



MEC102 INTRODUCTION TO ENGINEERING DESIGN

PROJECT WOK

MEMBER NAMES

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- 3. SAMRUTHA S (125009169)**
- 4. SRI LAXMI NARASIMAN S (125003339)**

SECTION

M1

ARJUNAN E	Comparison among different products we are sketching
BALA SWARUPINI P	Final products sketch and Morphological chart
SAMRUTHA S	No significant work accomplished
SRI LAXMI NARASIMAN S	Morphological chart and organizing content

INTRODUCTION:

- **Brushing - The first ritual in our daily routine, that keeps our day lively, dynamic and fresh.**
- **But what if the brush we use is notrecommendable and trustworthy?**
- **An unclean brush may ruin our health and possibly causes health issues and poisoning.**

Need statement of user:

To have an instrument that keeps the brush safe from rodents and harmful pathogens and prevent

them climbing onto brush.

PROBLEM STATEMENT:

In every Indian household the problem of insects and lizards is inevitable, but because of these if the brush bristles are exposed to insects, dust, rodents might make the brush unsuitable to use.

The main problems are:

- **Rodents and insects climbing onto the brush makes it unsafe for use.**
- **They make the brush poisonous.**
- **They may cause health Hazards to user.**

USER REQUIREMENTS:

- Keep the brush protected from lizards, cockroaches, insects, dirt &
- Keep it hygienic for use.
- It should be simple, easy and exciting to use.
- It should be at affordable price.

CONSTRAINTS TO FORMULATE THE PROBLEM:

- **It should be compact.**
- **It should be handy and must keep the brush intact.**
- **It should be durable.**
- **It should be cheap, portable.**

TARGET SPECIFICATIONS AND FUNCTIONS OF DESIGN SOLUTION:

i. TOOTHBRUSH COVER OR CAP:

- The brush bristles will be covered with a cap like cover of sufficient size where there will be no chance of formation of fungus on the bristles.
- And since the brush is protected with the cap it is free from insect and lizards.
- The cap must have tiny holes to allow the flow of air and draining of water from bristles so that the brush is dried to avoid fungus formation.

ii. TOOTHBRUSH CASE (OR) HOLDER:

- Even though the brush is covered with a cap there is a possibility that some part of bristles and parts other than bristles are prone to insects and lizards.
- So, to overcome this kind of situation a special type of tooth brush case is to needed. This will cover the whole brush (bristles + handle) and avoid any contact with the lizards and insects.
- This toothbrush case is small, compact and of perfect size and portable, easy to carry. People can even carry this during a journey which keeps the brush clean and hygienic.

iii. REPELLENT SPRAY:

- This repellent spray is completely safe and non toxic to use on brush bristles.
- This spray can be used on bristles before covering it with cap, for more protection and anti-pathogenic surety.
- This can be sprayed on the other parts of the toothbrush before keeping it in the case so that no cockroach or lizard cannot approach it.
- This repellent spray is nontoxic and is thoroughly tested in the laboratories and hence certified by Indian Medical Council.
- This repellent spray is even child safe and their brushes can be protected from cockroaches and lizards.
- This spray is mostly made of edible essential oils and provides good fragrance to kick start our day.




iv. UV Sterilization

UV sterilization for enhanced safety and hygiene.

- Engineered with sophisticated and mess free technologies, taking the helping hand of Electromagnetic Radiations.
- This version of innovation from our ideation and visualization, utilizes UV (Ultra-Violet) Rays installed intricately to the cap of the container and it is powered by Solar Energy that kills all the possible pathogens or harmful chemical compounds with its high energy (thanks to its low wavelength!).
- The even best part - in this version of the product is, **body of the case is retractable!!**
- Considering travel freaks, we have designed our toothbrush case in silicon over plastic or bamboo for durability, retractability, more threshold to bear the stress/force.
- Also, keeping in the market trend and variety of audience we have come up with variety of colors and animation prints for kiddos!

