

Project 3

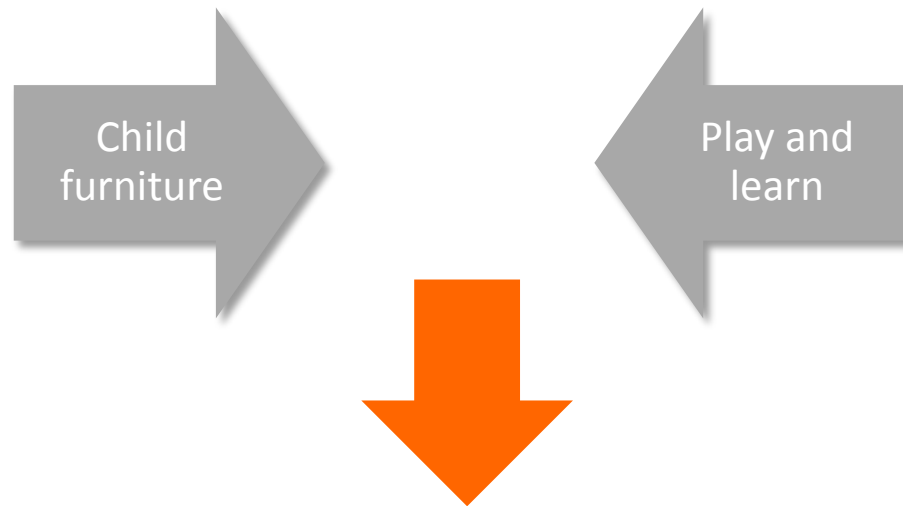
# Play and learn furniture

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# Methodology

- Primary research
- Secondary research
- Inferences
- Insights and opportunity
- Design brief
- Ideation
- Concepts
- Concept variations
- Concept evaluation
- Final concept
- User feedback
- Refinement
- Product

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# Play and Learn

Play is a vital part of a child's social, cognitive, physical and emotional development.

Researchers agree that play provides a strong foundation for **intellectual growth, creativity, problem-solving** and basic academic knowledge.



Why **furniture**?



Data collection



Campus school , kindergarten,  
IIT Bombay campus









Just kidding, play school,  
Hiranandhani.

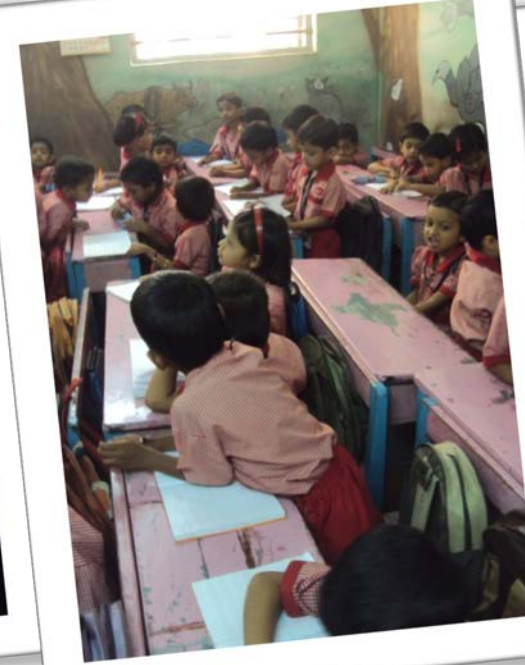




Just kidding, play school,  
Hiranandhani.







Lower kindergarten , Powai english school.





Kendriya vidyalaya,  
IIT Bombay campus.





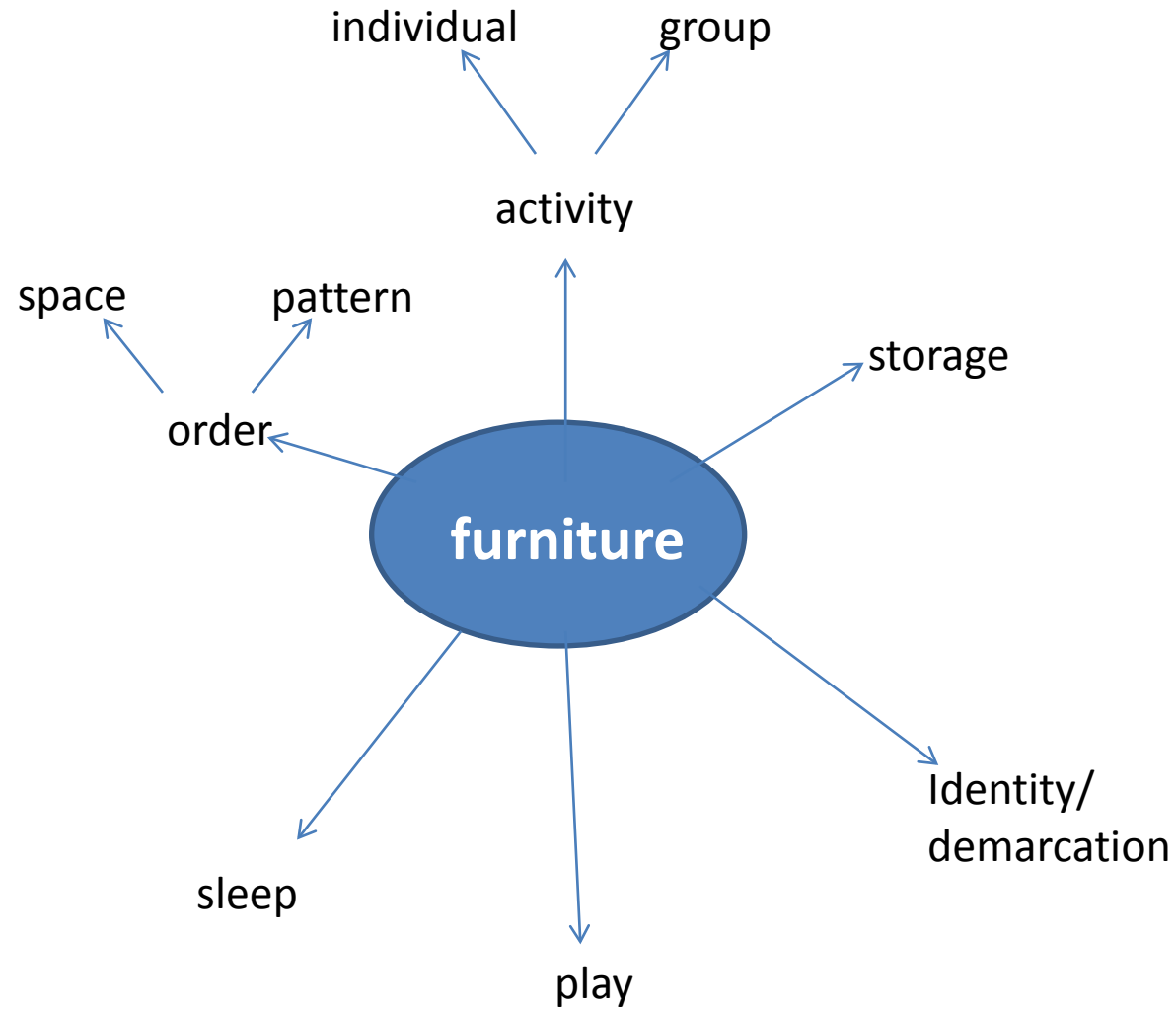
Balvadi, BMC Municipal school  
Powai.

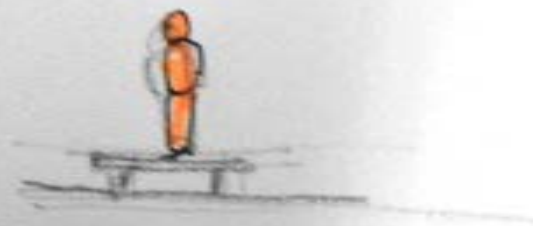




# Inference

- Furniture arrangement pattern varies with context and space requirement.
- Constant change within the class room , provides an opportunity to bring a play element.
- Children seek constant change in the position and orientation of work.
- Children adapt many postures while doing work.
- Children prefer ground when it comes to group activity or play.

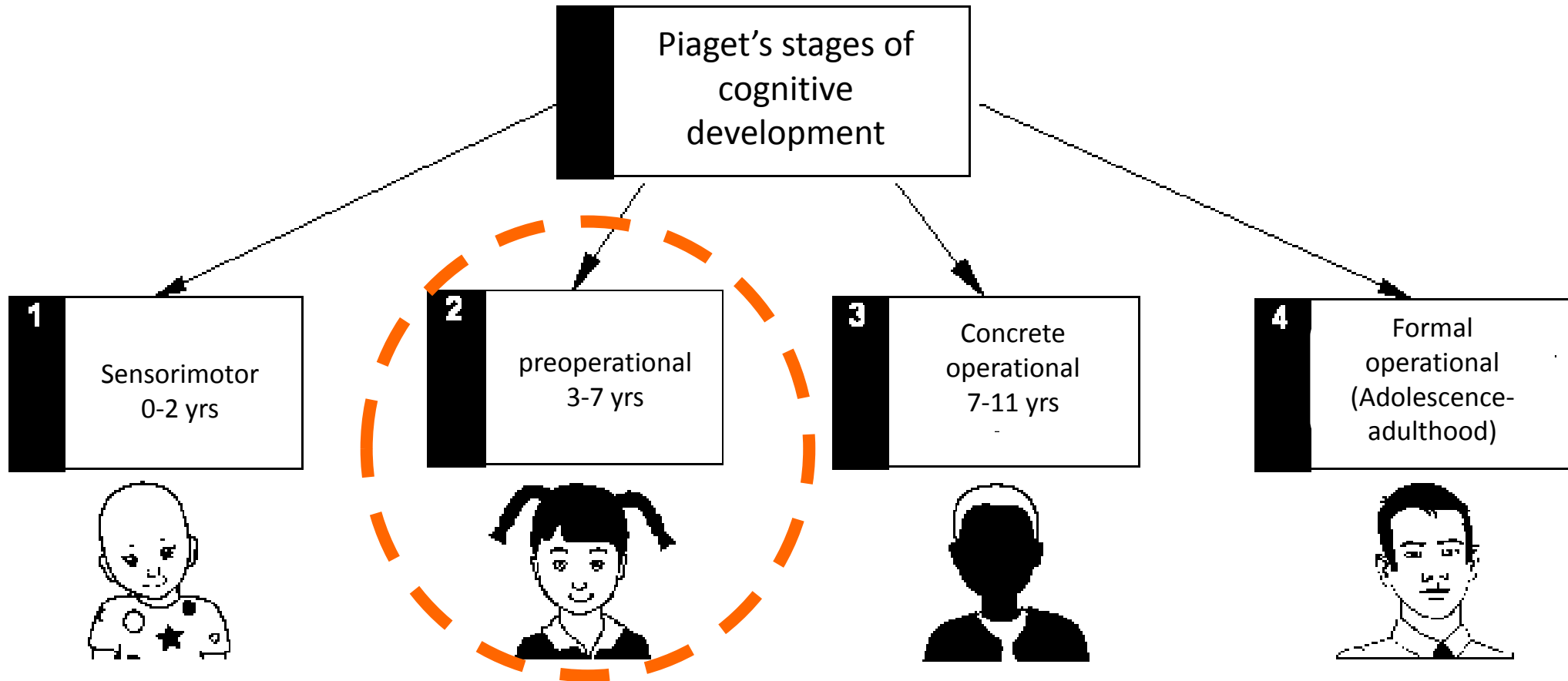




Postures adapted

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Literature study







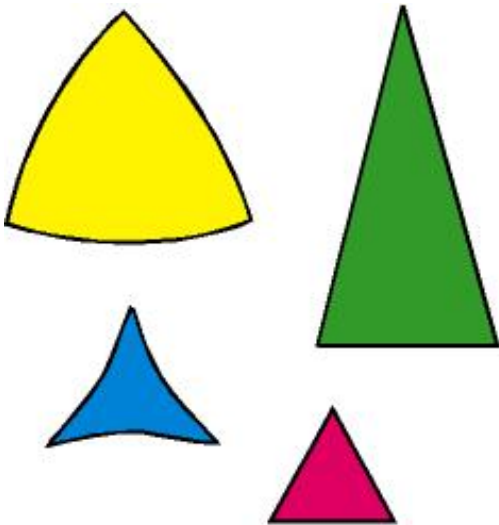
**Rudolf Steiner** methodology of education.

children should be “**actively, emotionally, and thoughtfully**” engaged in their learning,

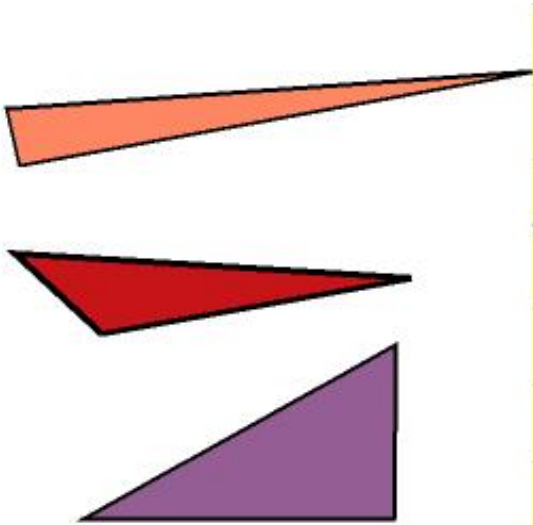


The Van Hiele levels of **geometric reasoning** .

- 1. Visualization
- 2. Analysis
- 3. Informal Deduction
- 4. Deduction
- 5. Rigor



