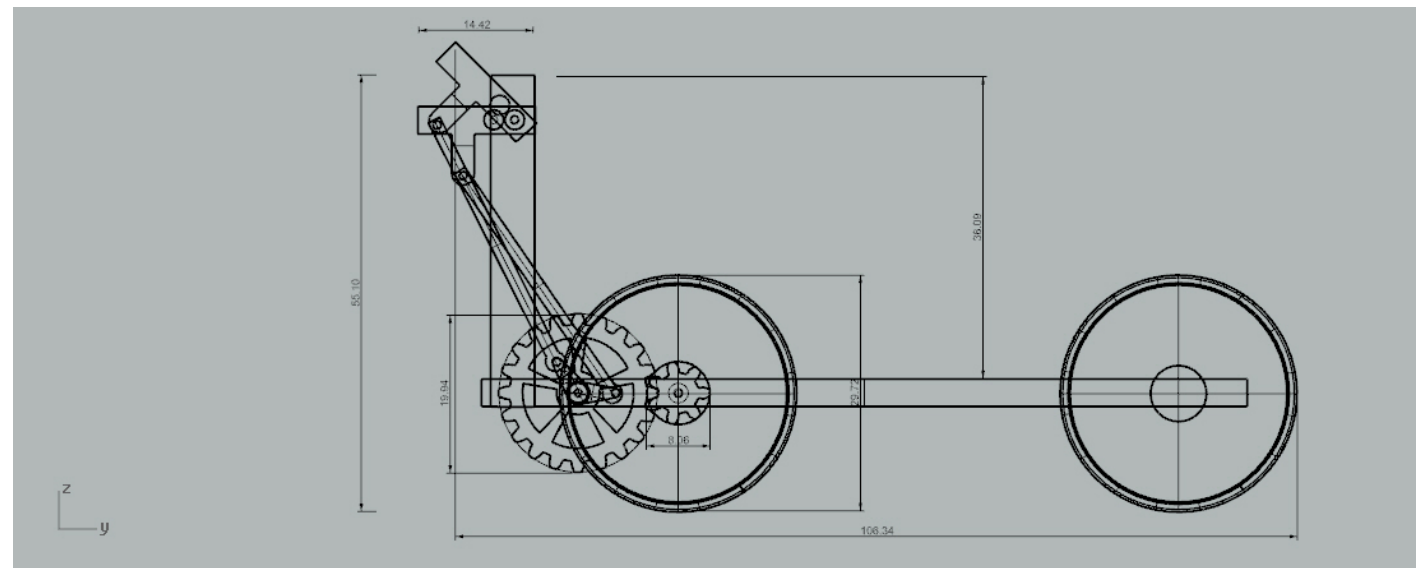
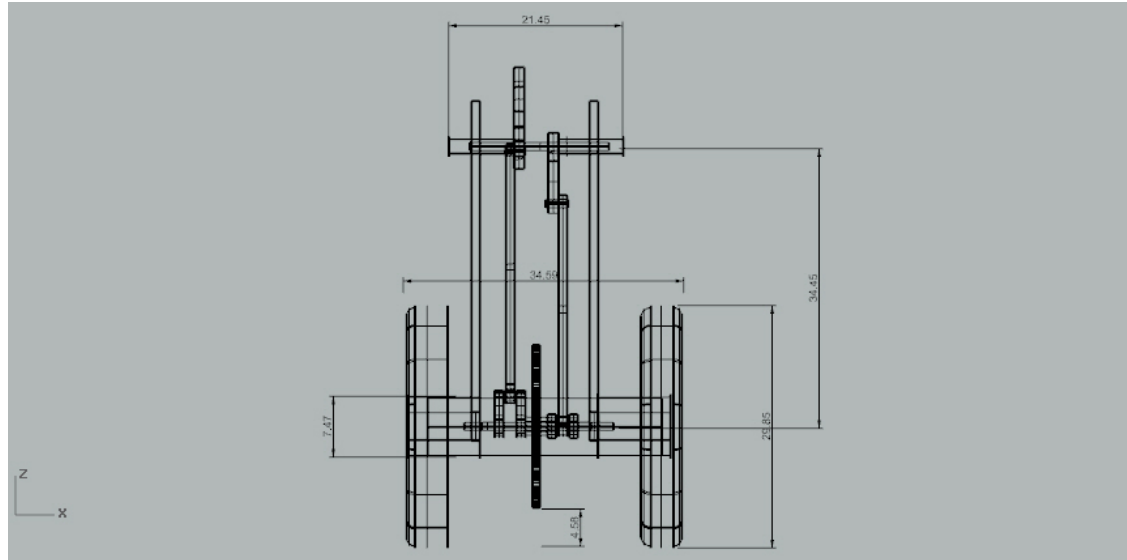


The Left image shows the Proof of concept model for the Sheffield handcar. The handcar was the major mode of transportation before the invention of the Internal Combustion Engine.