MORPHOLOGICAL MATRIX FOR TOOTHBRUSH PROTECTOR:

i. TOOTHBRUSH CAP:

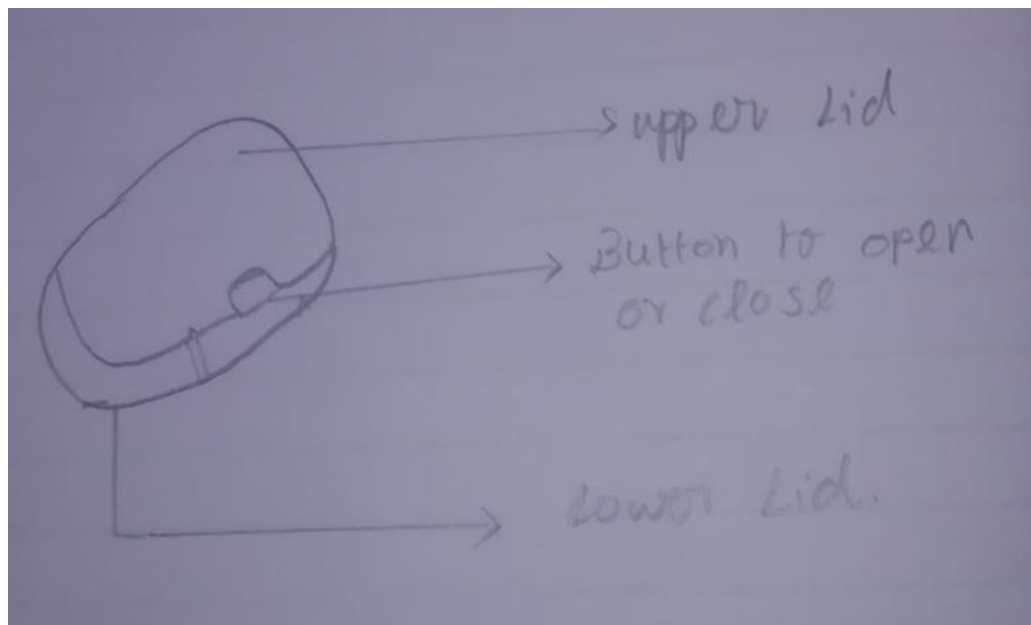
Feature	Idea 1	Idea 2	Idea 3
Shape	Regular	Cartoon	Regular
Material	Plastic	Bamboo	Plastic
Opening Style	Lifting up the cap from the bristles surface	Lifting up the cap from the bristles surface	Lifting up the cap from the bristles surface
Mechanism used	Portable comes with bush	Attached to the wall and brush are let to hang	Attached to the wall and brush are let to hang
Reference			

ii. TOOTHBRUSH CASE OR HOLDER:

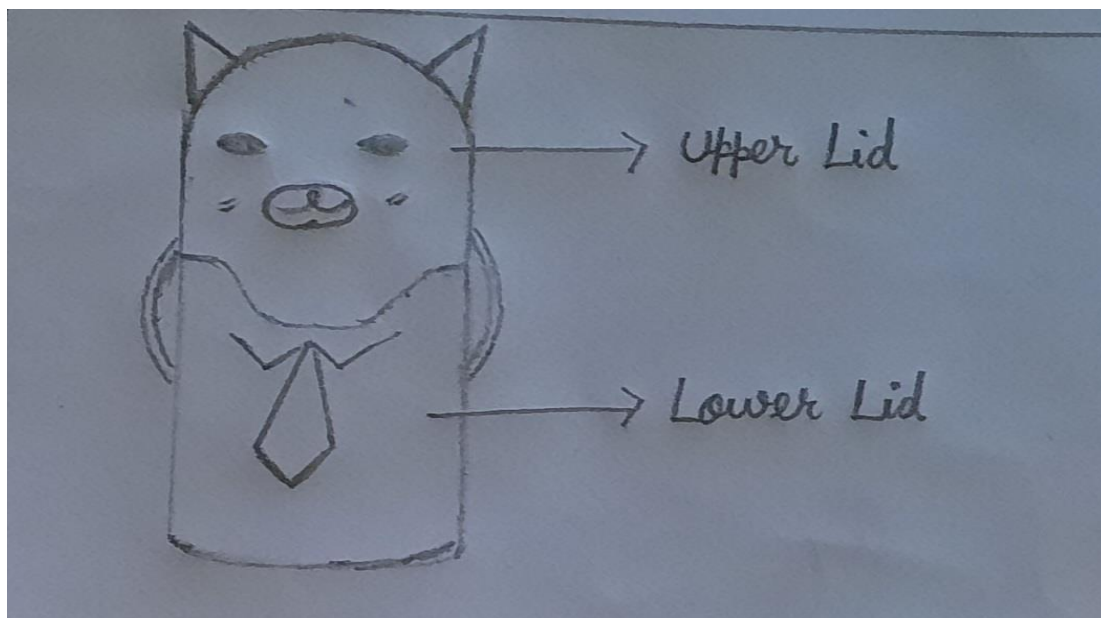
Features	Idea 1	Idea 2	Idea 3	Idea 4
Shape	Animal shaped	Simple cylindrical and vertical	Hand-fit, compact and horizontal	Vertical, Cylindrical, retractable.
Material	Wood/Plastic	Plastic	Plastic	Silicon
Opening Style	Twist or pull to open cap from case	Twist or pull to open cap from case	Click open the case through a button provided	Twist or pull to open cap from case
Mechanism	Just cover the bristles and protects physically	Just cover the bristles and protects physically	Just cover the bristles and protects physically, coupled with a repellent for anti pathogenic ingredients.	Cover the bristles protects, physically also uses UV to sterilise the pathogens (Mess free and occupies less room).
Reference				