Triangles

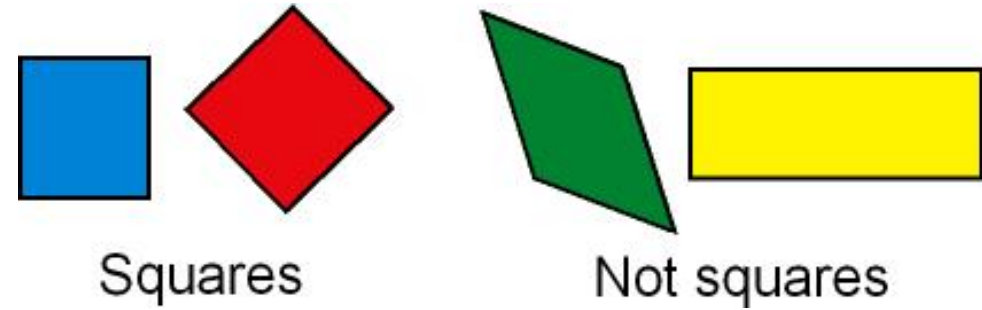


Not triangles

1.visualisation

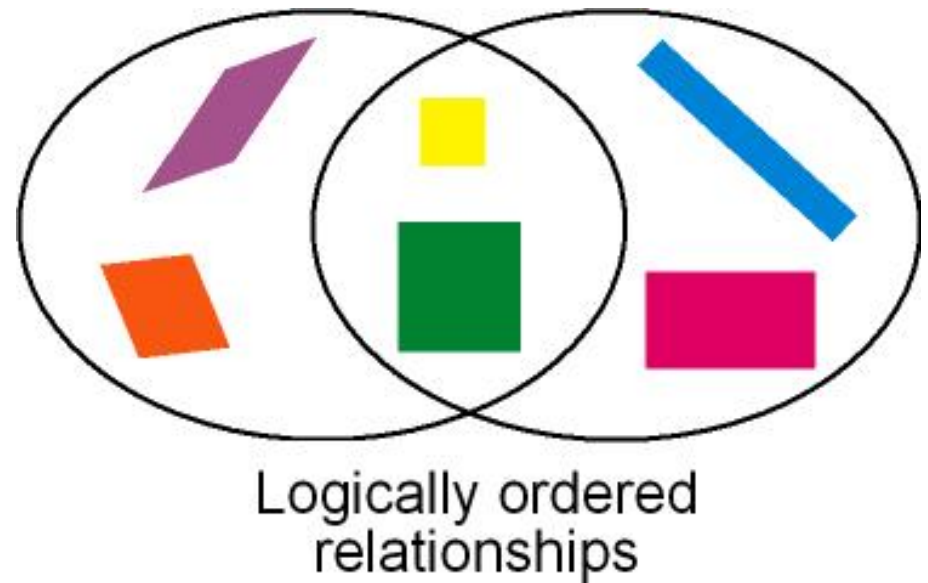
## 2. Analysis

Recognize and name properties but do not understand ordered relationships



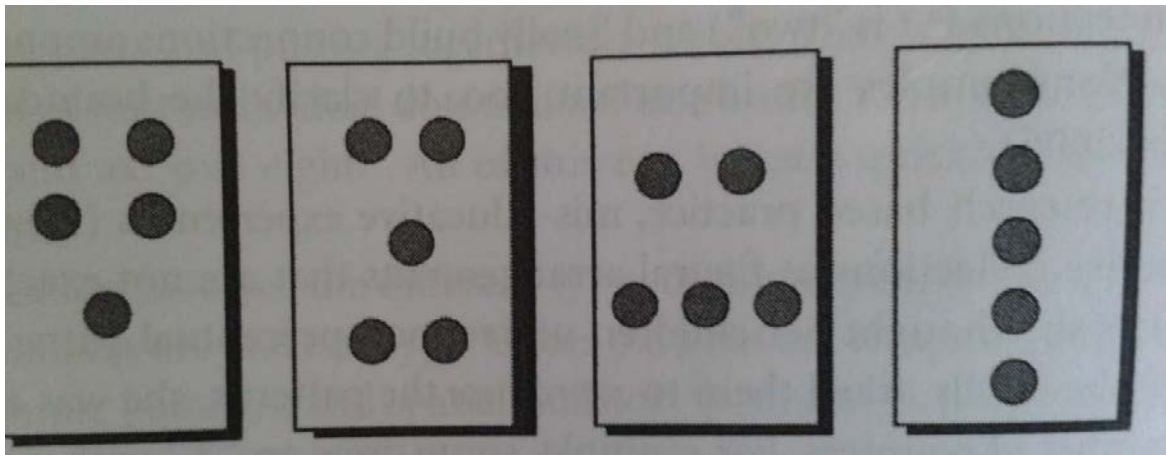
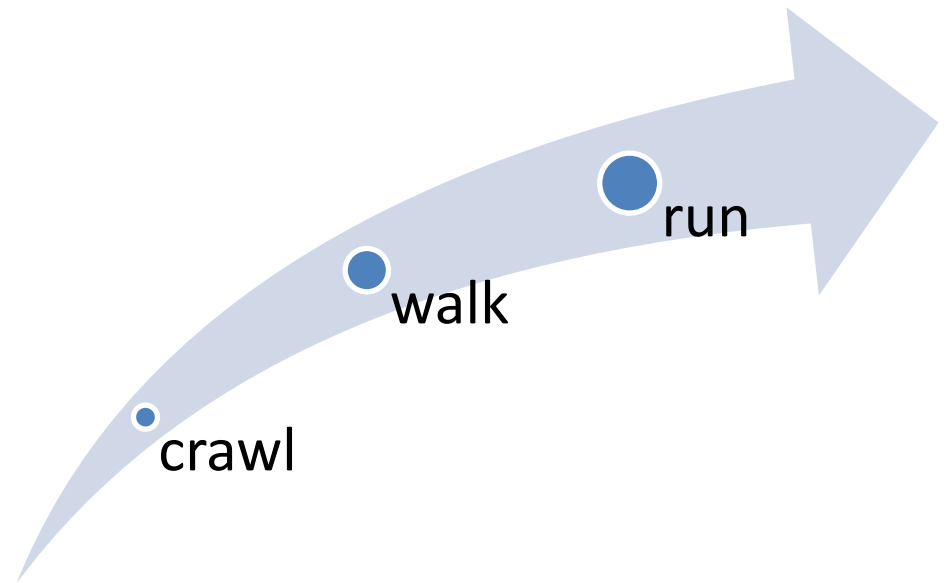
## 3. abstraction

Properties are logically ordered



## The learning trajectories approach.

Children follow natural development progressions in learning and development. As a simple example, **they learn to crawl, then walk, then run, skip and jump with increasing speed and dexterity.**



conceptual subitizing that may suggest 5 as 4+1, 2+1+2, 2+3 or 5

## Montessori education

- Mixed age classrooms, with classrooms for children aged 2½ or 3 to 6 years old by far the most common
- Specialized educational materials developed by Montessori and her collaborators



## Educational toys

Pink tower- building the tower in sequence.

### Purpose

Visual discrimination of **dimensions**.

\_Refinement of **voluntary movement**

-Refining **visual-motor coordination** and is called upon to concentrate.

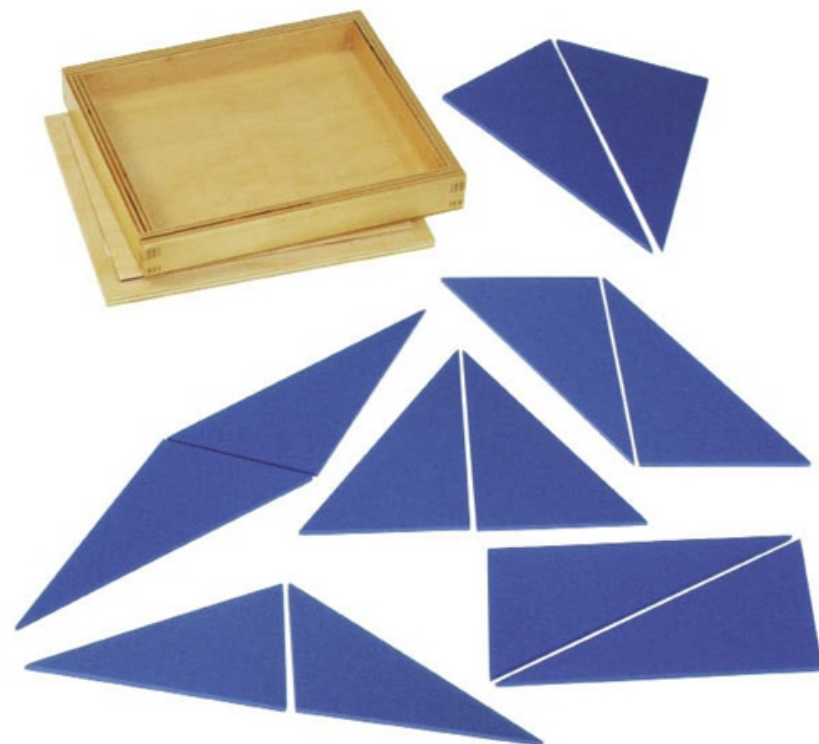
\_Preparation for mathematics.



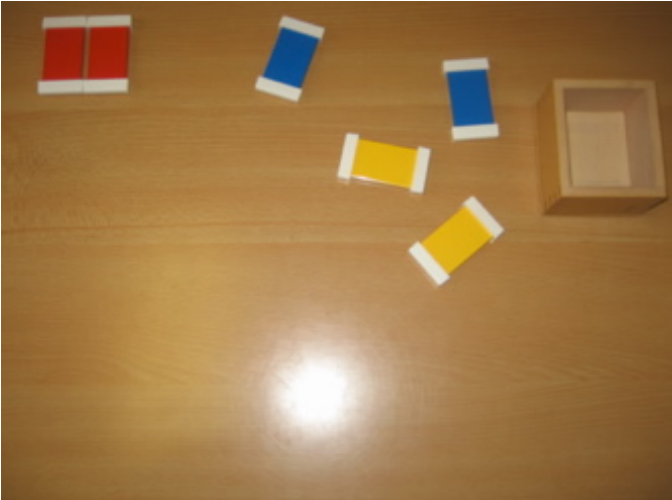




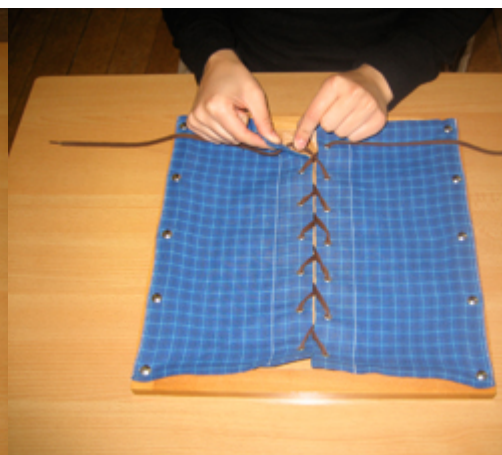
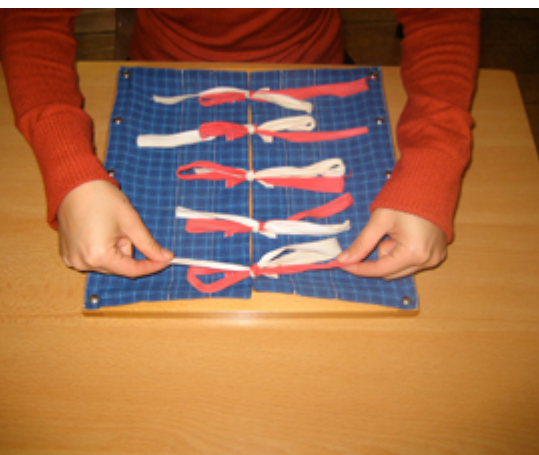
Wooden cylinders



Constructive triangles



Colour matching



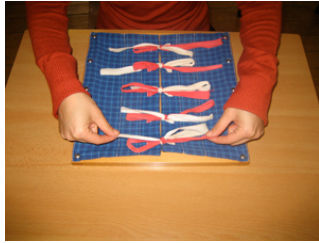
Dressing frames







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Motor skill



Social skill



# Skill development

Mathematic concept



creativity



science



Furniture in the market

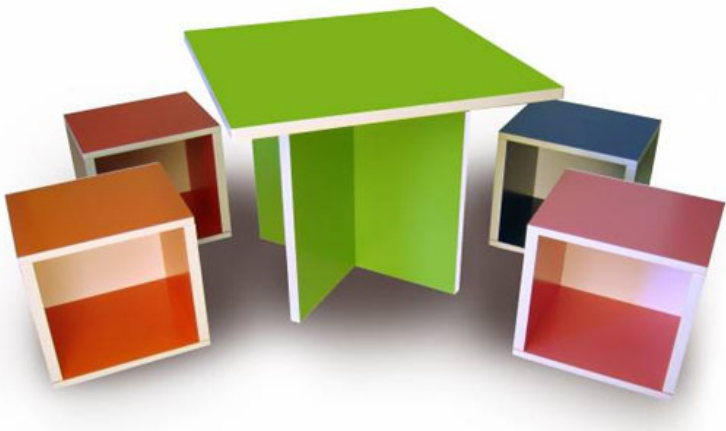






General furniture





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## Scope of the project

- The challenge of combining a furniture with a play and learn method is an opportunity to explore and develop on creative skills.
- This product category has the scope **to take over the general furniture** as there is an educational drive towards play and learn.
- Can be aptly seated in schools that are **dedicated to play and learn environments**.
- Such kind of furniture , will add to the **value of an institution**



## Design **direction**

The design should bring in the possible aspects of the play and learn elements within the furniture, for various skill development.

Play and learn can be achieved with combination and composition of more than one furniture.  
The design should not loose the identity of a furniture.



## Design brief

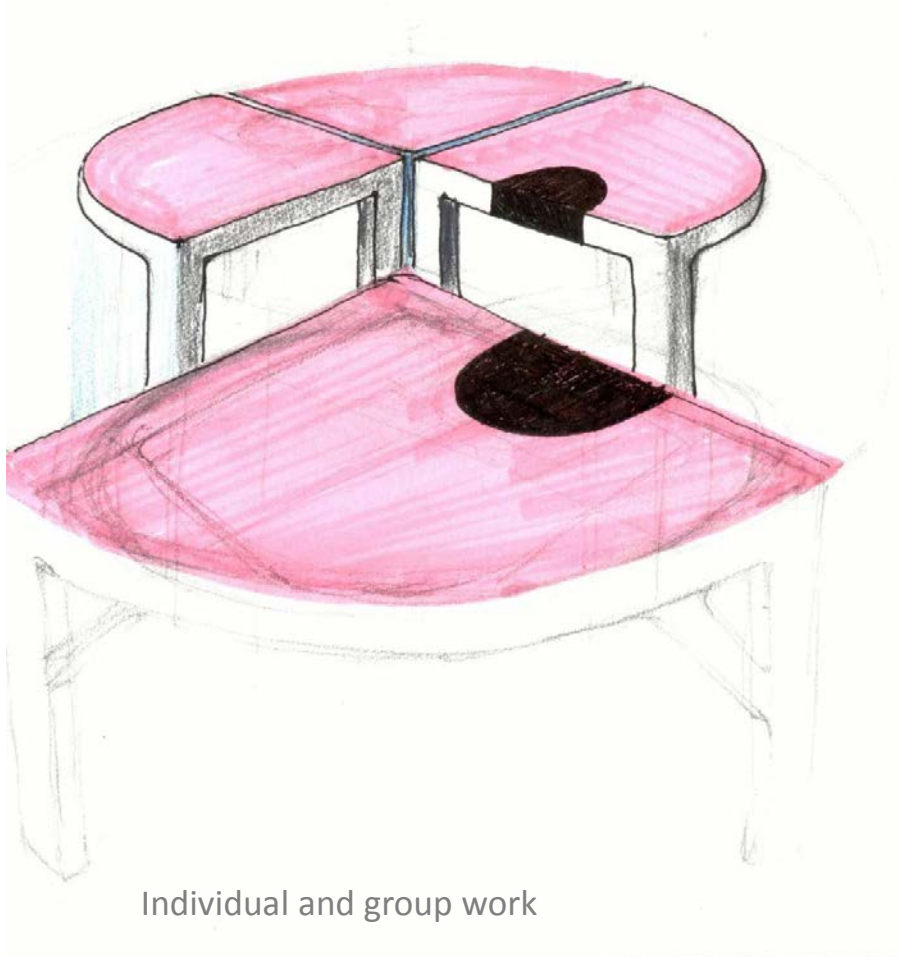
- The design should aim to make the furniture a context for learning through play.
- The design must be suitable for children in the age category 3 to 6 years.
- The design should cater to the changing needs of a child.
- The design being in an environment which is the world for a child, much engage the child in active play which comes along with learning.
- The design must have the ability to develop certain skill set required for the age category.

The design should have the potential to expose the child to basic concepts of cognition .The furniture must provide an opportunity to engage the child in imaginative and creative play. The design must be flexible to take up different combination of patterns and can have an option of stacking.

