

Project II

Cutlery for Indian cuisine

Final



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the plan

- Introduction
- Cutlery and Indian cuisine
- the study
- the analysis and design
- the concept
- the test

Introduction

The insight

- The western cutlery is not designed for Indian cuisine
- We use cutlery with some items of Indian food because of convenience.
- Some places like navy insist on cutlery even with roti, etc.

The Aim

Designing cutlery for an item of Indian cuisine.

Cutlery and Indian food

The Indian Cuisine



North Indian cuisine



South Indian cuisine



Western Indian food



Eastern Indian food

Cutlery and Indian food

Use of cutlery with Indian cuisine

Sno	Food item	Process used	Cutlery used	Comfort rating
1	Roti	Tearing with support of plate, and usually filling insides with dry side-dish.	Knife and fork	1/10
2	Dosa	Tearing/pulling with minimal support and dipping the dosa into the sambhar or chutney	Spoon/fork or knife/fork (works only with thicker dosas)	2/10
3	Naan	Tearing, sometimes with two hands and filling the insides of the piece with gravy.	-	0/10
4	Paratha	Pulling with minimal support and dipping into the curd.	Pulling with minimal support and dipping into the curd.	4/10
5	Idli	Cutting, holding and then dipping into the sambar.	Spoon	7/10
6	Vada	Cutting, holding and then dipping into the chutney.	Knife and fork	6/10
7	Rice	Mashing and scooping	Spoon	7/10
8	Kebab	Picking (piercing)	Fork	7/10
9	Syrupy sweets	Picking sweet with syrup on it	Spoon	6/10

the study

Types of dosas

- Sada Dosa - Plain dosa with moderate thickness
- Masala Dosa - a dosa stuffed with spiced potatoes
- Uthappam - uthapam is thick and not filled, with ingredients cooked right into the batter.
- Rava Dosa - made with rava or semolina, which doesn't need fermentation
- Onion dosa - chopped and sautéed onions are spread on the dosa.
- Paper dosa - a long and very thin delicate dosa which can be spread over 2 feet.
- Chilli dosa - chilli powder is spread on the dosa.
- Egg dosa - a dosa spread with an omelette.
- Adai - a dosa prepared from a combination of dals namely Urad, Channa & Moong dal.
- Wheat dosa - made with wheat flour, and served with coconut chutney,mysore masala dosa

the study



Sada Dosa



Uthappam



Masala Dosa



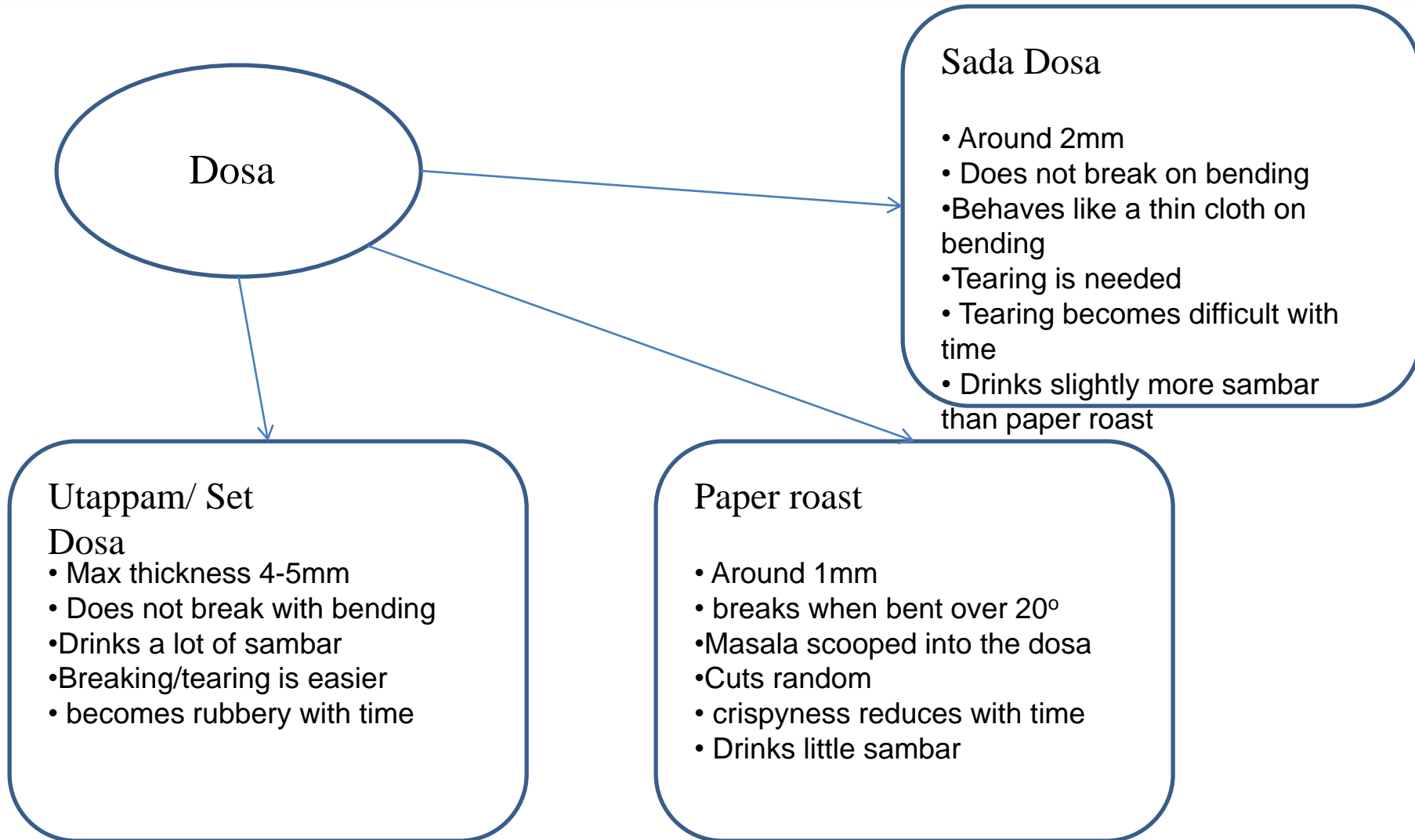
Paper Roast

the study

Understanding Dosa material

- dosa was considered a substrate.
- material properties were studied
- various types of dosa was studied

the study



the study

User study

- Observing the intricacies of eating with hand.
- Getting ideas from Foreigners eating Indian food
- Taking inspiration from various tools