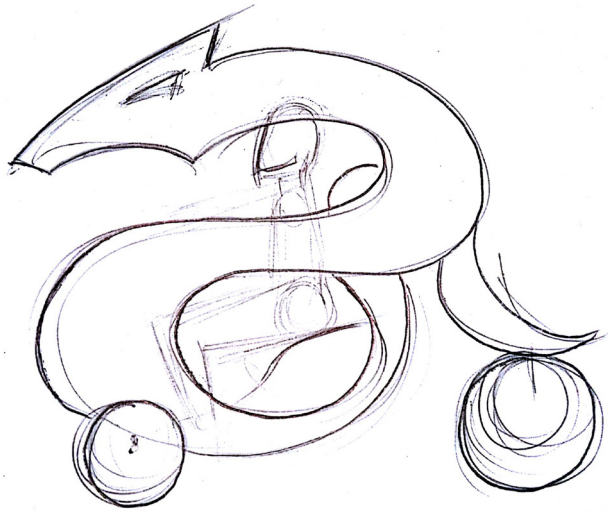
The to and fro rotation is translated to the forward uni-direction at the drive wheel and thus increases the speed by adding a smaller gear.



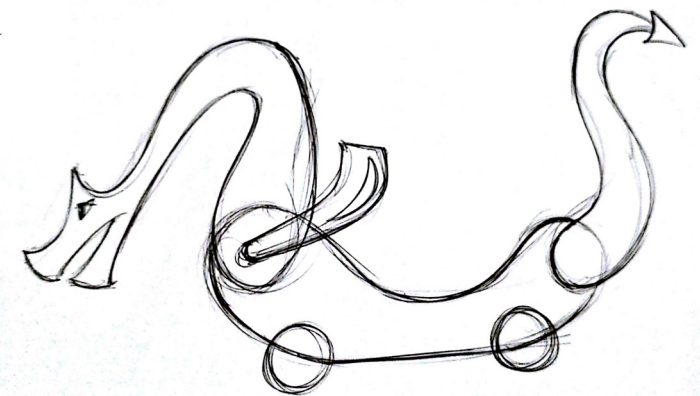
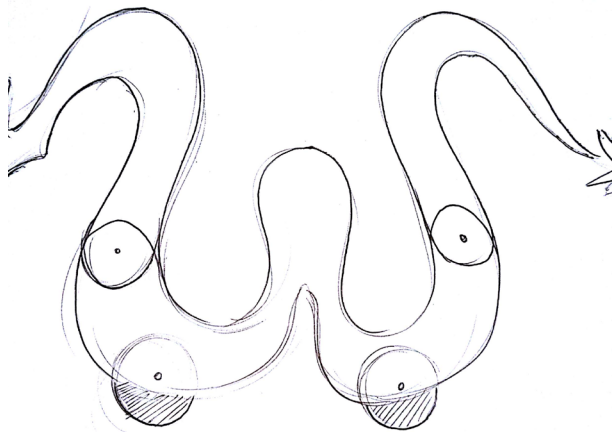
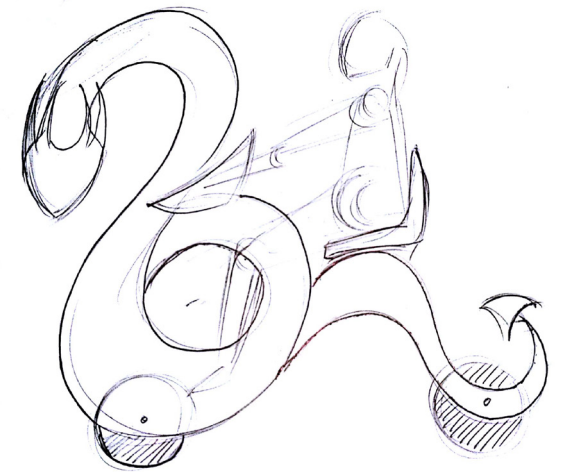
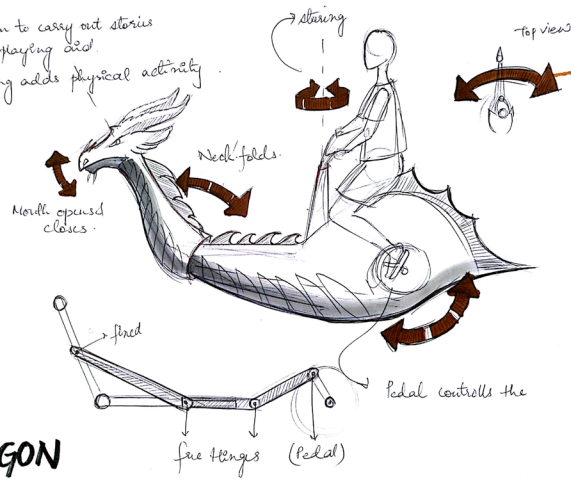
POC DETAILS