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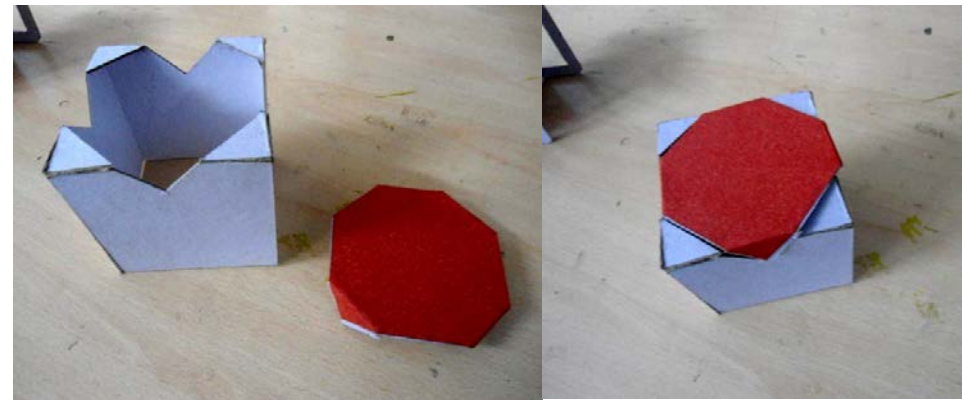
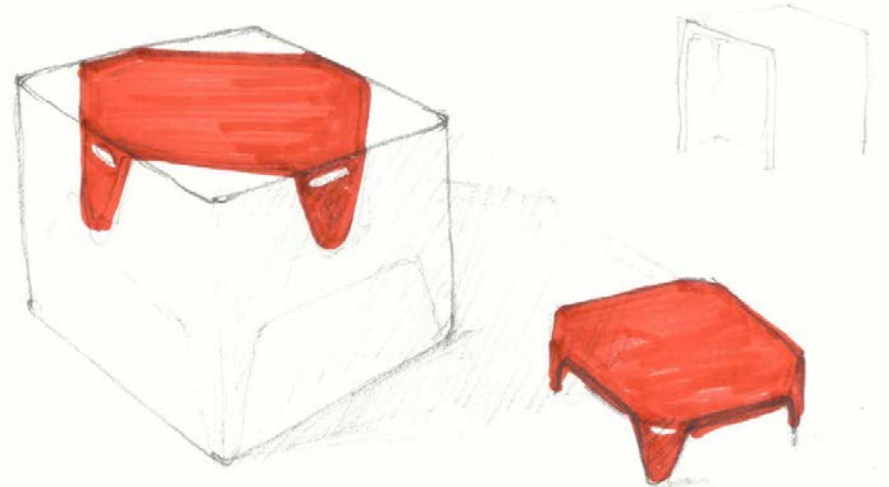
## ideation 1



Individual and group work

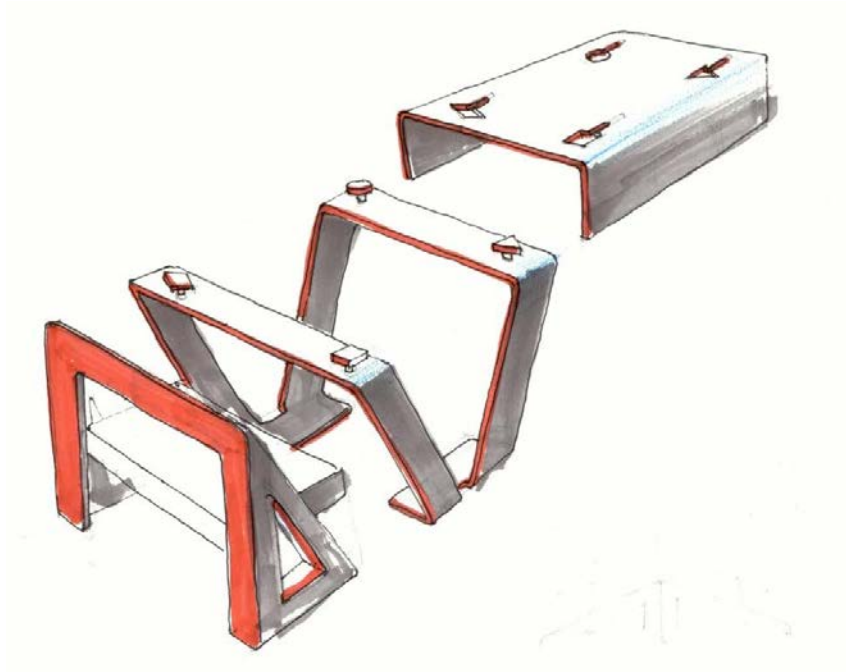
Colour matching  
Shape matching

## ideation 2



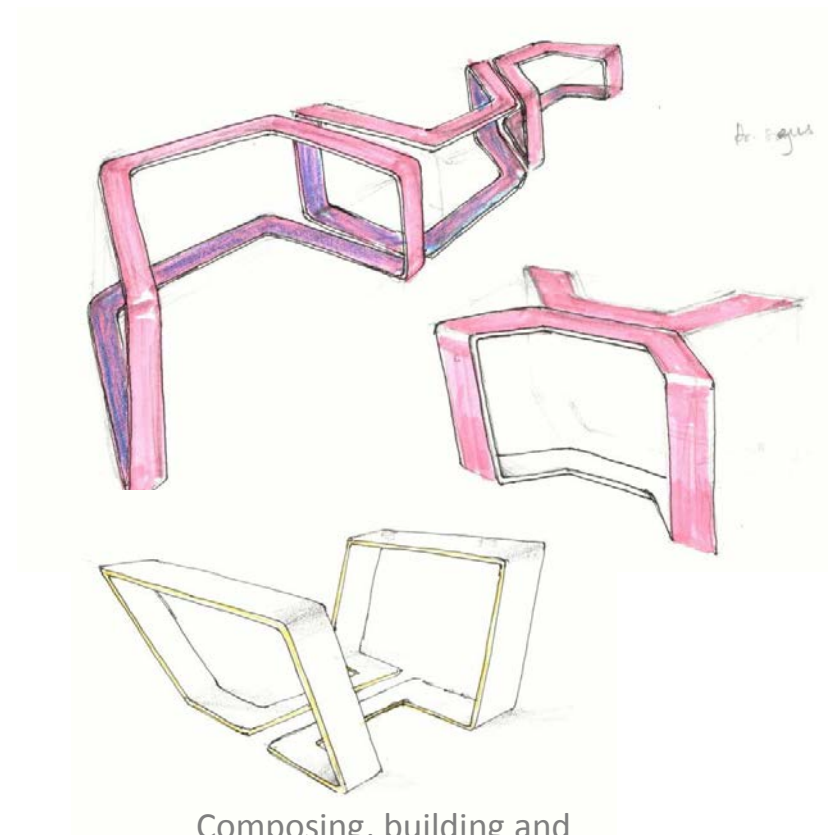
A smaller stool can be removed from the bigger.  
Motor skill development  
Shape recognition

## Ideation 3



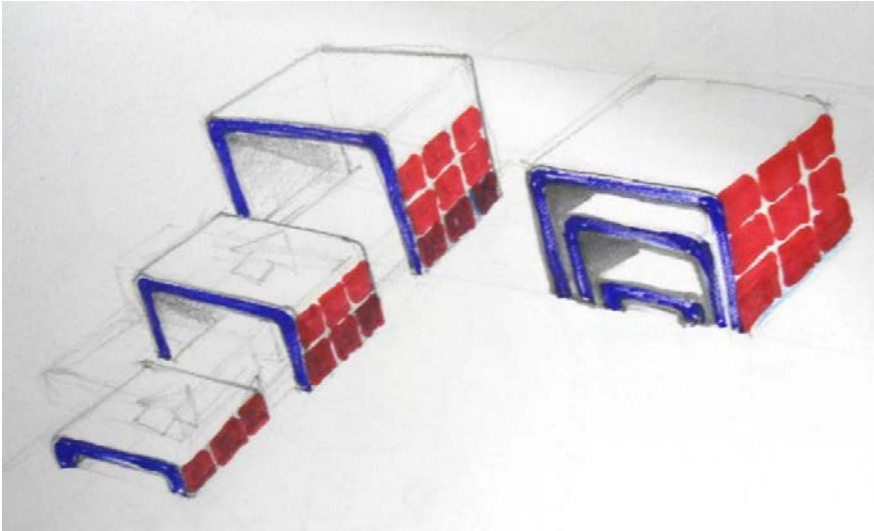
Shape matching, aligning,  
composition, Eye and hand  
movement coordination

## Ideation 4



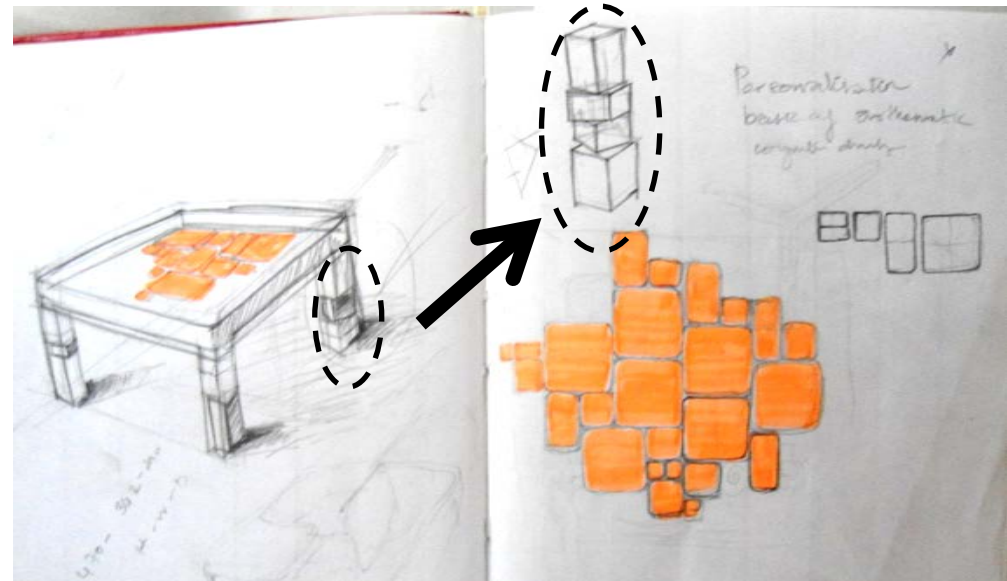
Composing, building and  
manipulating forms.

## ideation 5



Sequencing, order and scale understanding.

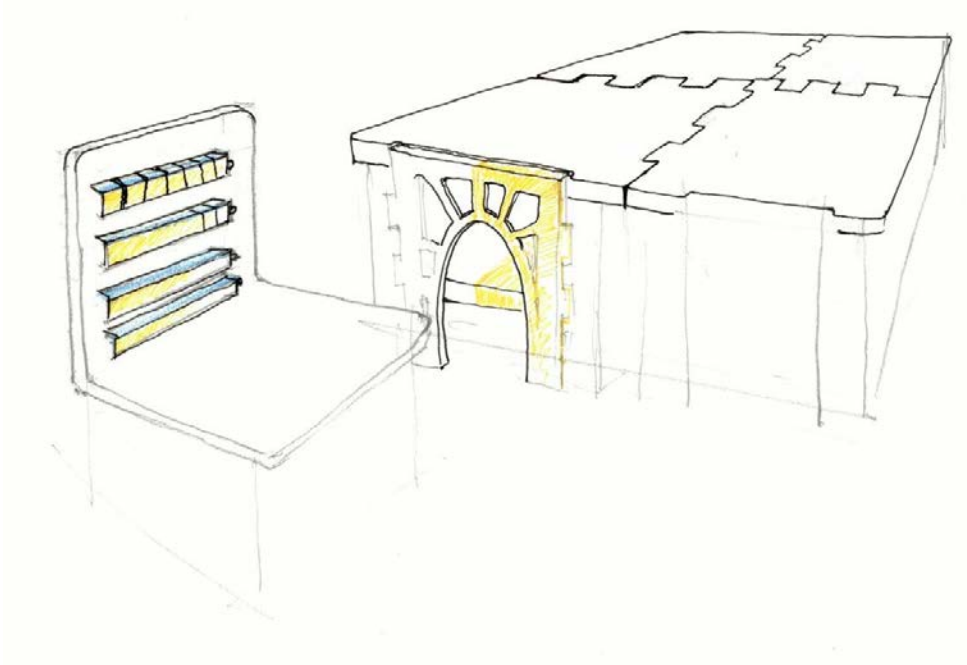
## ideation 6



Opportunity to personalise space.