the study

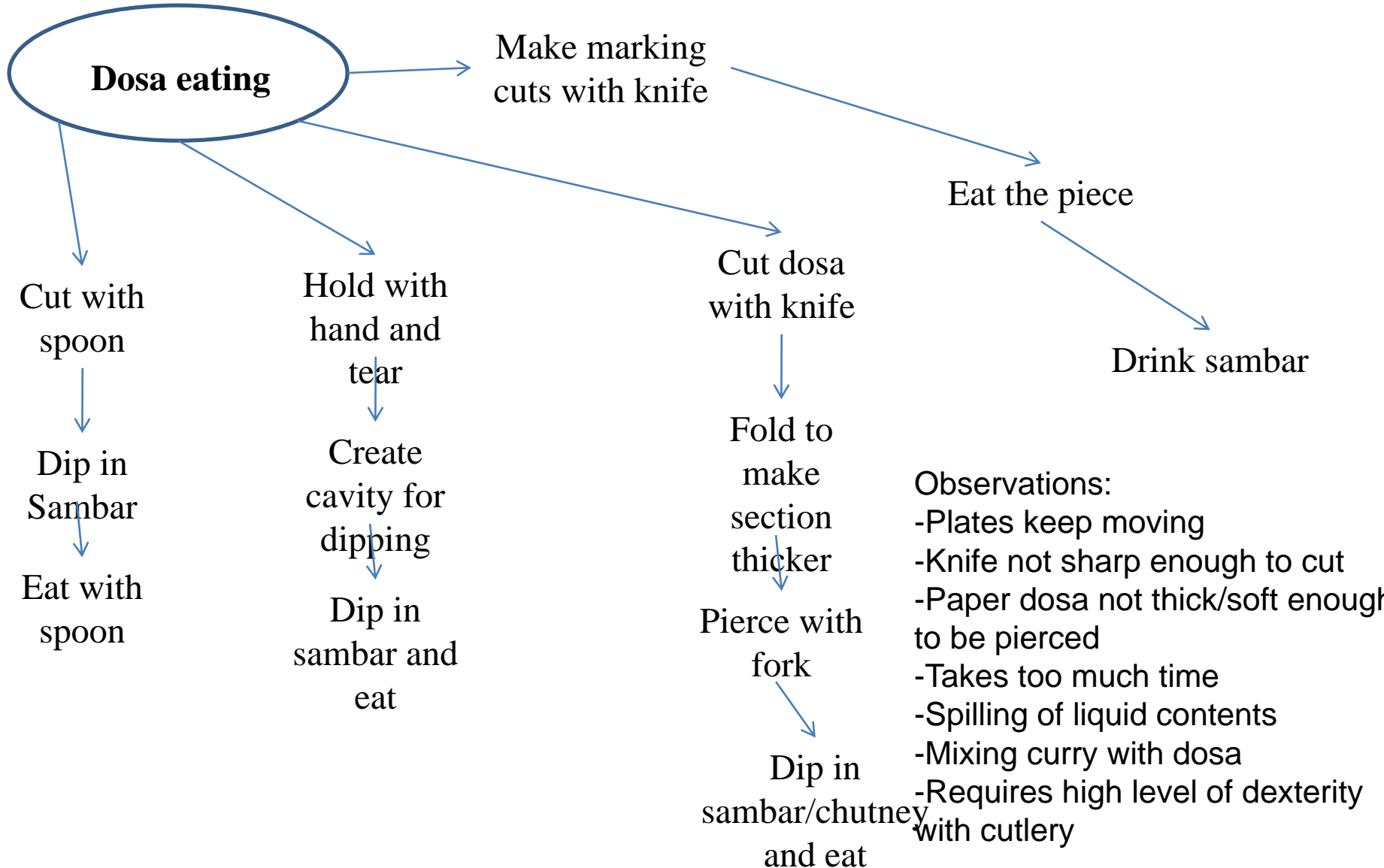
Observing the intricacies of eating with hand.

- The users were asked to first eat with hand and then with cutlery of their choice.

- The actions were recorded, screenshots shown.



the study



the study



Ate : Dosa, Roti-subzi, Dal, Idli

Cutlery used:

Roti – fork & knife

Paneer – fork

Dosa – spoon fork/knife/hand

idli – Spoon

Problems :