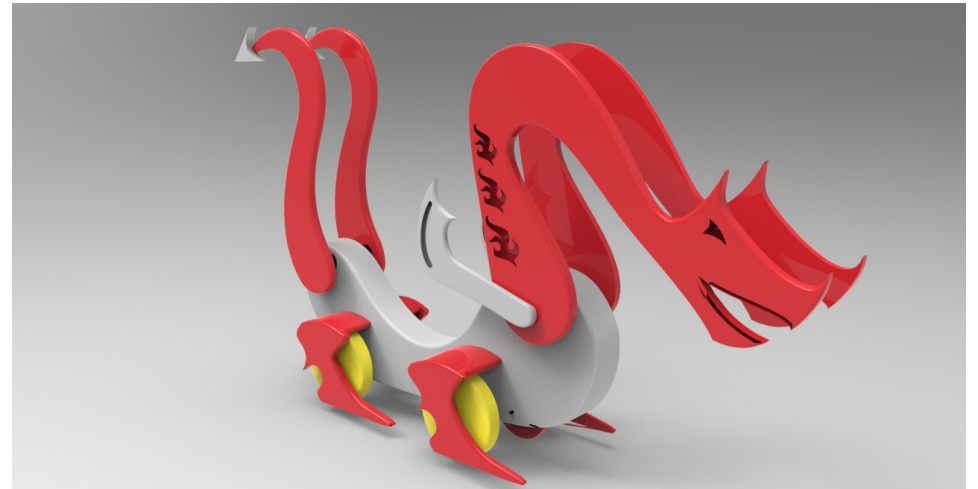
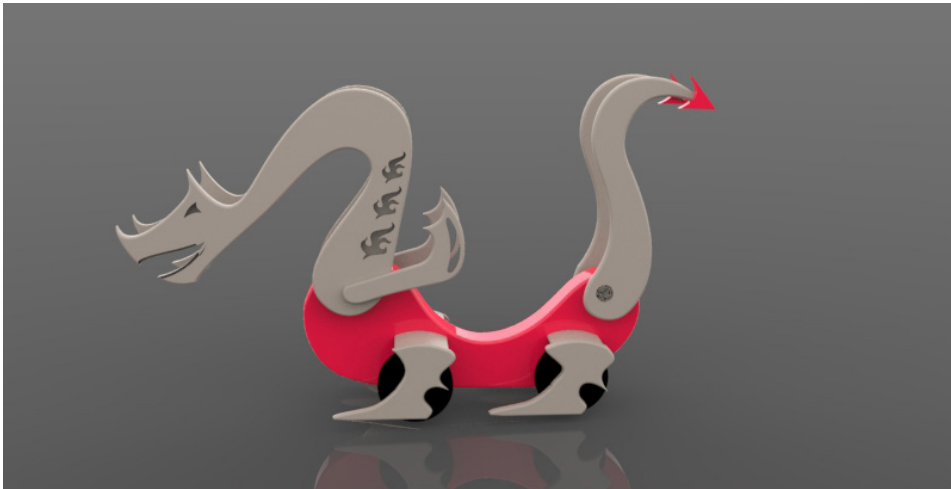
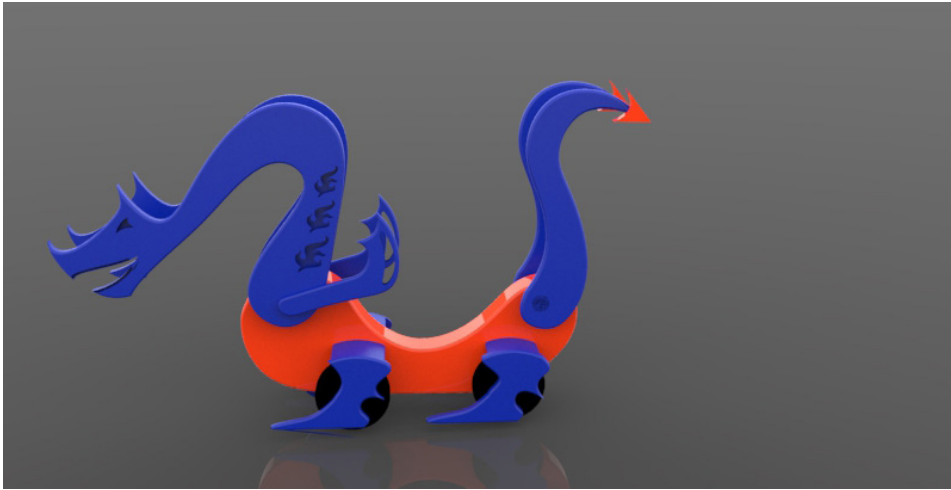
FORM VARIATION