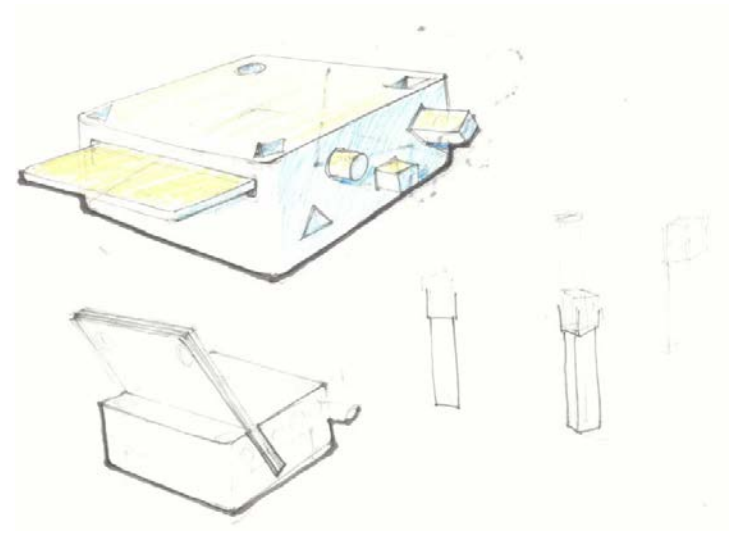


## Ideation 9

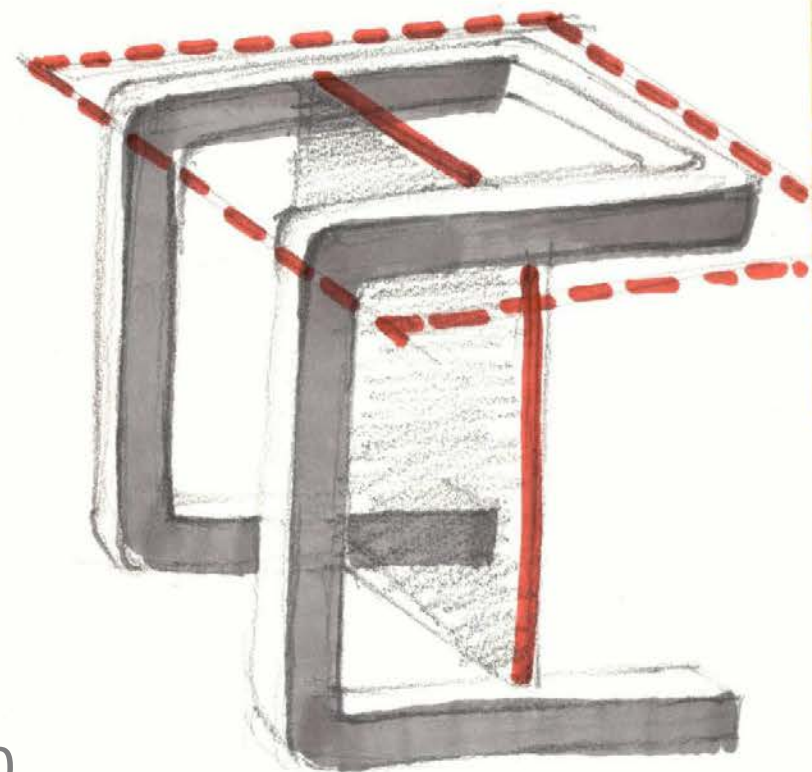
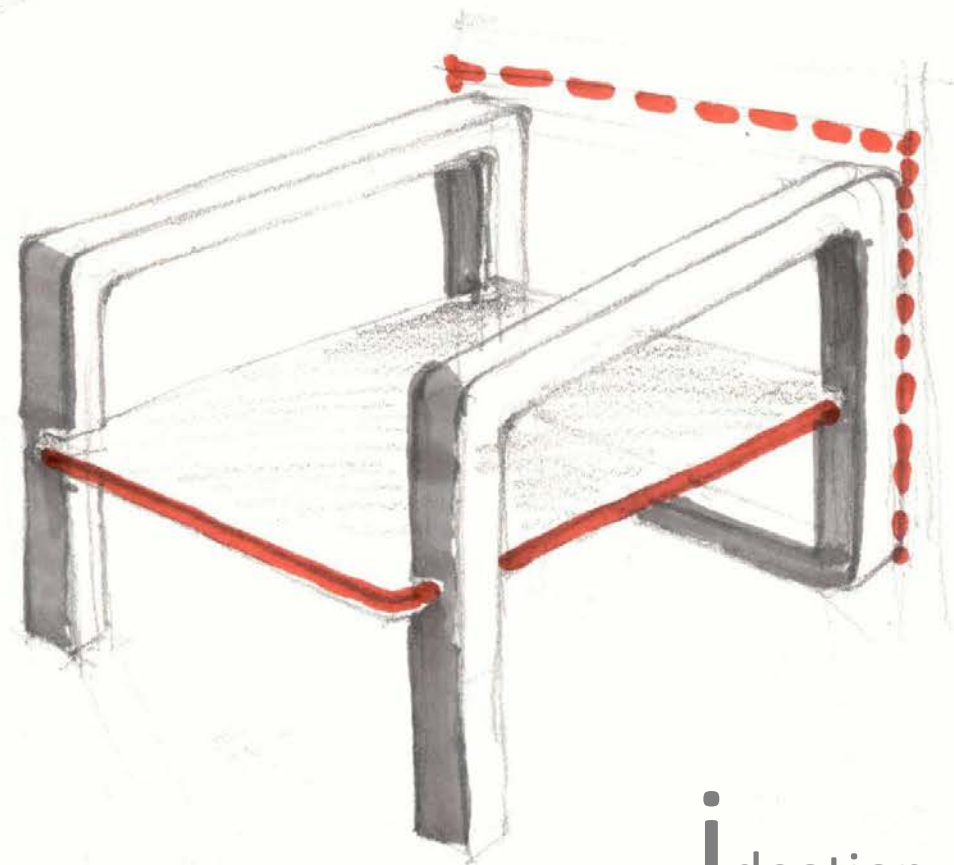
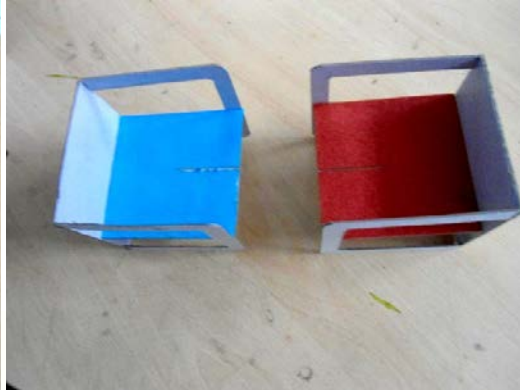
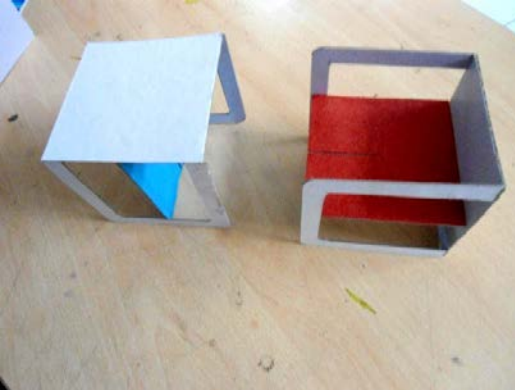


Composition, visual matching ability. Eye and hand movement coordination

## Ideation 10



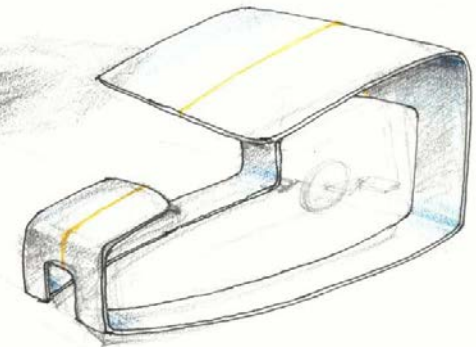
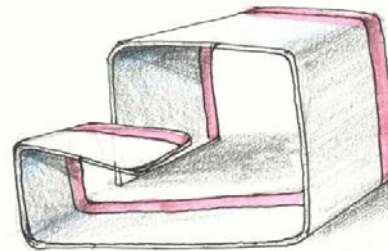
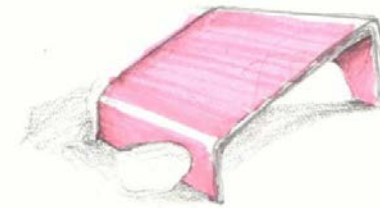
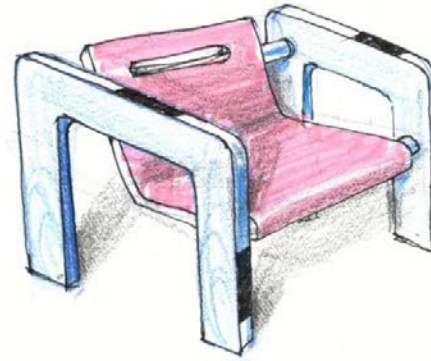
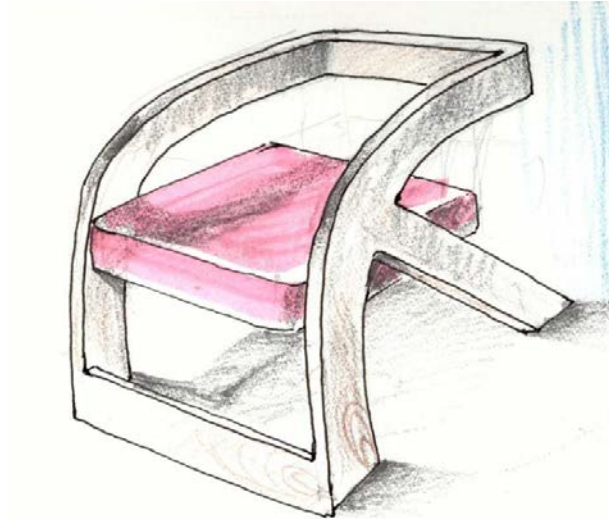




i deation 10

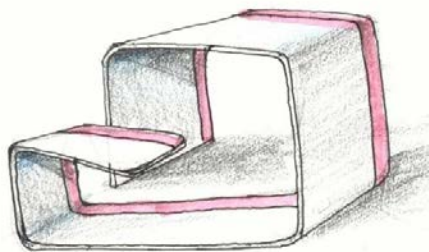
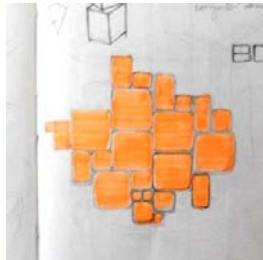
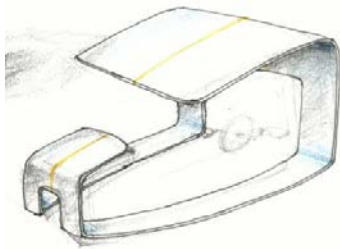
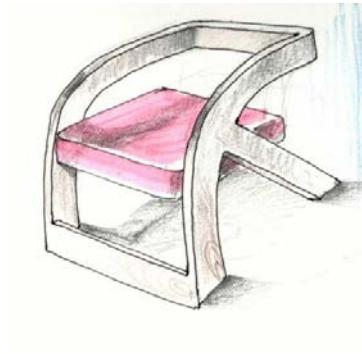


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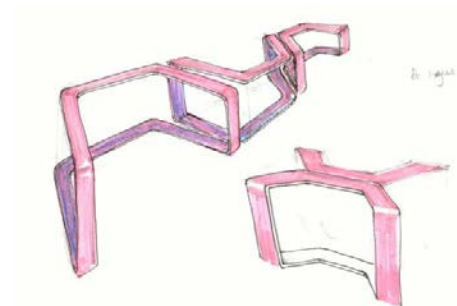
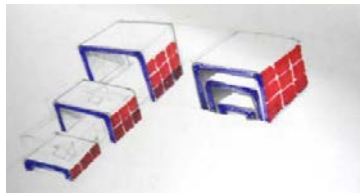
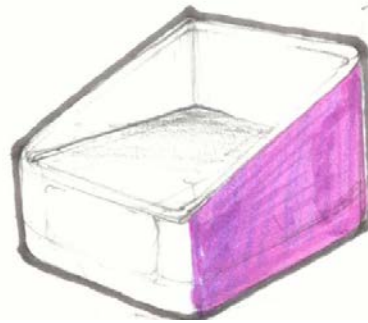
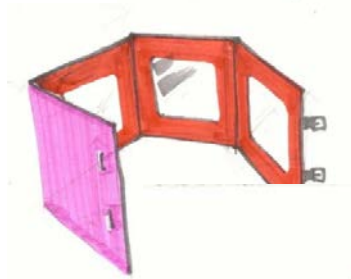
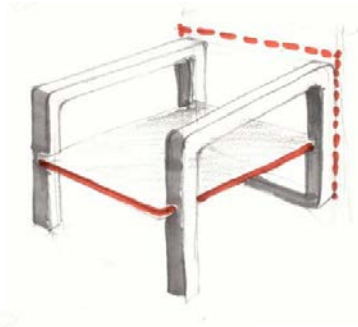


Clusters

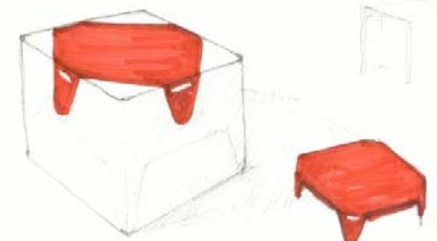
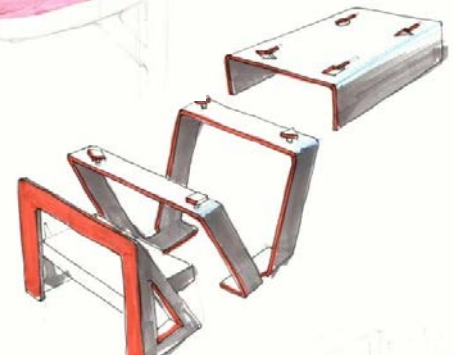
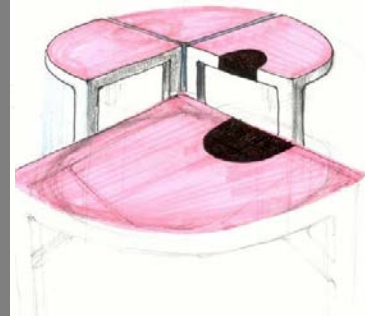
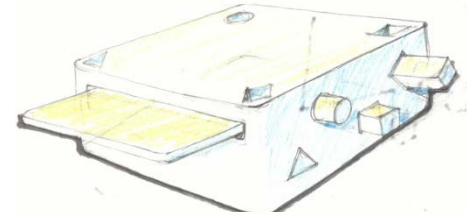
## Physical play



## Combination/ manipulation

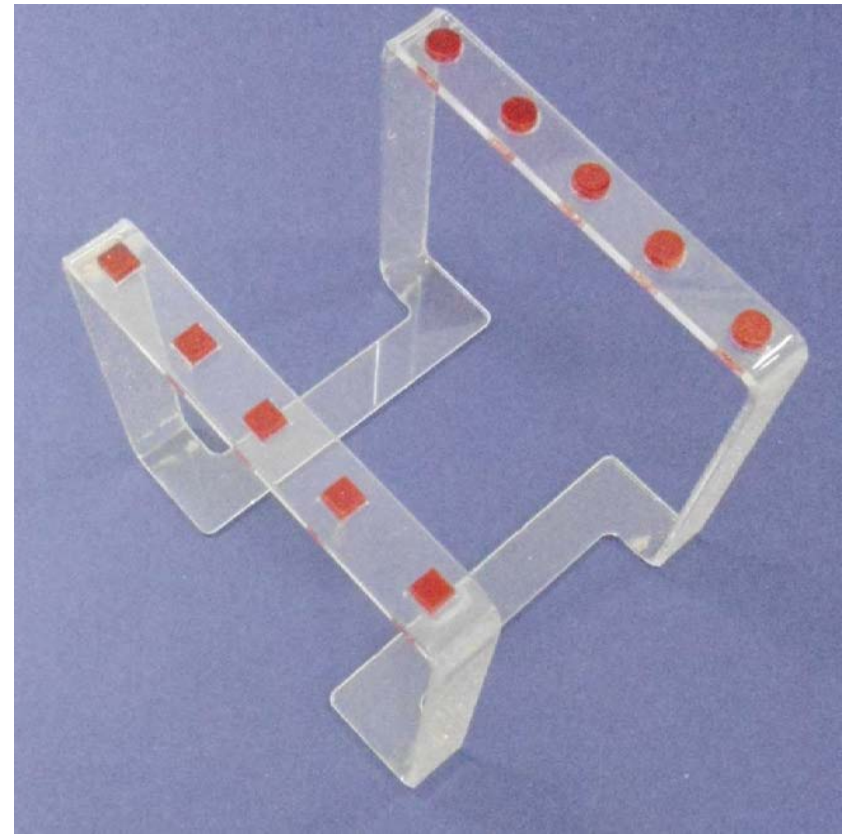


## additive



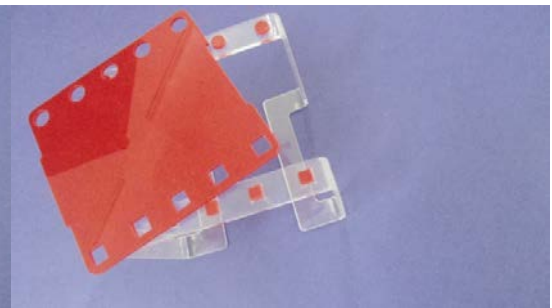
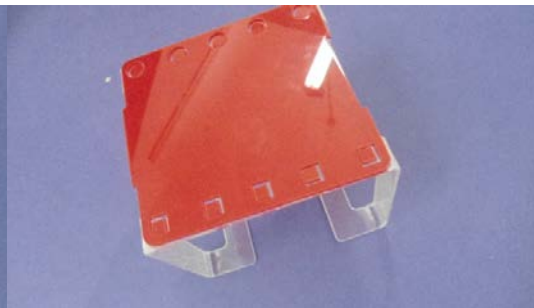
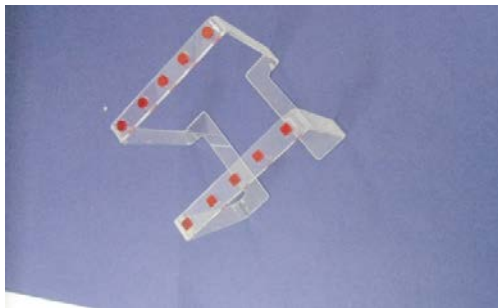
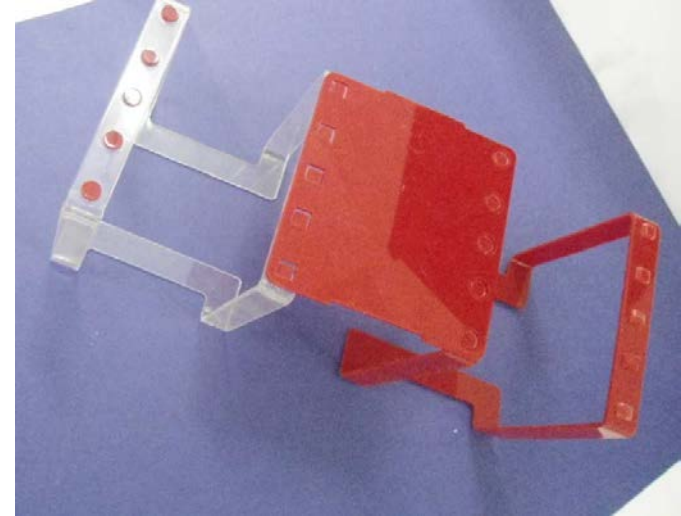
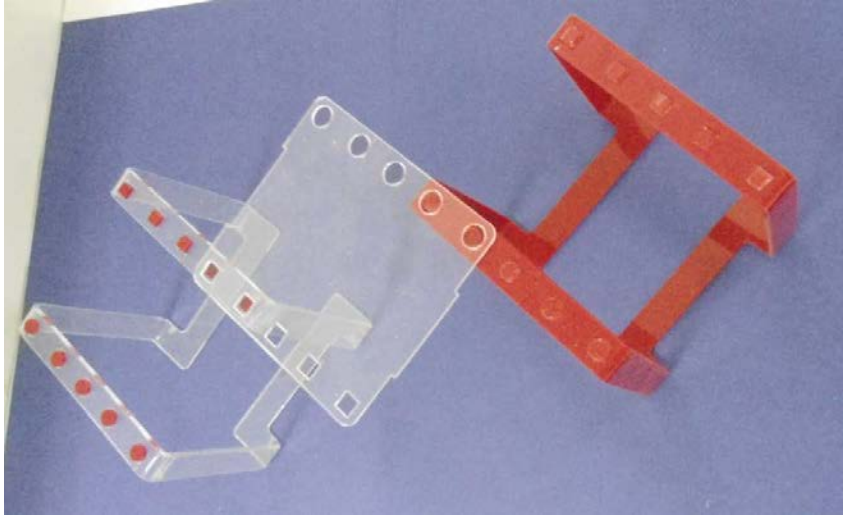
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## Concept 1