Fork – No grip

Knife – Not sharp enough to cut roti/dosa

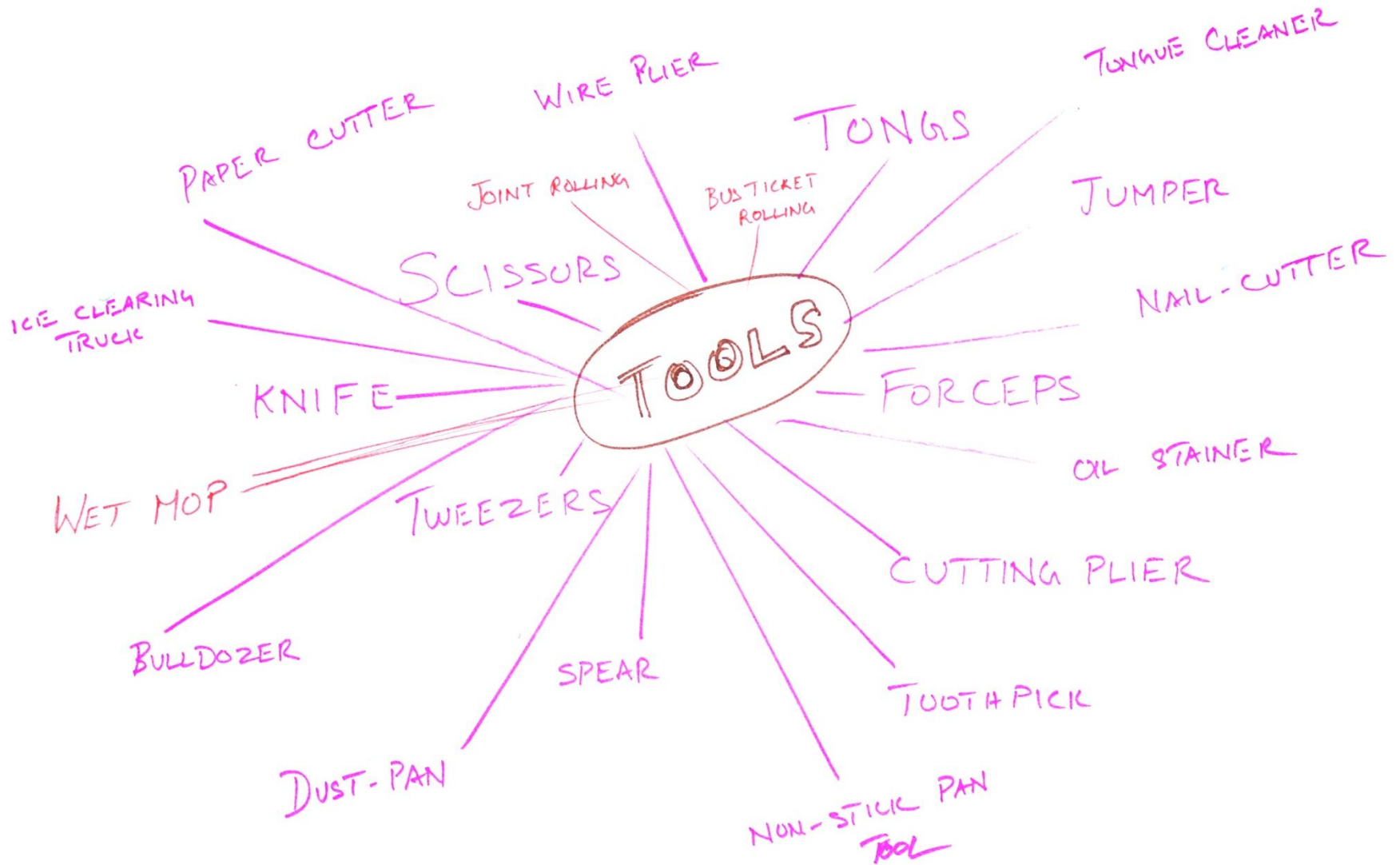
spoon – only for gravy

With hand tearing roti/dosa, cutting dosa,

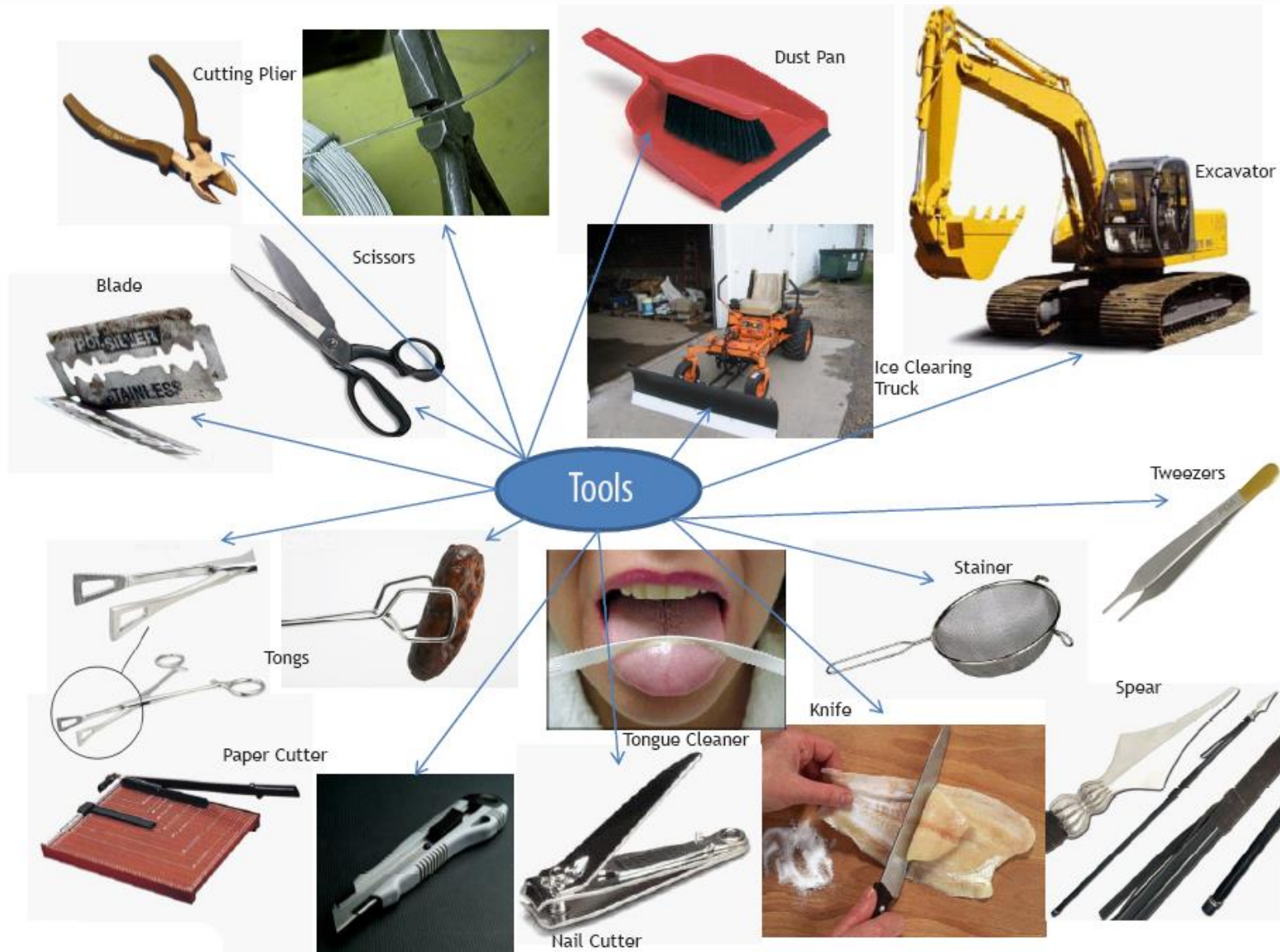
lifting into the mouth, subzi dripping



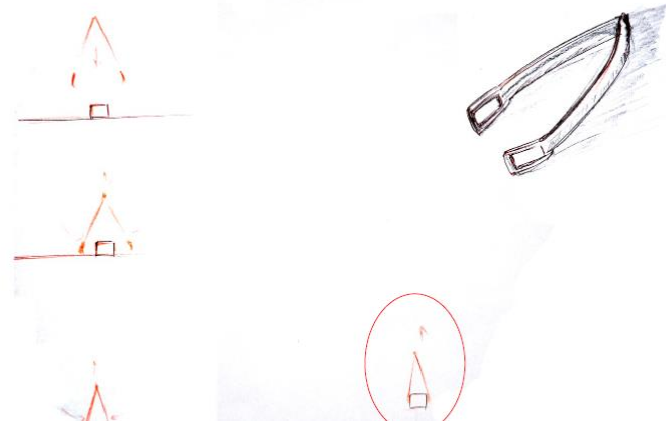
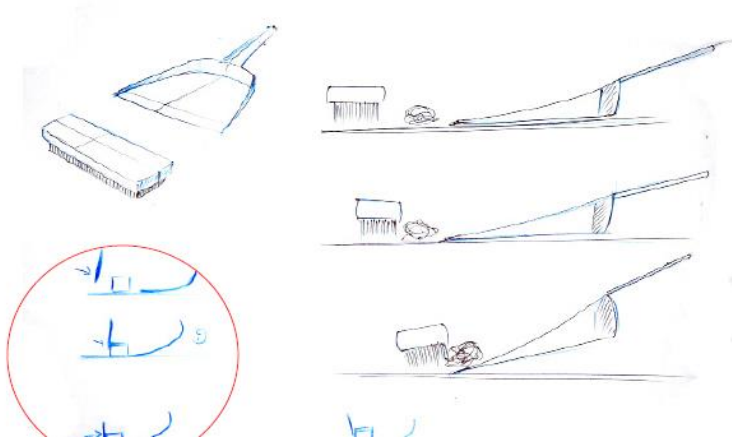
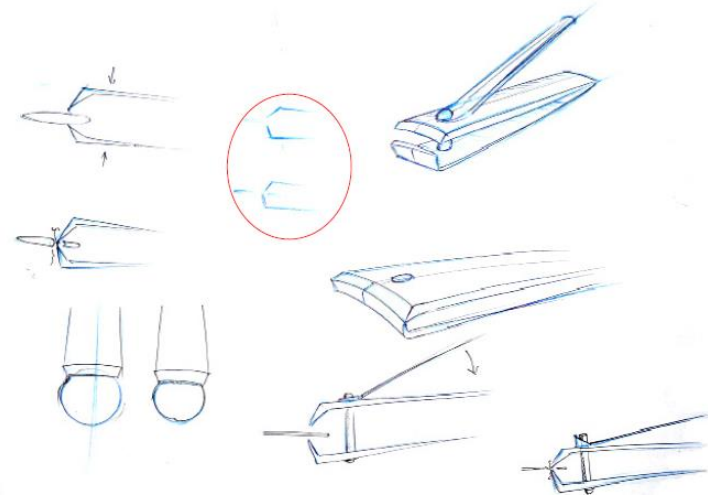
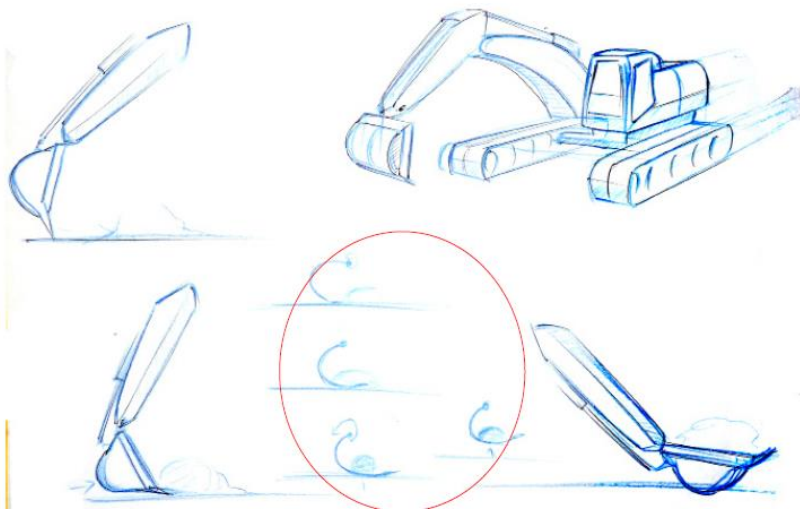
the study