- Freedom to carry out stories
- Role playing aid
- Pedalling adds physical activity.



COLOR VARIATIONS



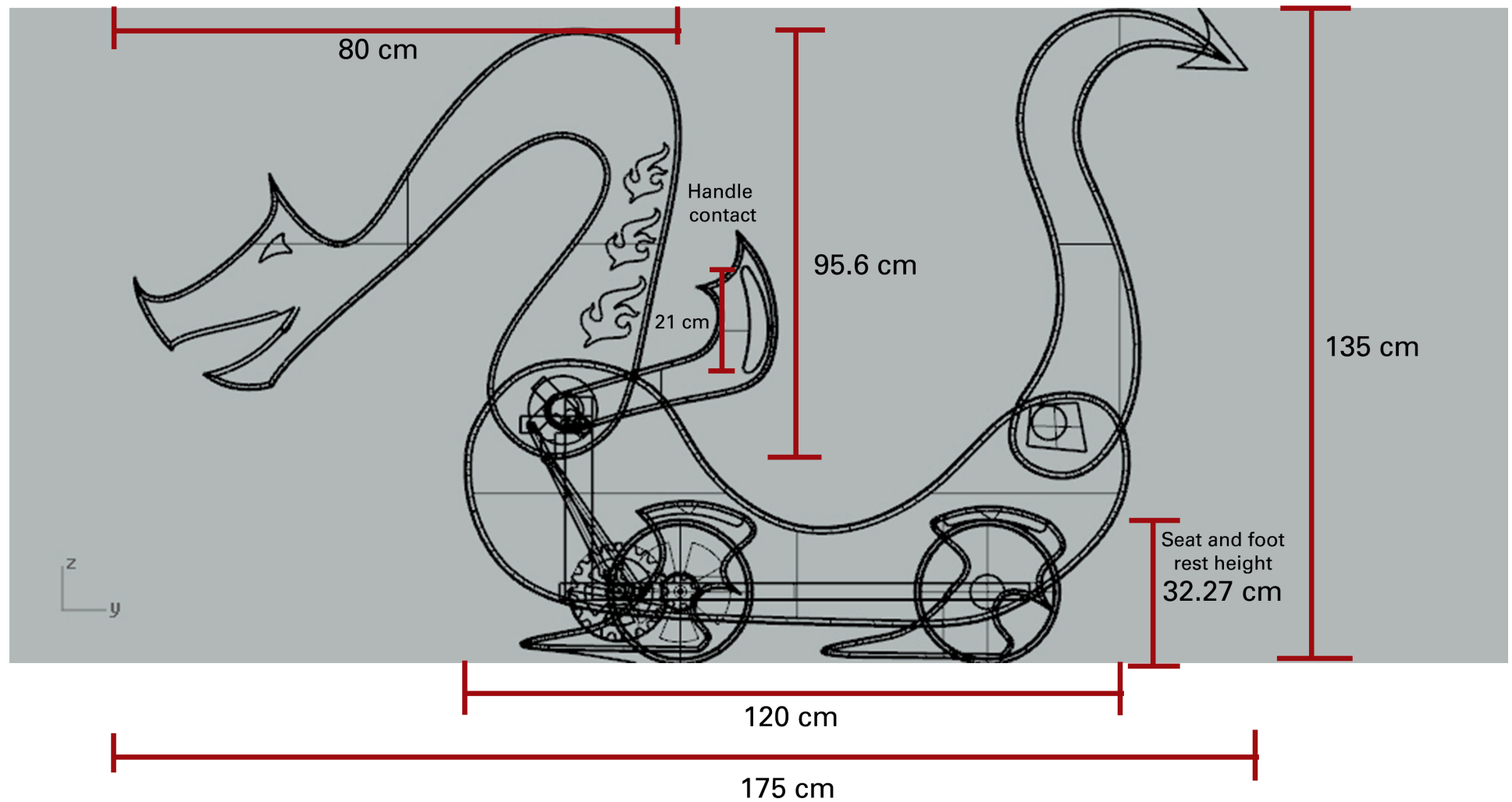
MOOD BOARD



FINAL MODEL



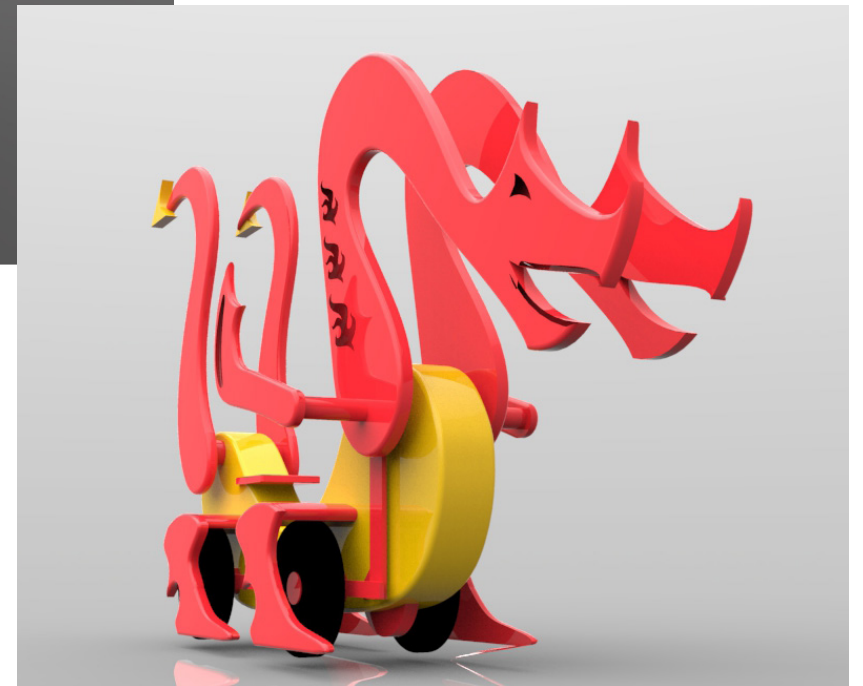
DIMENSIONAL DETAILS



MANUFACTURING DETAILS

- The outer body can be manufactured via basic cutting of the wooden planks of 1.5 inch thickness and then assembled later on by screwing them together.
- Internal Gears and axels are made of lights steel
- Seating is made of injected molded thermoset plastic with a covering of cushion and water resistant fabric.
- Handle of the dragon, ie the wings are made of wooden planks as well but the hand contact area has a covering of rubber.
- 32 cm Diameter Rubber tyres are provided to better grip and load carrying capacity.

FINAL RENDERS



BRANDING AND LOGO

The chinese Dragon has a lot of character and is celebrated in the festivals in China. The mythological Creature is known for it's powerful flames which could destroy cities, it's ferocity and large wingspan. The name I chose to give is 'Blaze' which means 'To burn brightly' and the logo's shape has been chosen as the circular one so that it could be incorporated in the name as well as not have the traditional wavy structure in Chinese Dragon Illustrations. The negative space forms the letter 'e'.