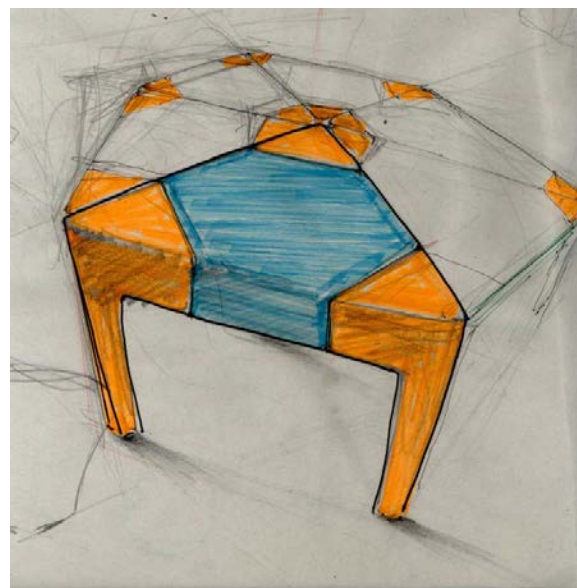
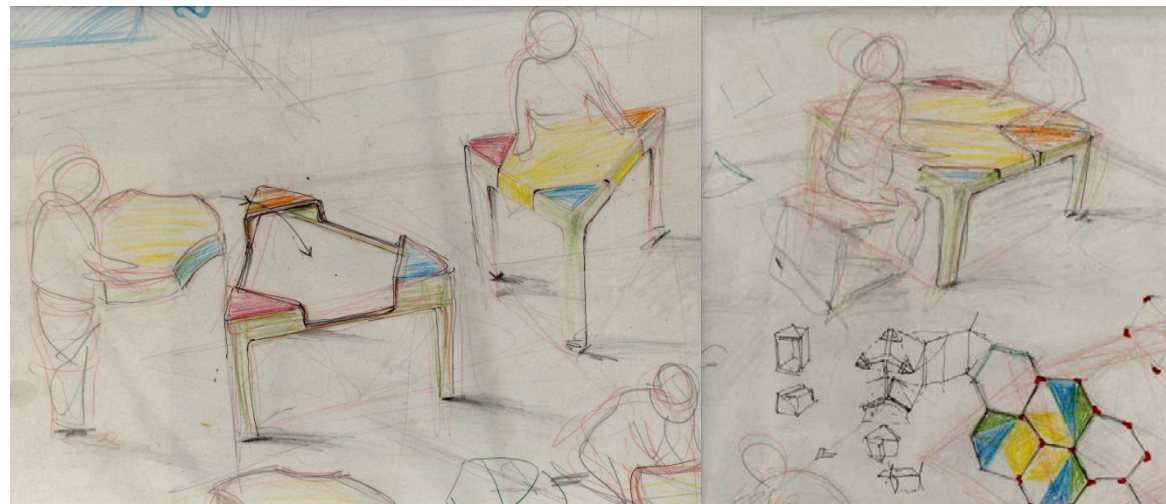
## Concept 1 exploration

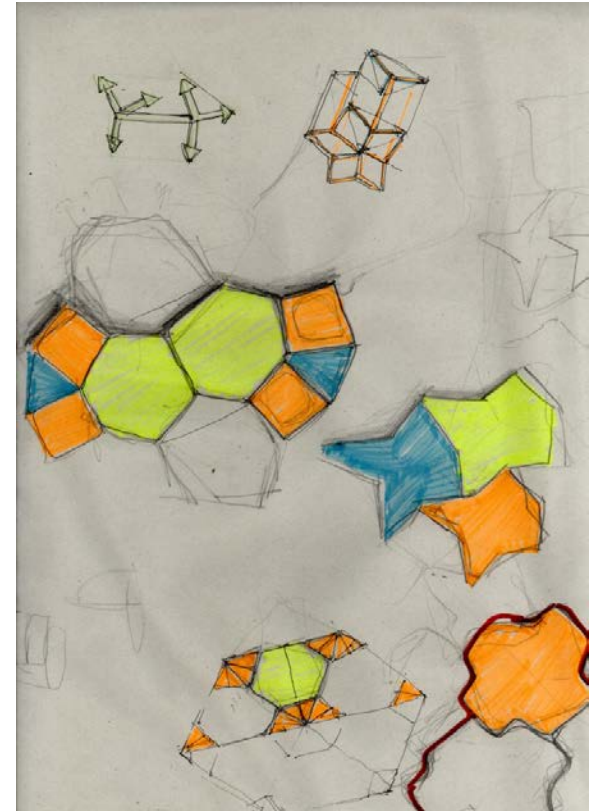
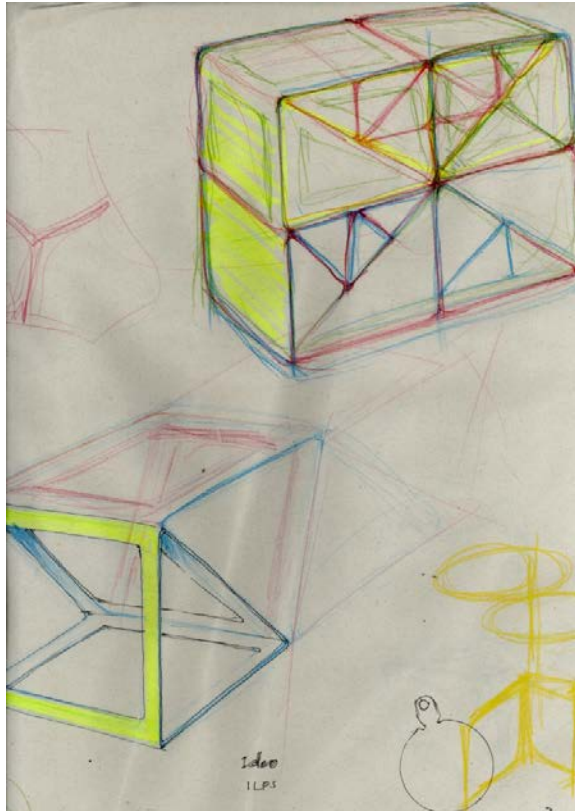




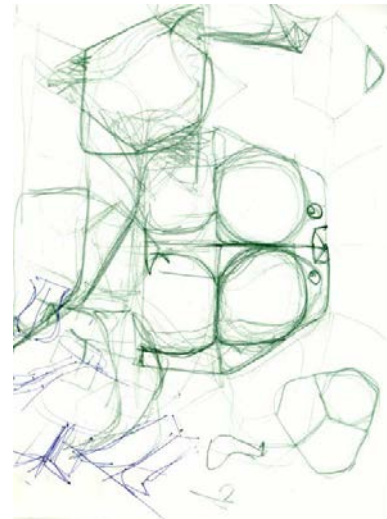
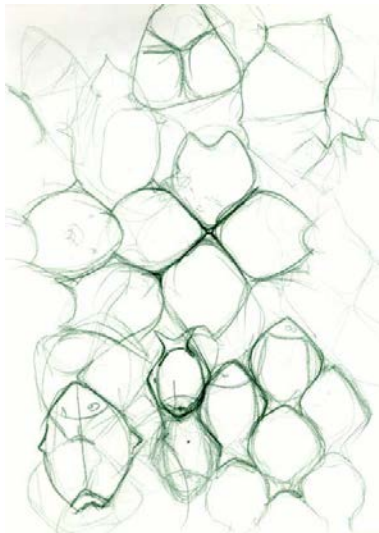
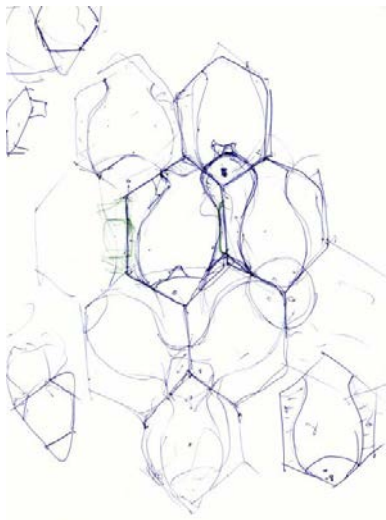
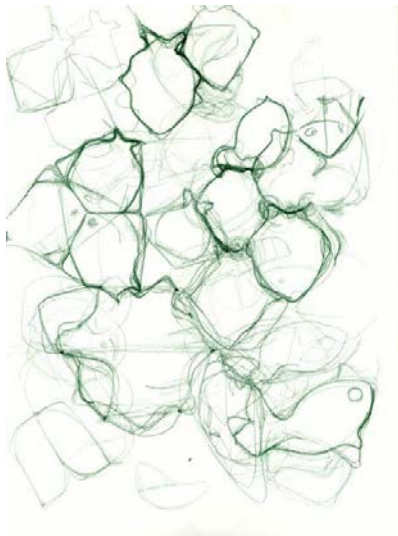


Exploration based ideation





Shape composition exploration



Tessellation as a tool to learn



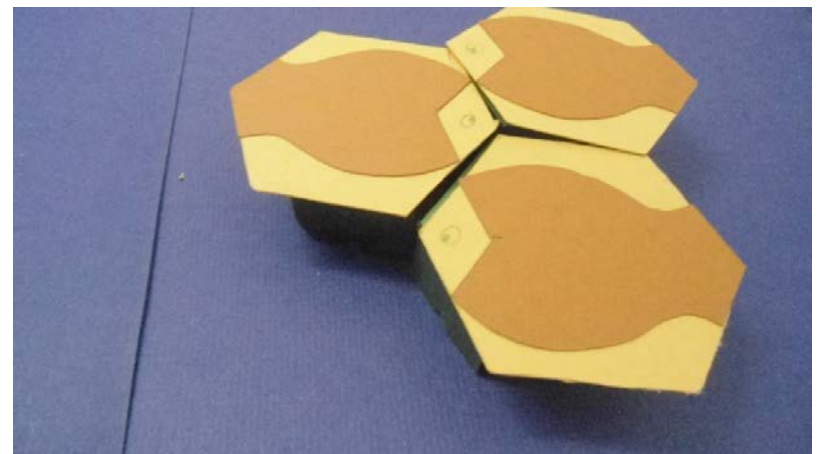
## Concept 2

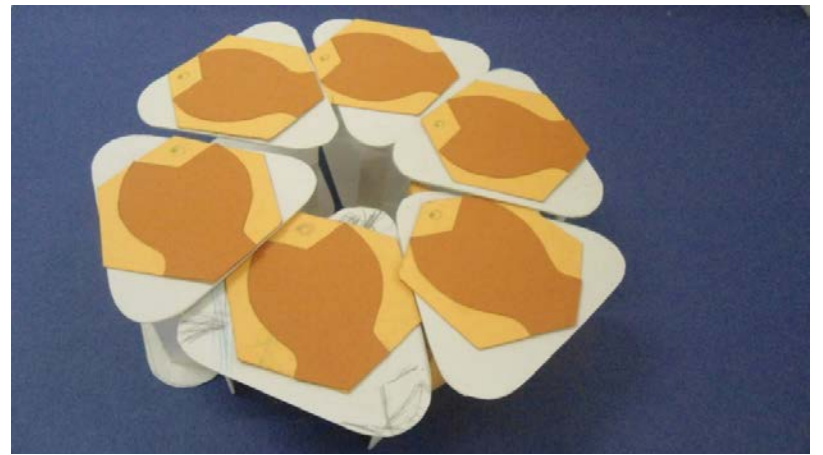




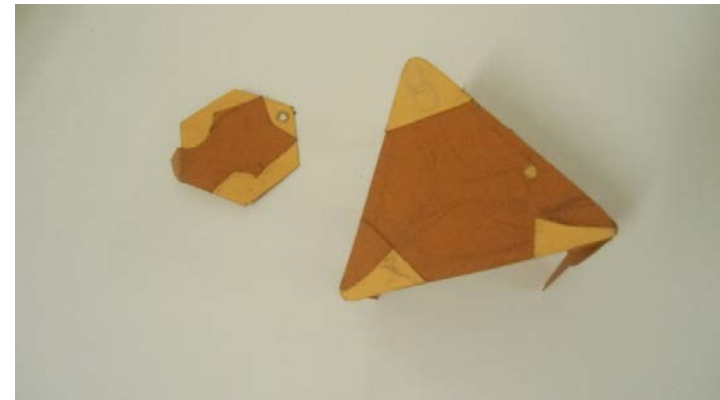


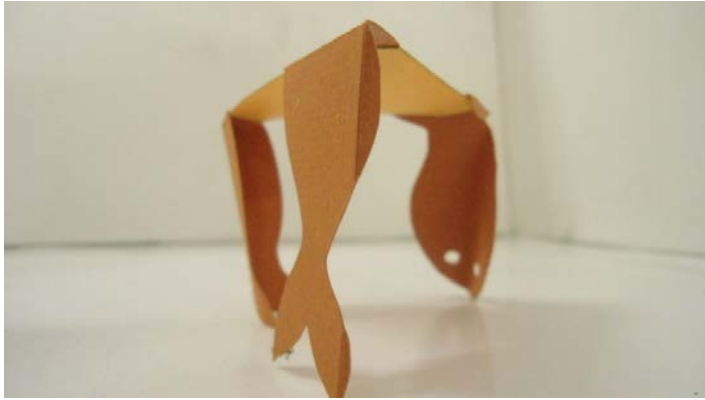
The removable part  
tessellates in the ground