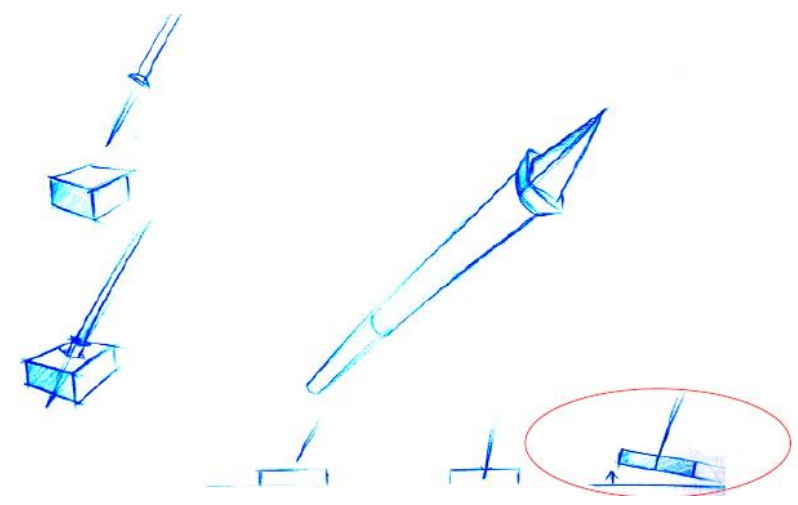
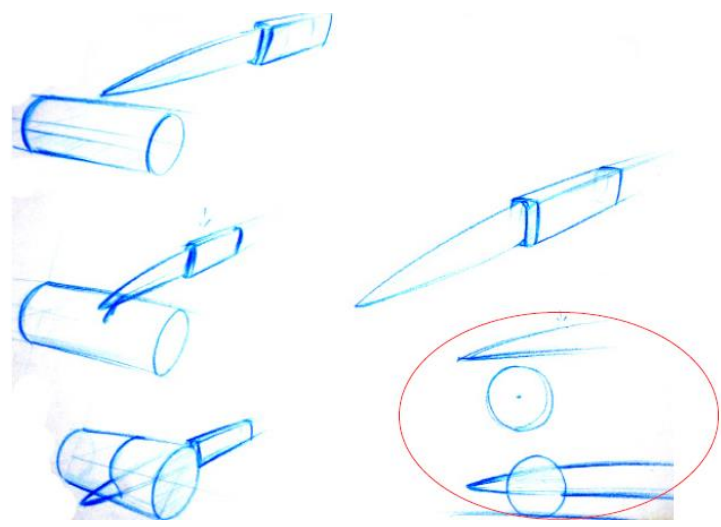
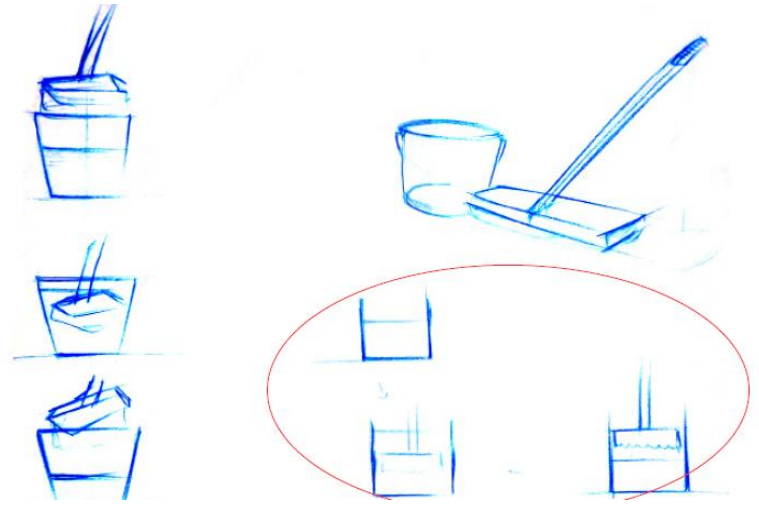
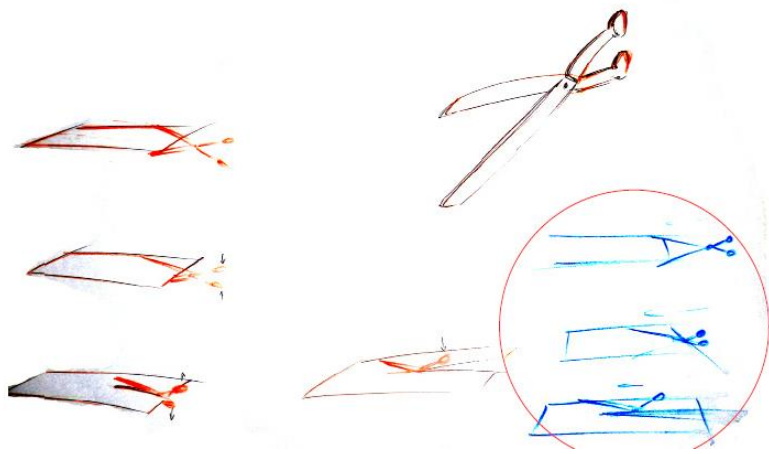
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the study



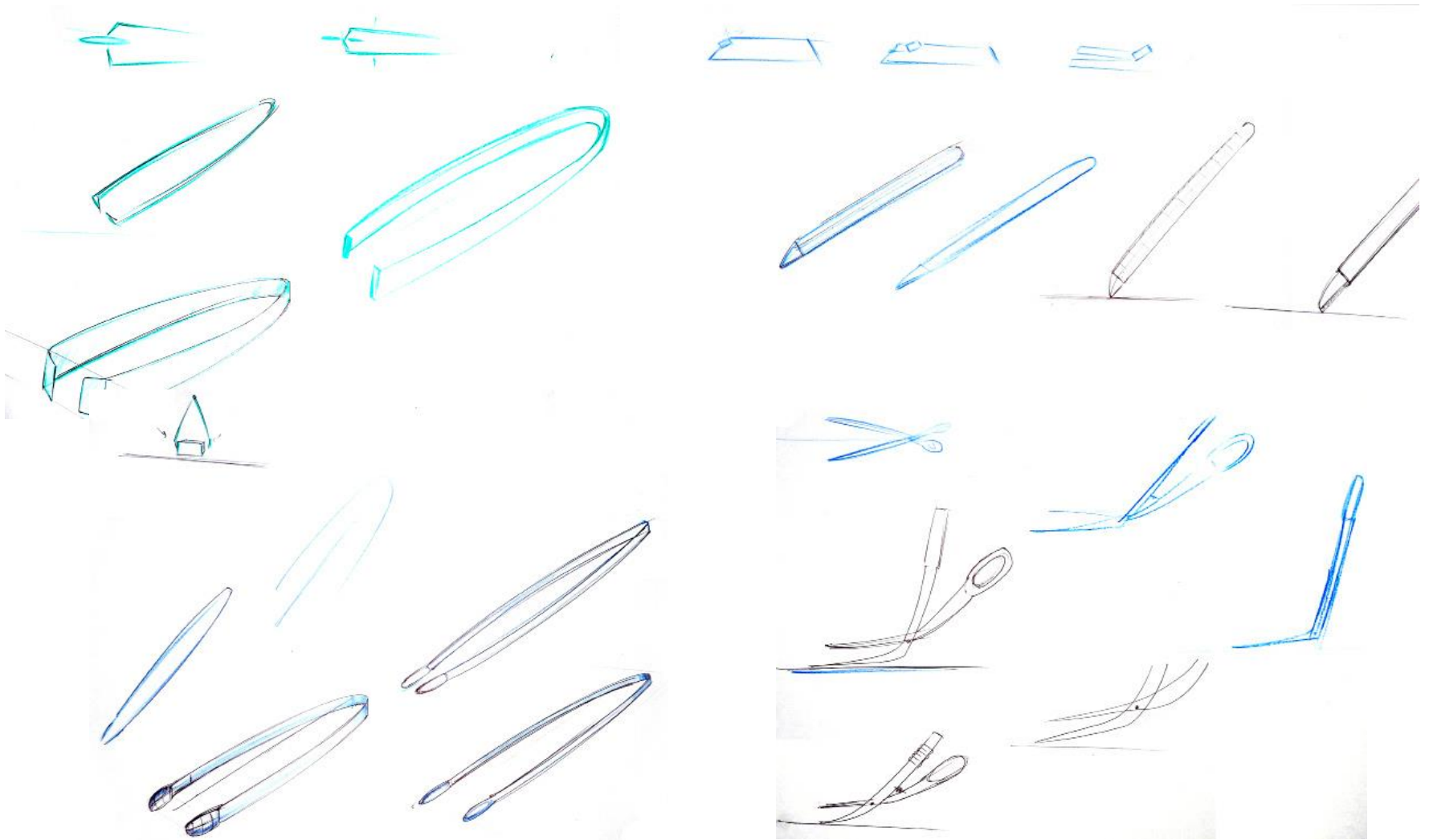
the study



analysis and design - ideation



analysis and design



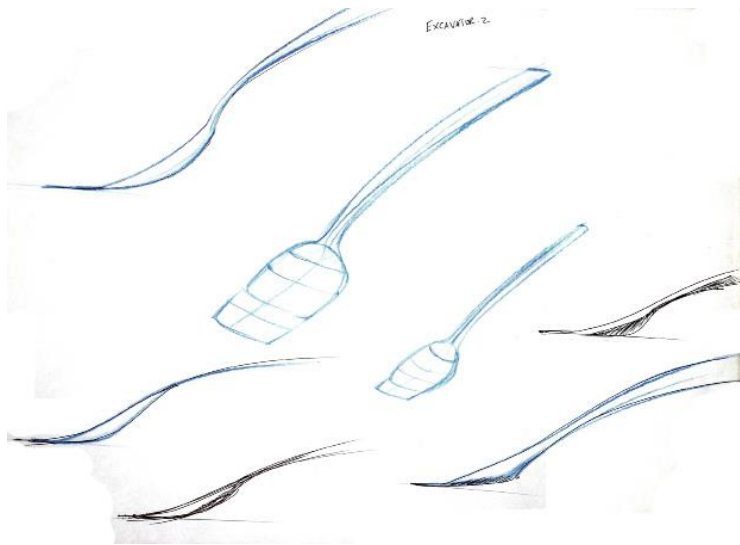
analysis and design

Functionality Evaluation

Clustering was done based on the action it does

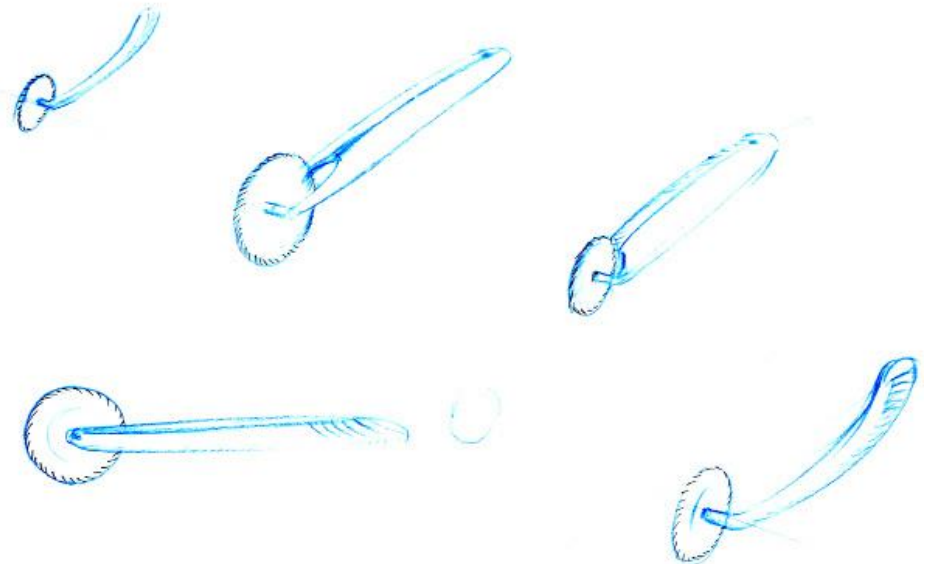
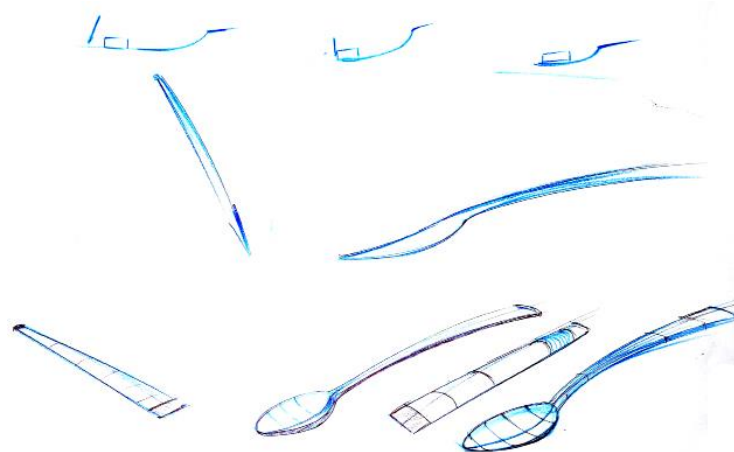
- Cutting action
- Piercing action
- Tearing action