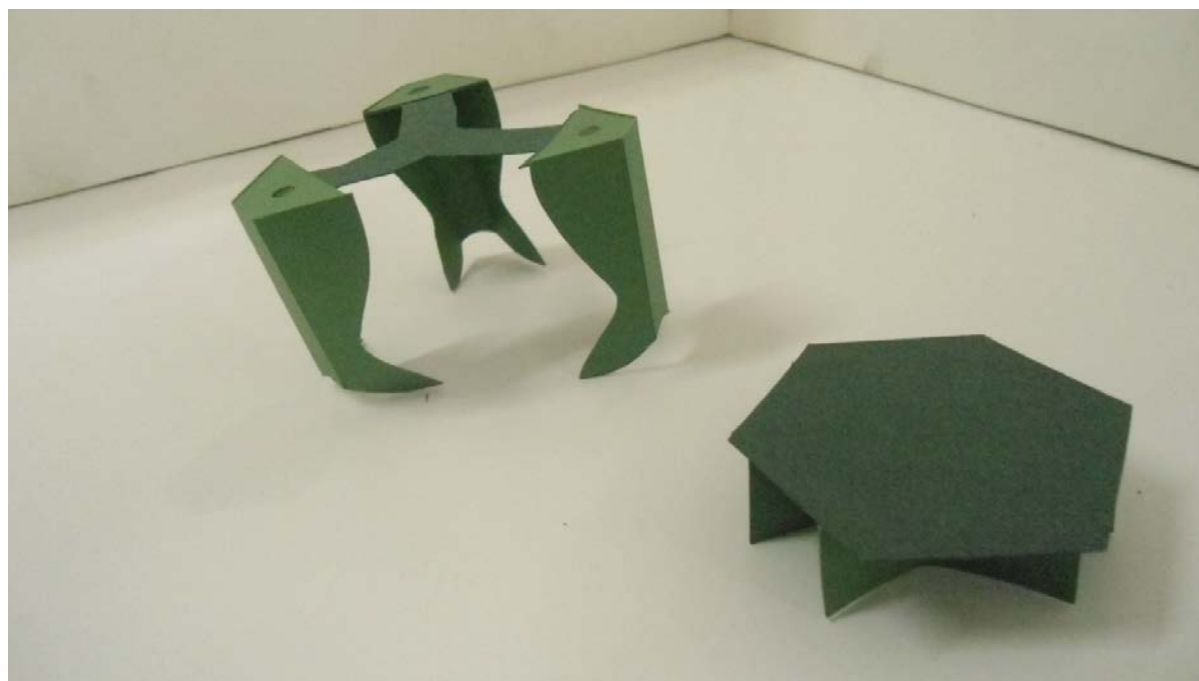
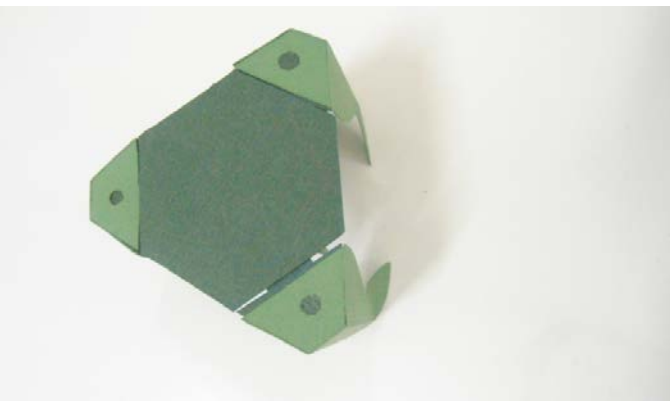


Concept 2 variation

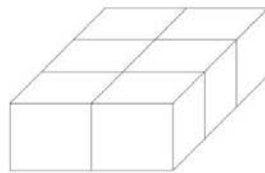
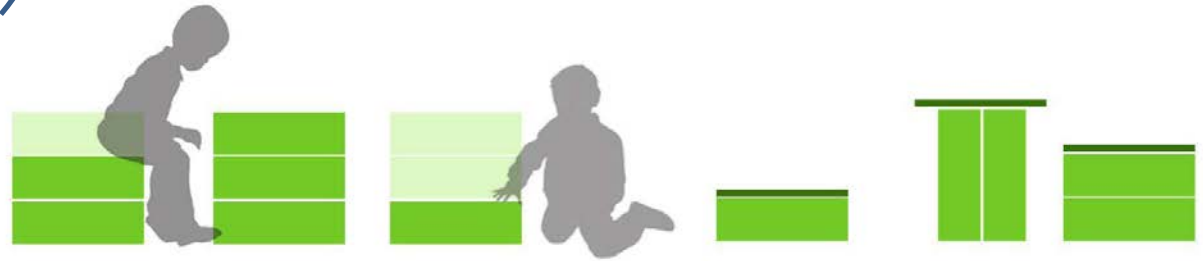


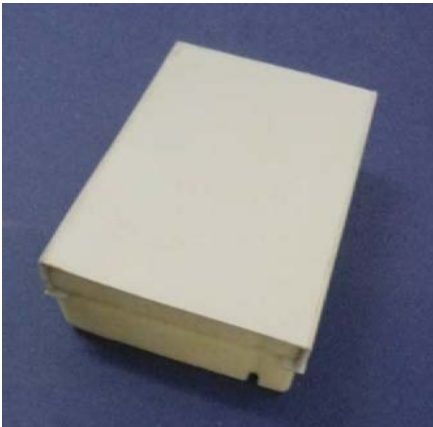
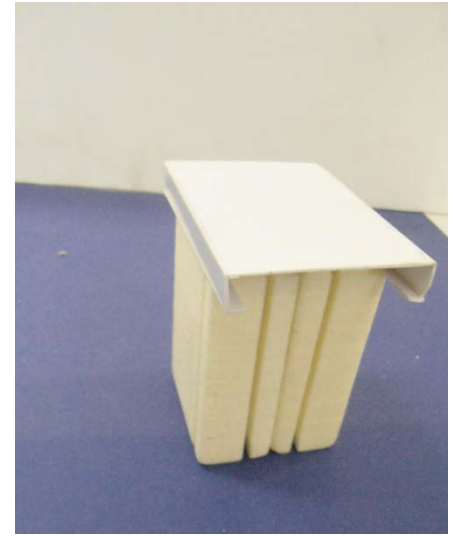


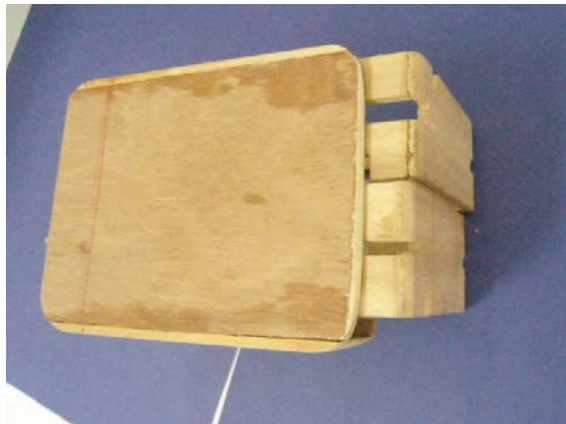
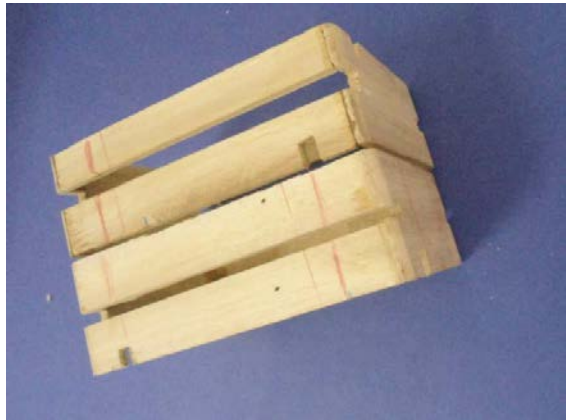




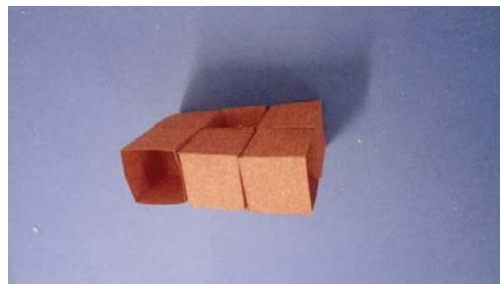
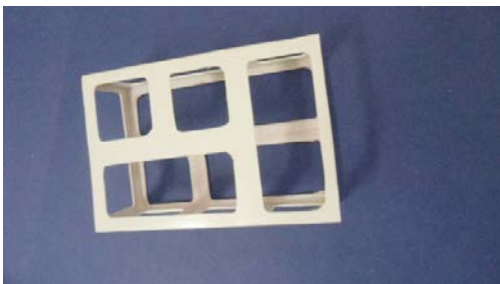
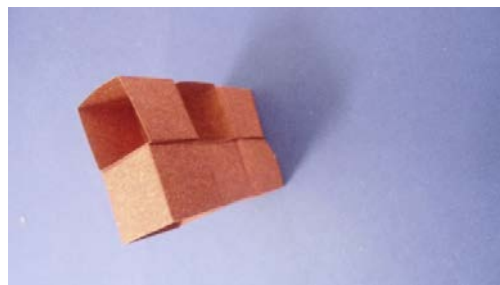
## Concept 3



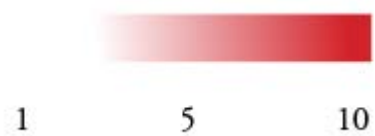








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criteria

concept 1

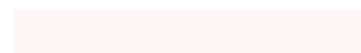
concept 2

concept 3

basic function



opportunity to learn



visual appeal



stack ability



element of play



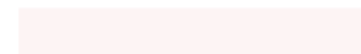
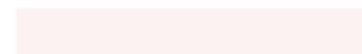
combining value



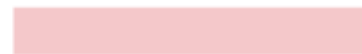
flexibility of usage



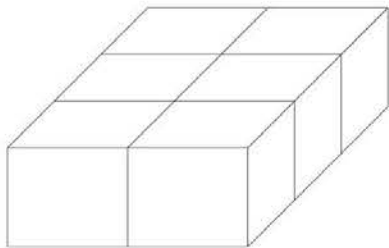
maintenance



ease of usage

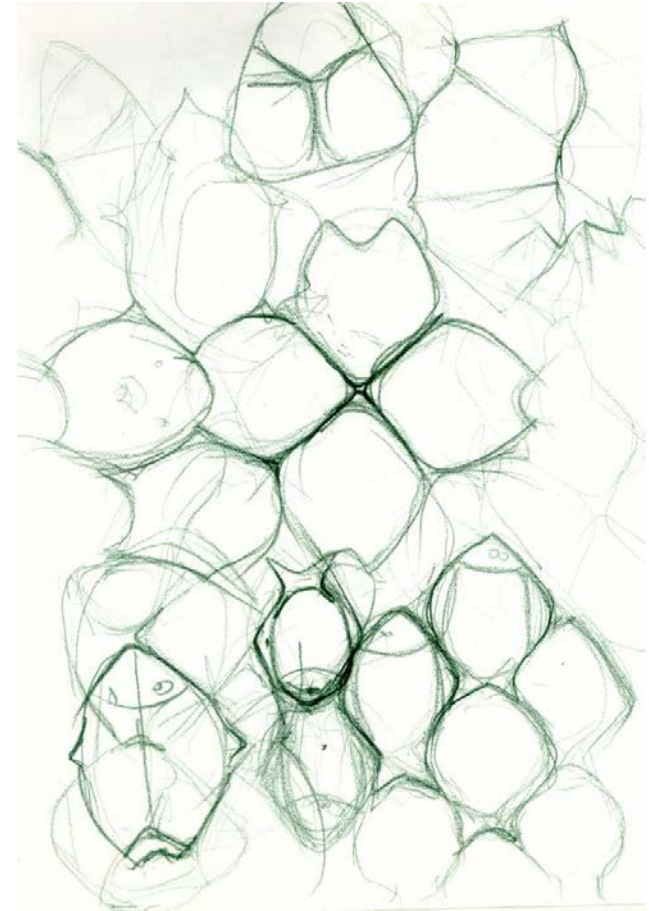
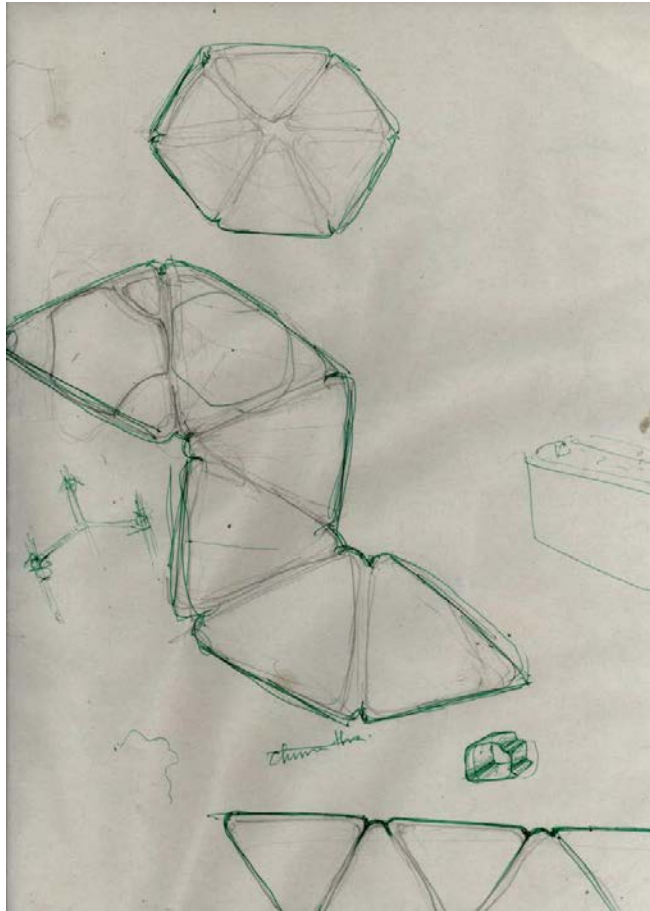