analysis and design

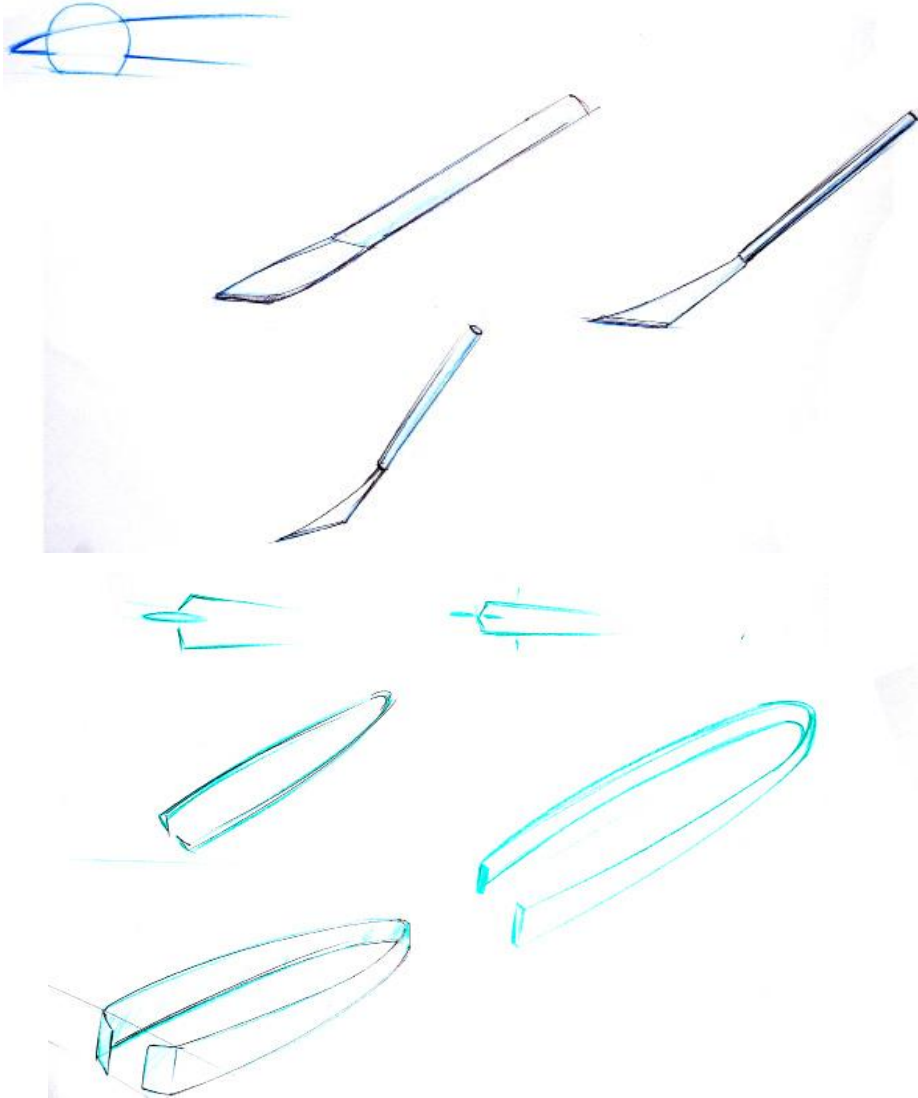


Cutting Action

In this cluster, the dosa was CUT with the edges of the tool. 'Cutting' is the action used for separating the dosa into smaller pieces. This was tried with different types of dosa and effectiveness was tested.

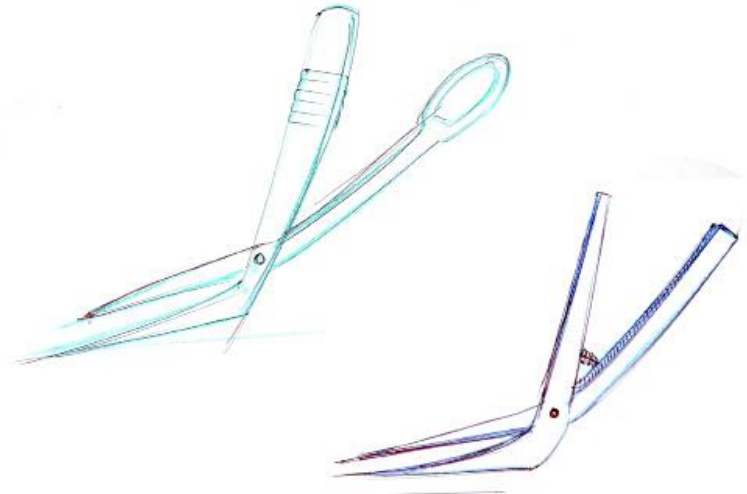


analysis and design



Cutting Action

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analysis and design



Mock-ups: Cutting Action
Figure shows the Sheet metal mock-ups
that were made to test out with dosas

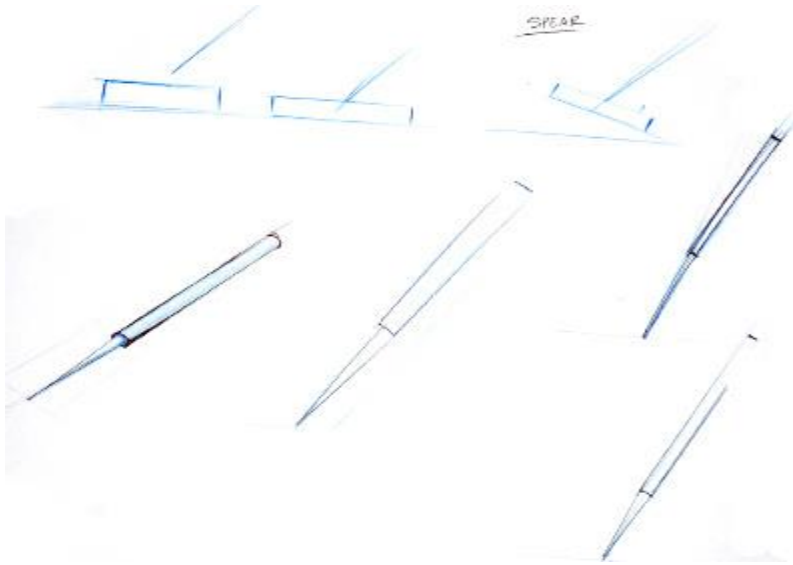


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Mock-up testing



analysis and design



Piercing Action
Here, the Dosa was pierced to pick up
from the plate.

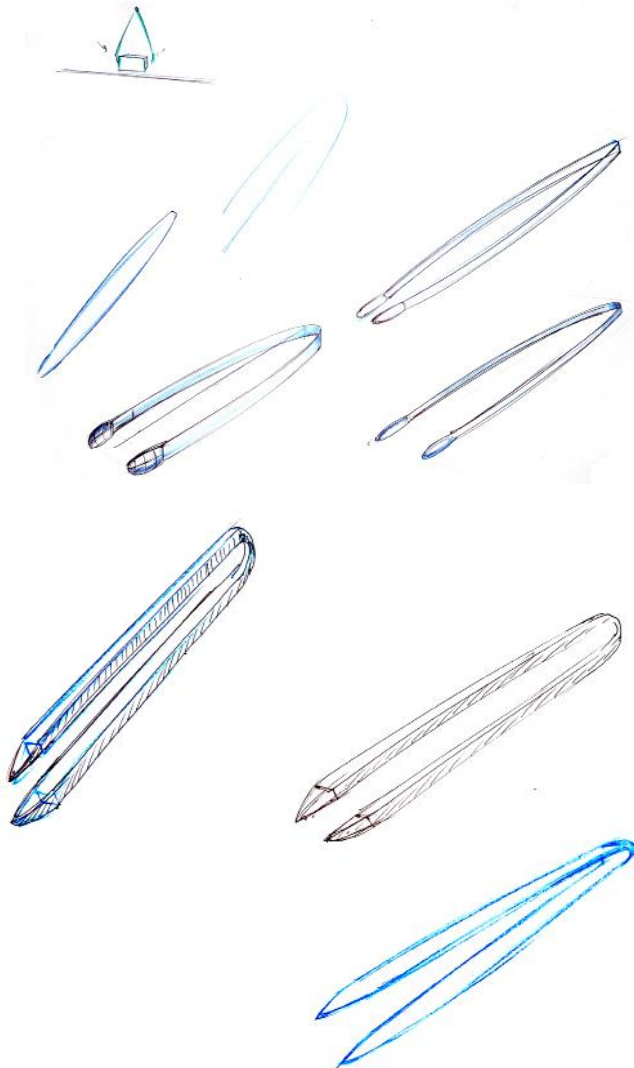


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Mock-up testing

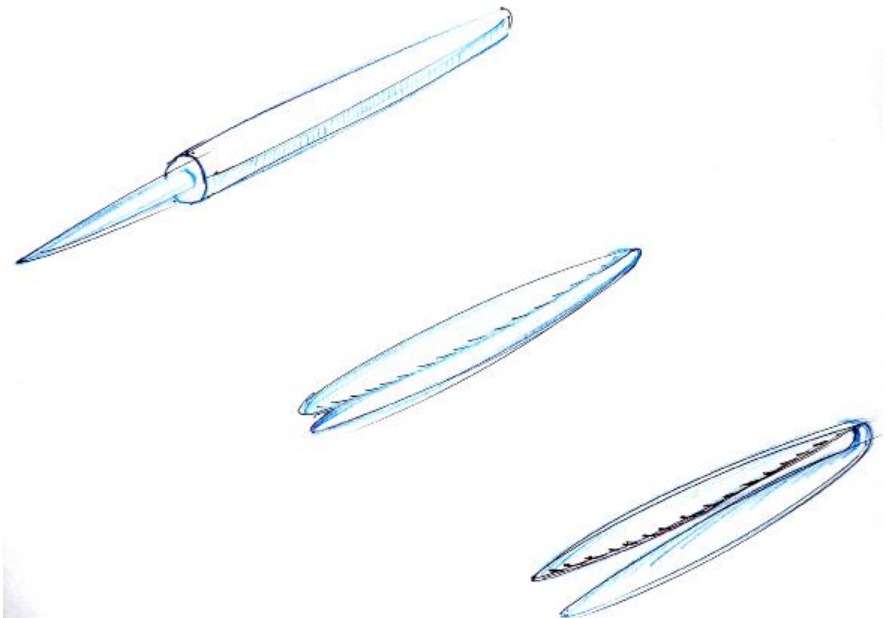


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Tearing action

The dosa is torn into smaller pieces with tearing action. The part of dosa to be removed is held with the tool and is pulled and torn into smaller pieces.



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Tearing Action: Mock-ups

Mock-ups were made for all significant ideas, with material carefully chosen to produce the desired effect.



analysis and design

testing



analysis and design

Test Rating parameters

After testing of mock-ups was complete, each action was rated based on the following parameters.

1. Usage (cleanability, ease of use)
2. Types of dosas it works with (TOD)

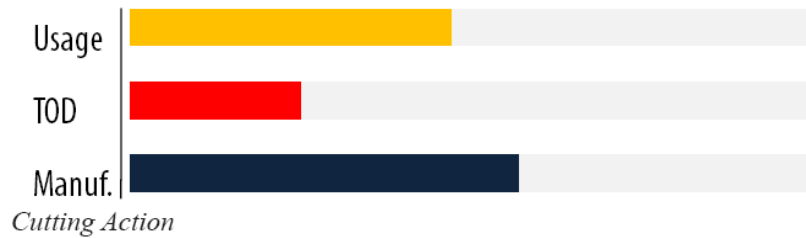
There are different types of dosas – sada dosa, Masala Dosa, Uthappam, Paper Roast, Rava Dosa.

The cutlery should work for most of the dosa items.

3. Manufacturing

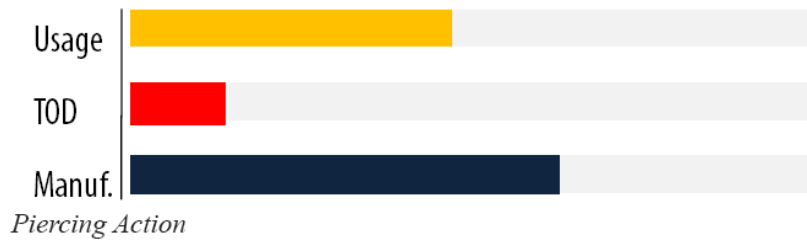
The basic criterion is that, the surfaces should be simple.

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Cutting Action

The ratings of cutting actions are shown in the graph. It was found that cutting works with only thicker dosas.



Piercing Action

The ratings of piercing action are shown. It did not have scope for wider application either.



Tearing Action

The ratings of tearing action are shown. This action is what we utilize for eating dosas with hand, and that maybe the reason for its higher rating

analysis and design

Problem analysis

The immediate noticeable problems were listed down and were analyzed.