Final concept

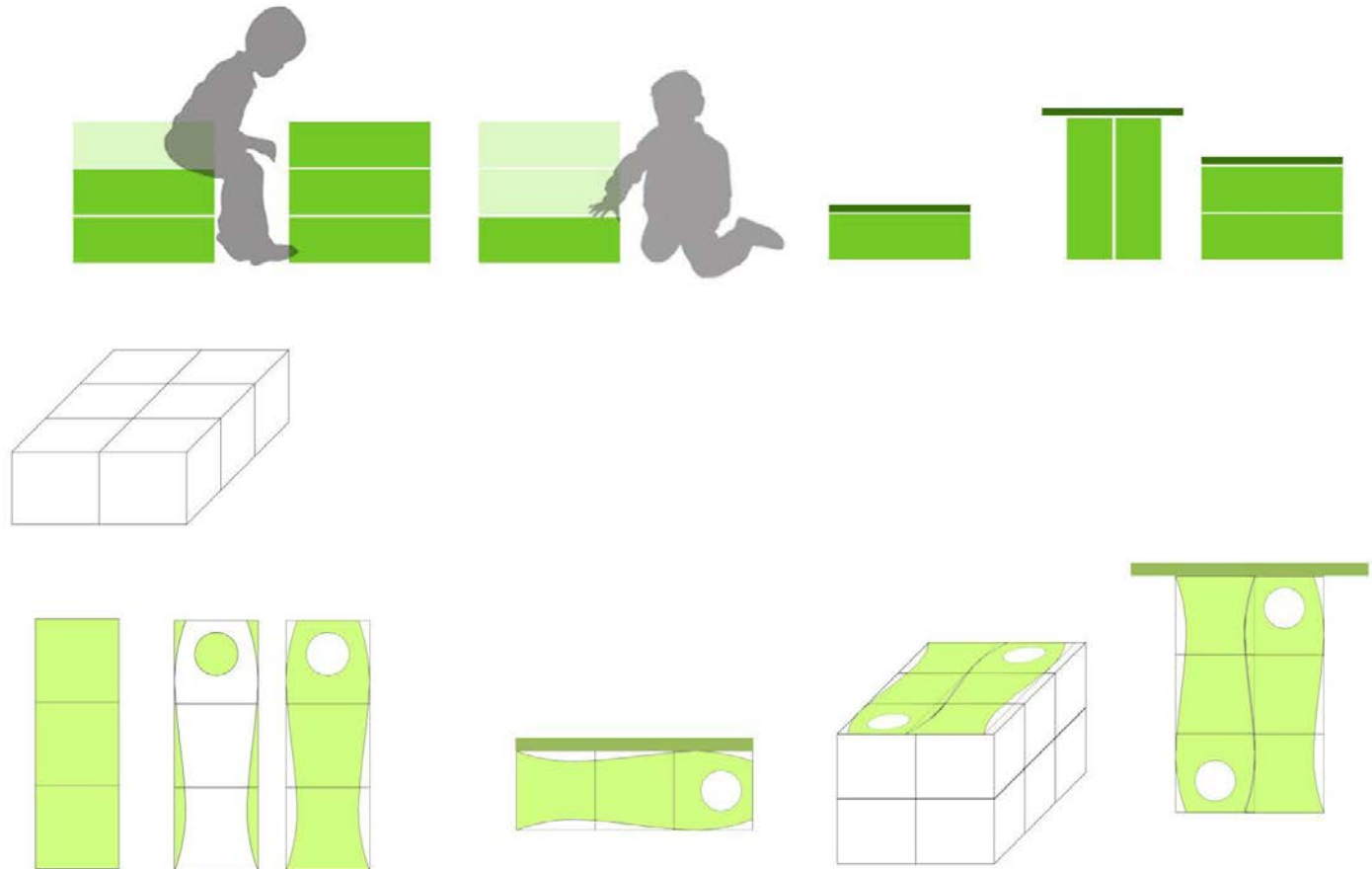
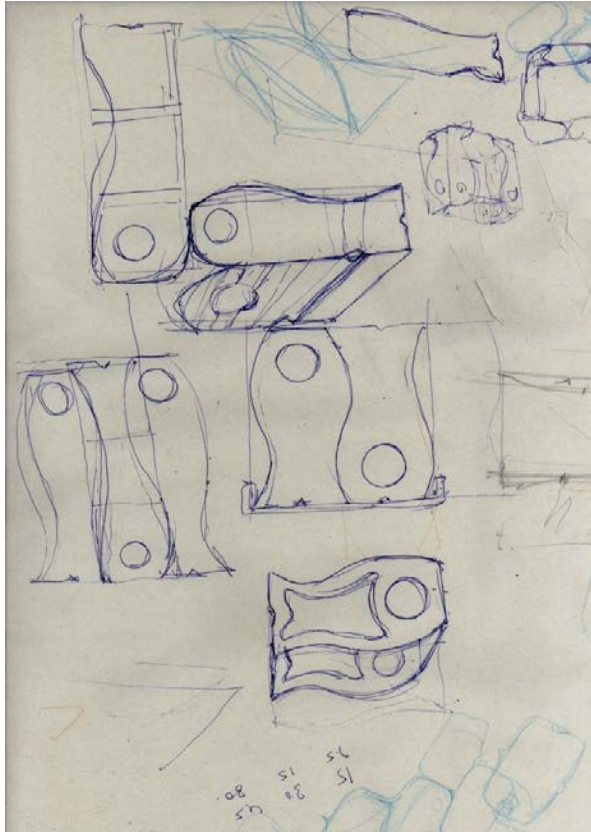




Revisiting the positive aspects of the other concepts



## Introducing a metaphor in the existing proportion



## Physical modelling

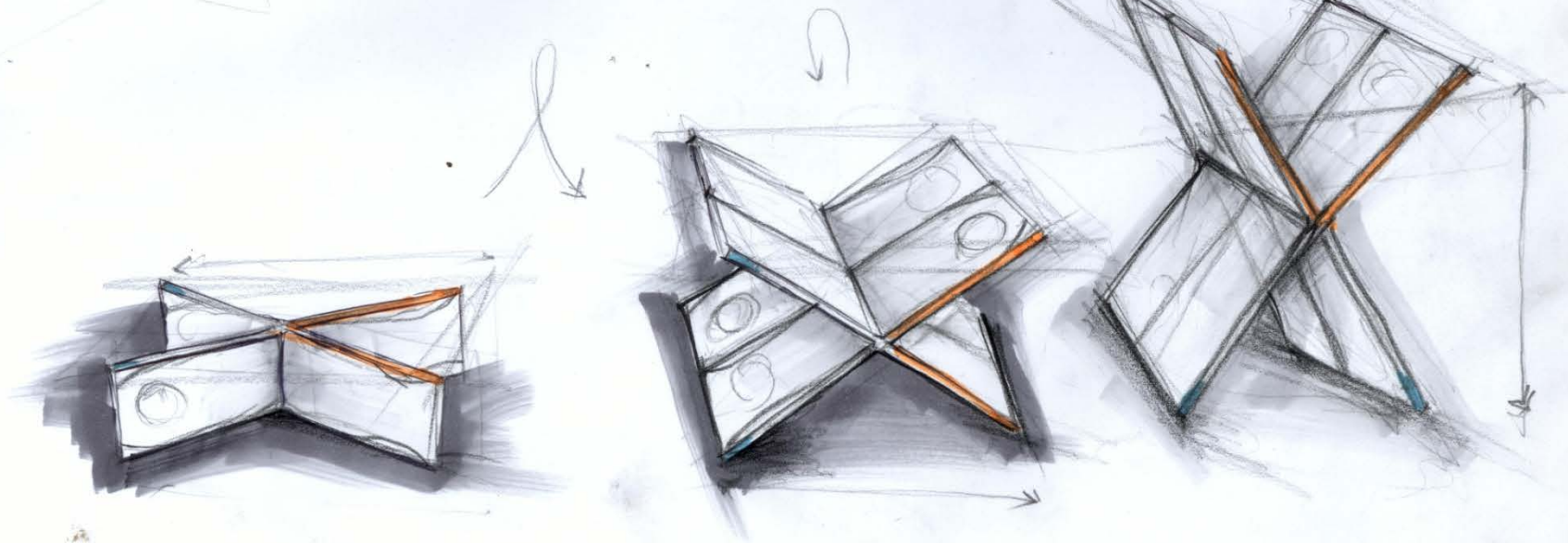
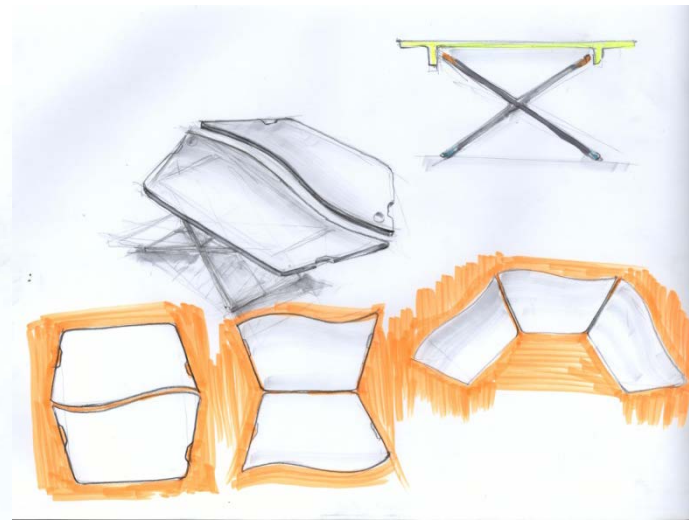
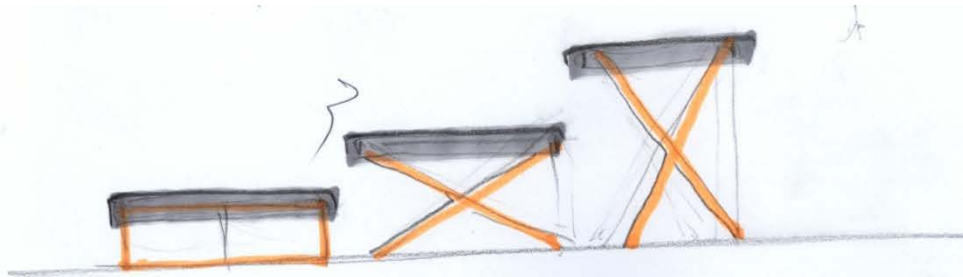




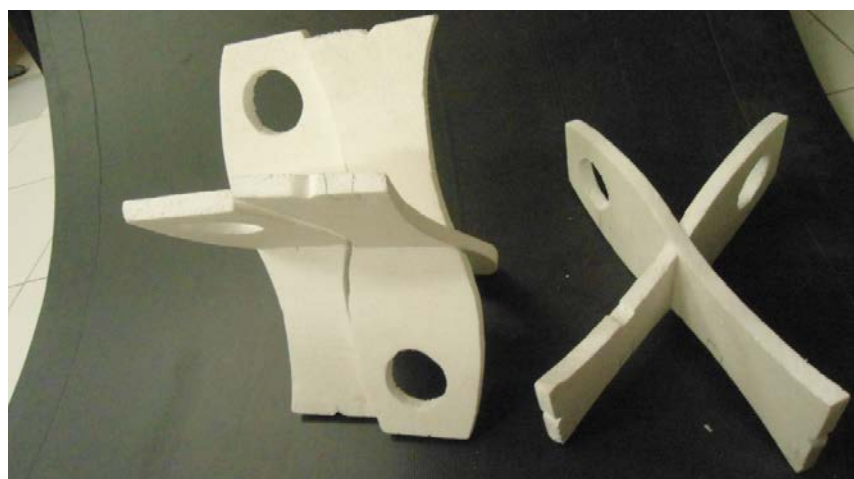
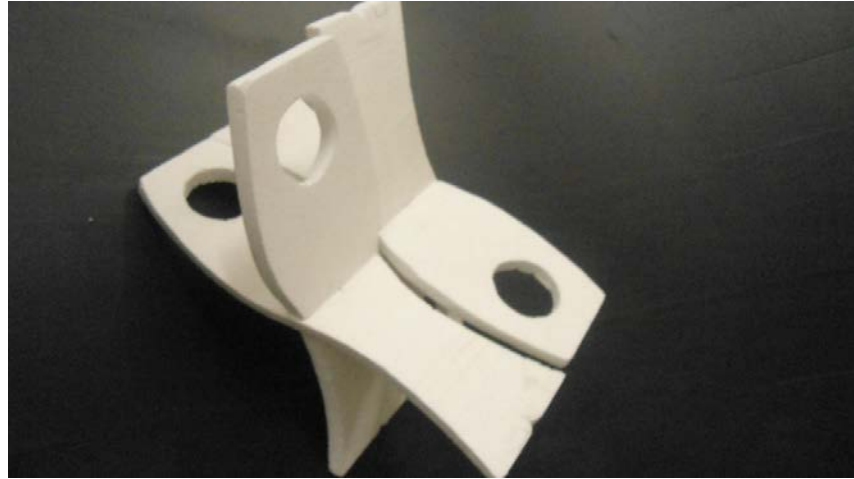
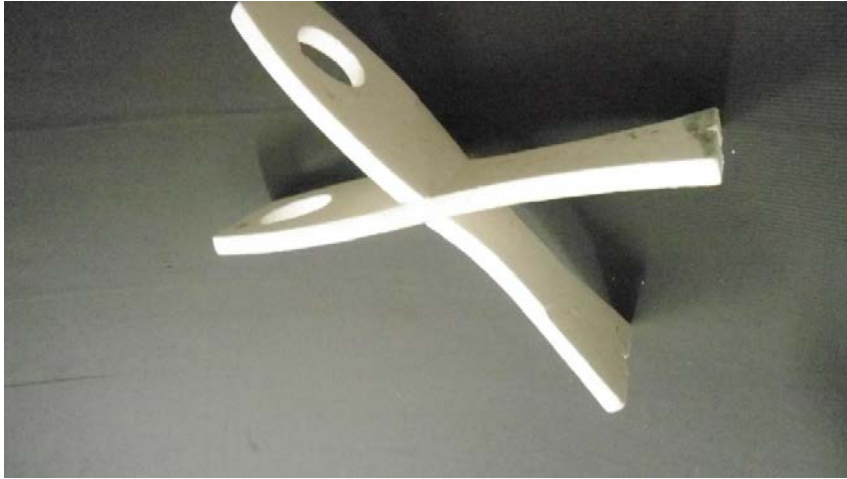
A table combination