- Different hands for tearing and eating
- No convenient way to take masala
- Ergonomics

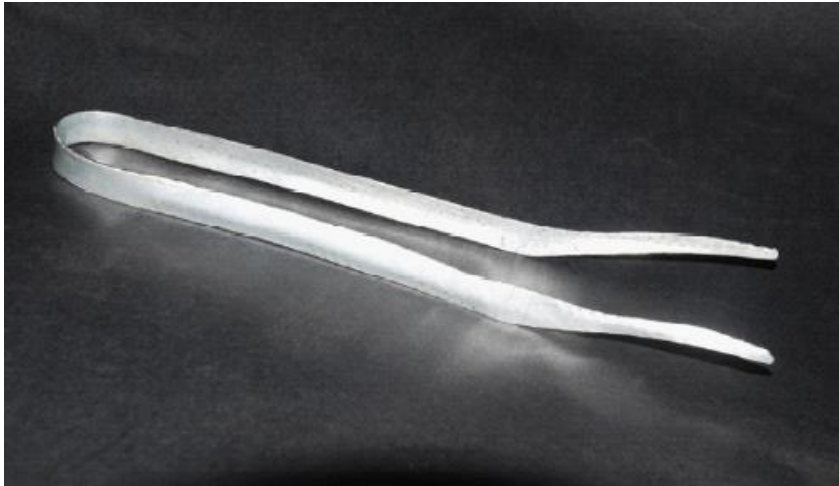
Solution

- The chopsticks
- Ergonomics
- The cross section

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Implementation of solution
The solutions were implemented on a mock-up model. Simple angles were given for giving the ergonomic hold.



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Semantic analysis

- The form, finish etc. were studied
- Relationship between pieces were also studied



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Results of Semantic study

-Clear demarcation between where the hand goes and the part in contact with food

-The shape of the demarcation is also different as compared to geometrical demarcation in other items

-Glossy finish in stainless steel.

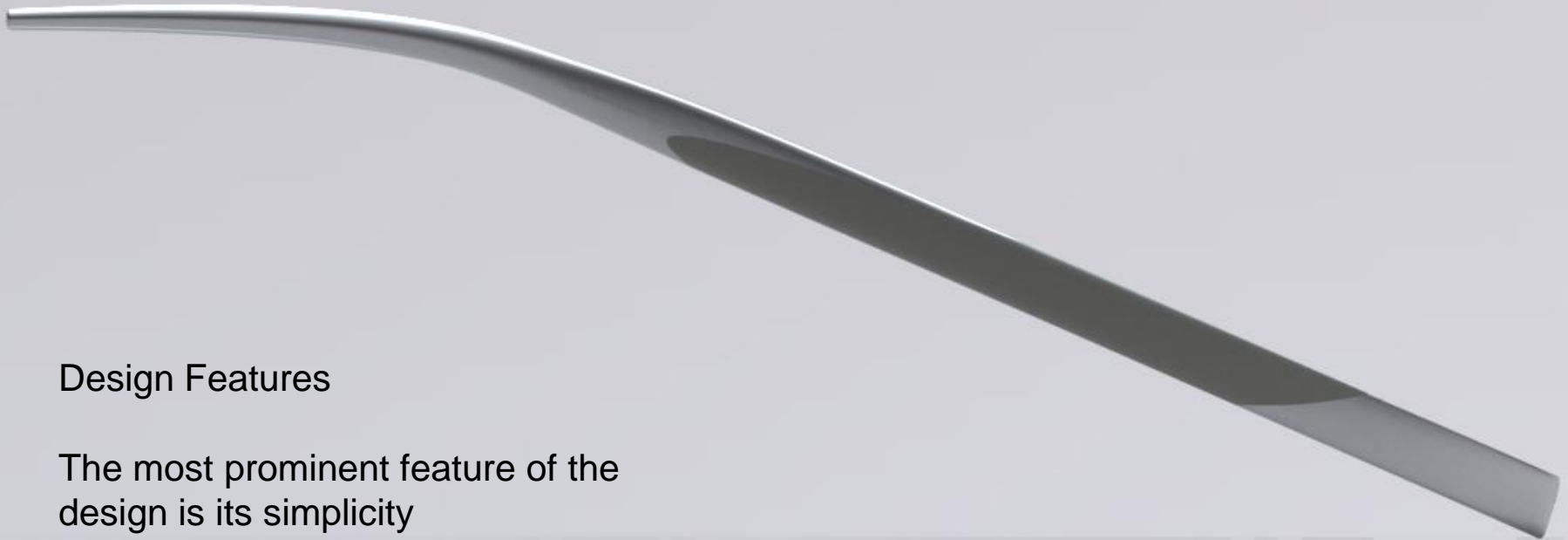
- The items of the cutlery belong to a family.



The concept



The concept



Design Features

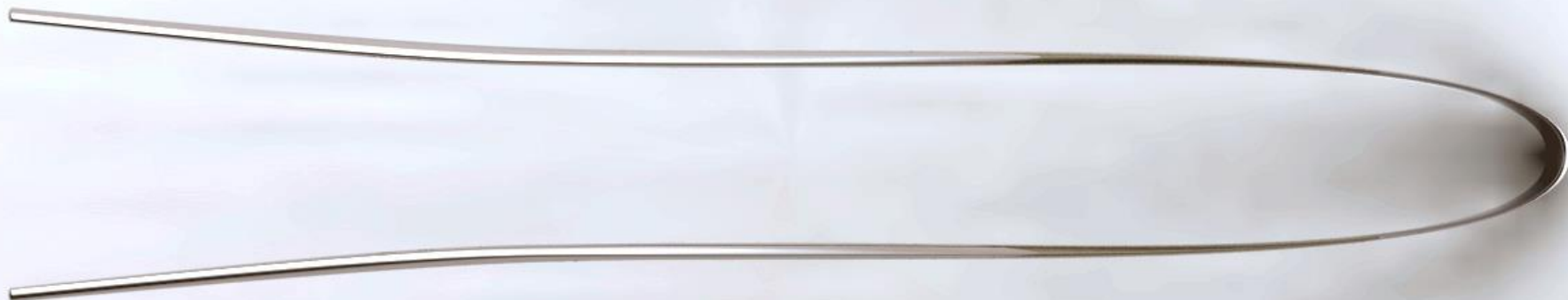
The most prominent feature of the design is its simplicity

The neck bend for ergonomics

Easy cleaning

The concept

Makes stacking possible



The concept

The insides which are flat, hold the dosa when held together and the curved outsides comes in contact with the lips.



The concept



The test



The test

conclusions

- Is capable of simulating most of the hand actions with acceptable precision
- Training time of 15 seconds for a new user.
- User confused as to which hand the cutlery goes
- Tearing action – precise tearing is difficult – needs practice
- Some dosas stick to the insides of the tong
- Not completely independent of existing cutlery
- Cannot be used on the move.
- Orientation of the cutlery not self-explanatory
- The widest angle of the tong should be lesser than the width of the mouth

Thank you!



Milind, Juny, Dhuri, taruja, soumya, palash, Janvi,
Darshana, Bongo, Kim, Darshan, Chetan, Pavan, Roman, Robert