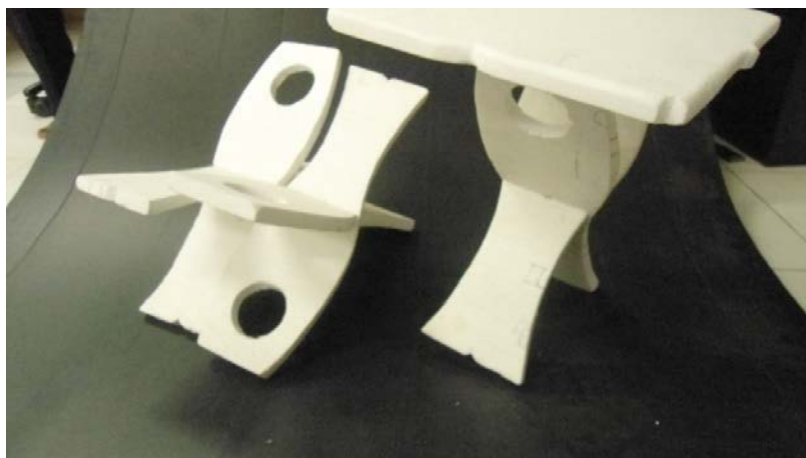






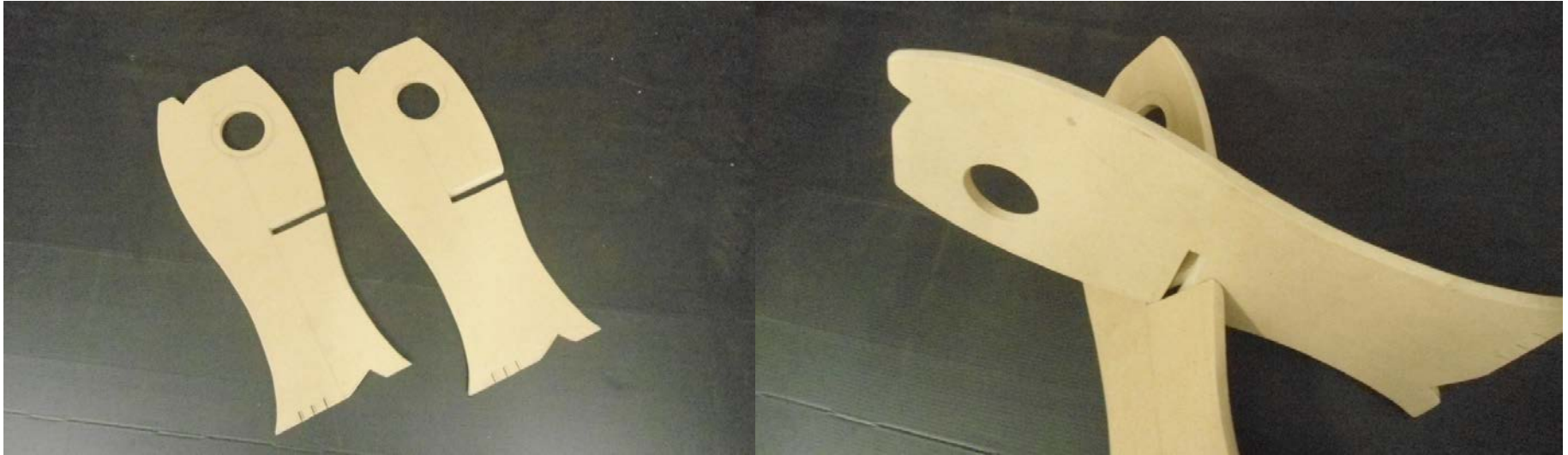
Exploring on the cross form



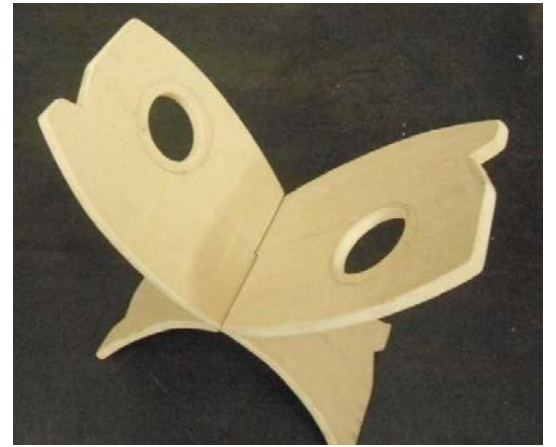




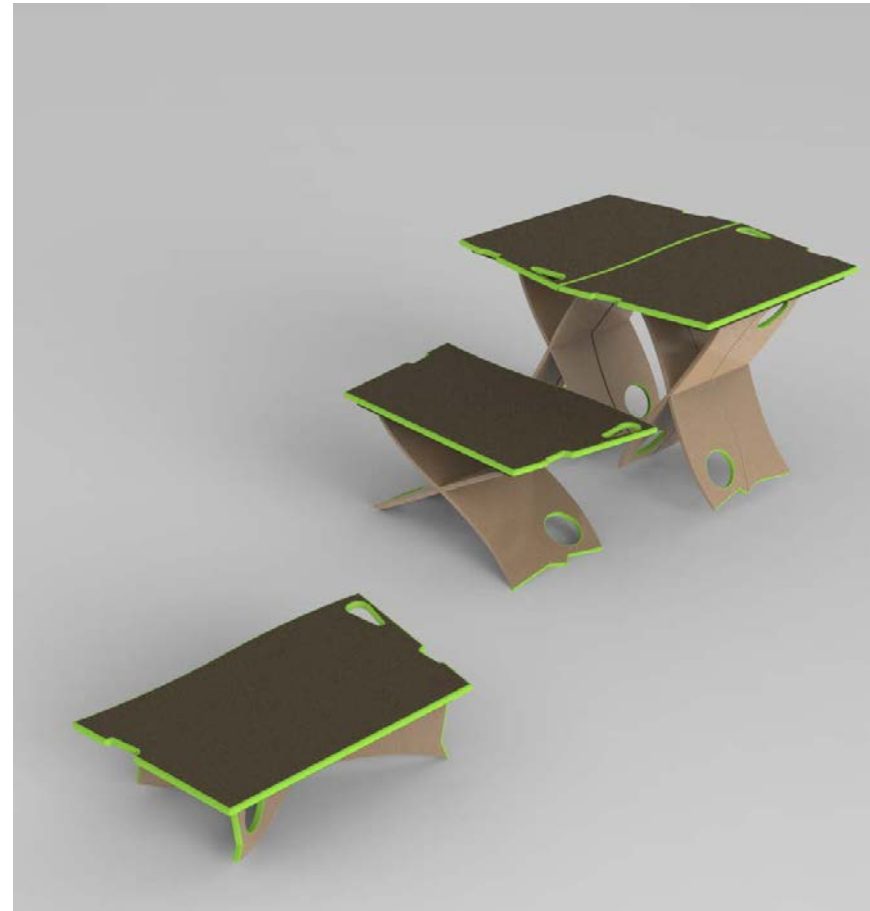
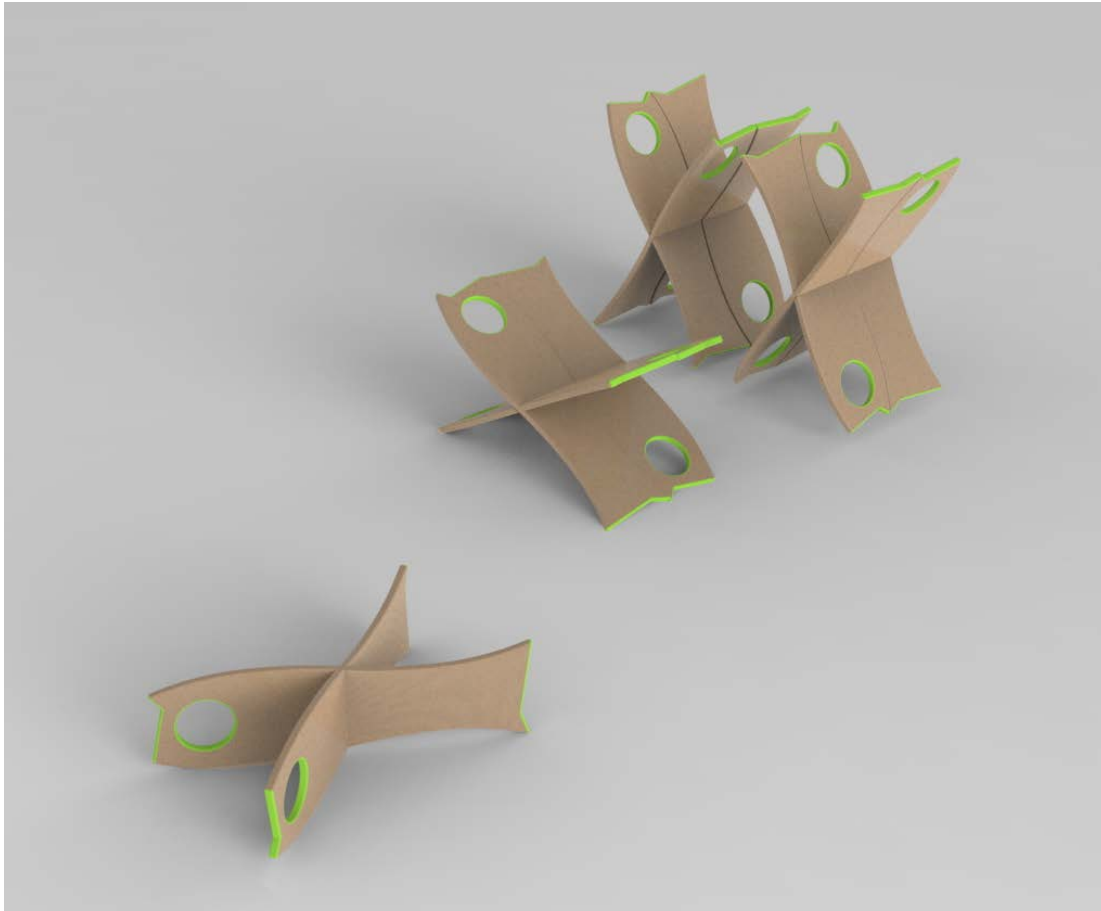
## Wood as a material







## Digital modelling





- Primary research
- Secondary research
- Inferences
- Insights and opportunity
- Design brief
- Ideation
- Concepts
- Concept variations
- Concept evaluation
- Final concept
- User feedback**
- Refinement
- Product





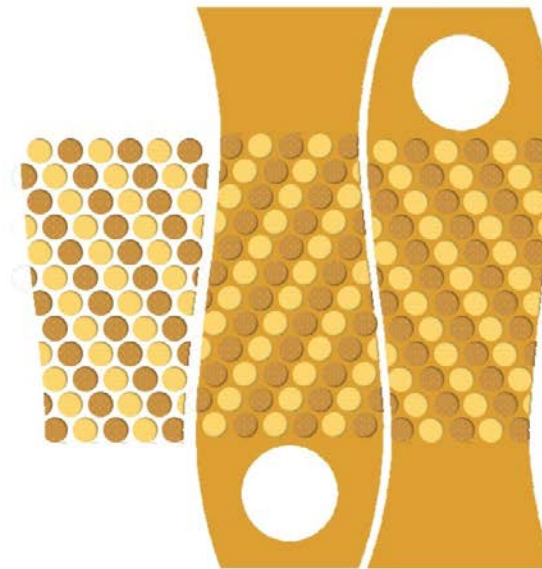
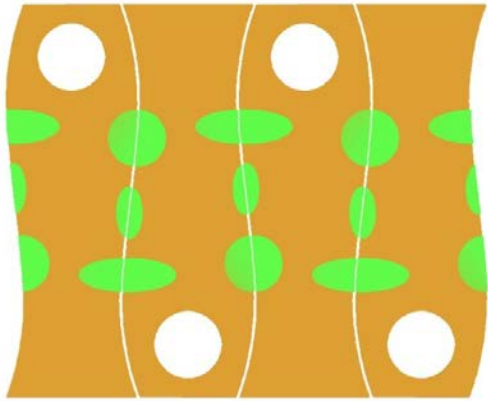




## Feed back

- Lack of rigidity
- Strength of material must be increased
- Locking the units with each other





Using shapes and patterns to bring in learning value





- Primary research
- Secondary research
- Inferences
- Insights and opportunity
- Design brief
- Ideation
- Concepts
- Concept variations
- Concept evaluation
- Final concept
- User feedback
- Refinement
- Product





18 mm rubber wood

Holes punched with reference to  
learning trajectories approach

The holes can be used to bind  
members









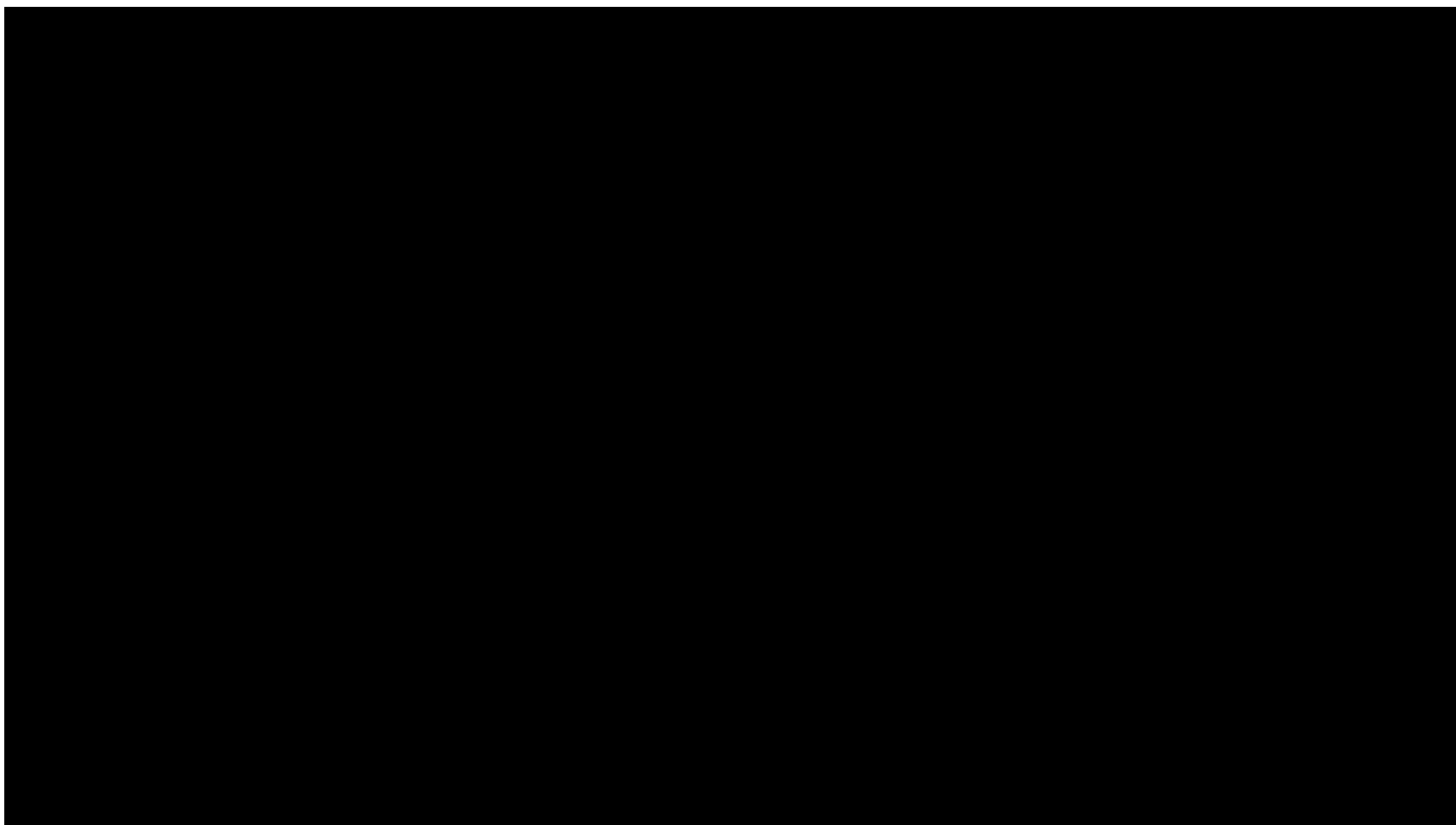




An elastic binding member.  
the head can be adjusted to lock.

Each time the child needs to match the  
profile to pass it through the holes





branding



fuøñ play

fuøN pLay

fuøñ play

*fuøñ play*

*fuøñ play*

***fuøñ play***

**FUøN pLay**

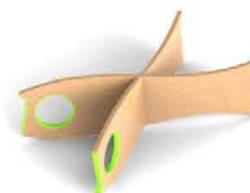
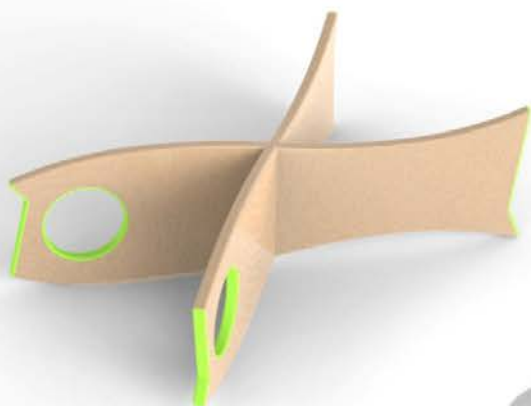
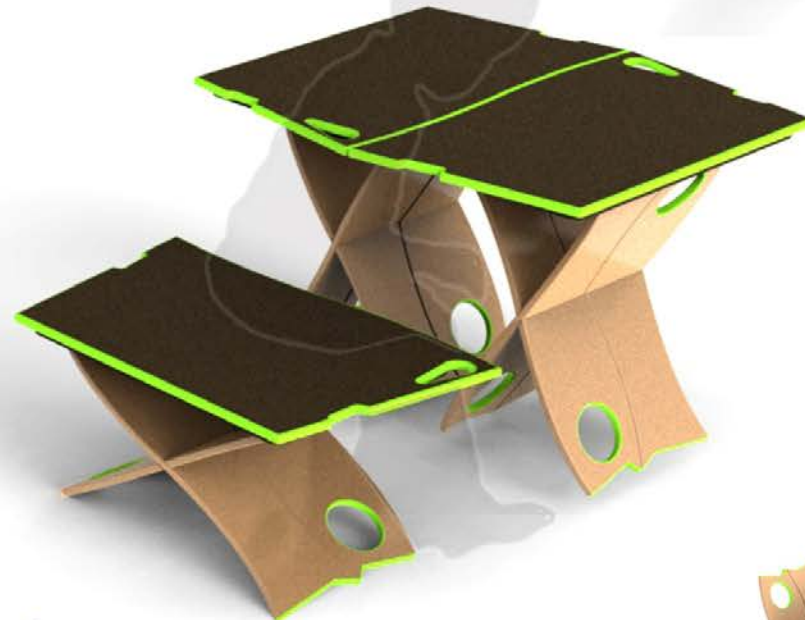
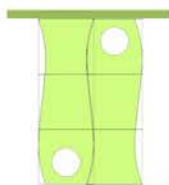
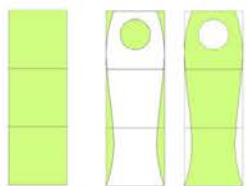
**fuøñ play**



fun play



fun play







Thank you