SKETCHES OF CONCEPTUAL DESIGN SOLUTIONS:

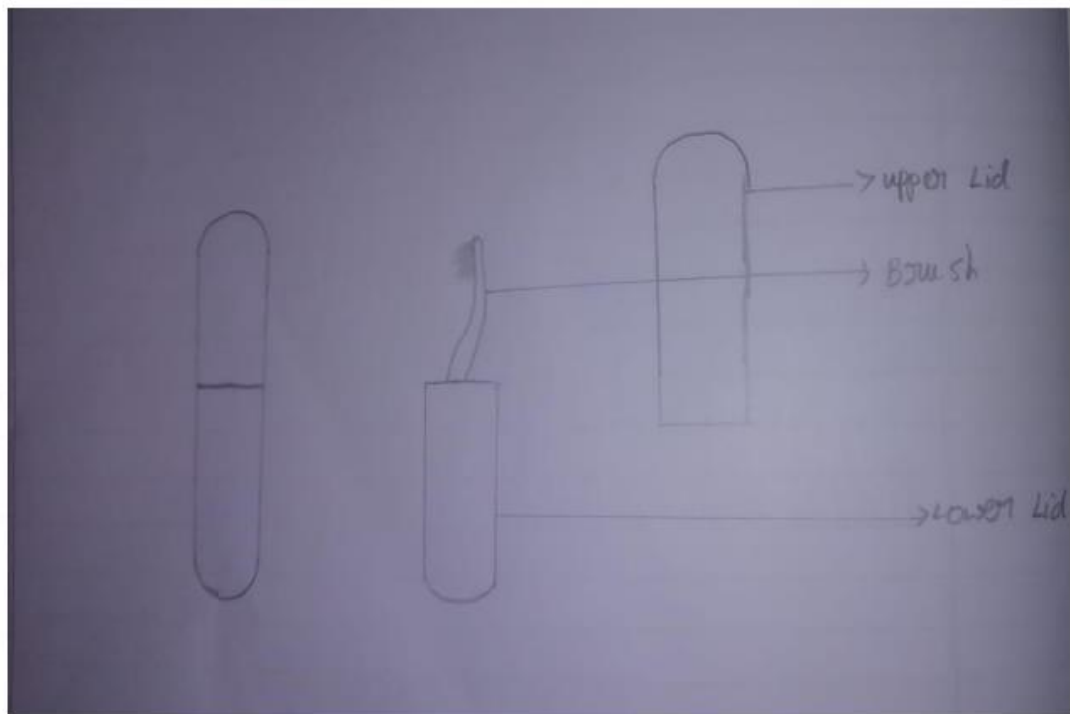
➤ CONCEPT-1: -



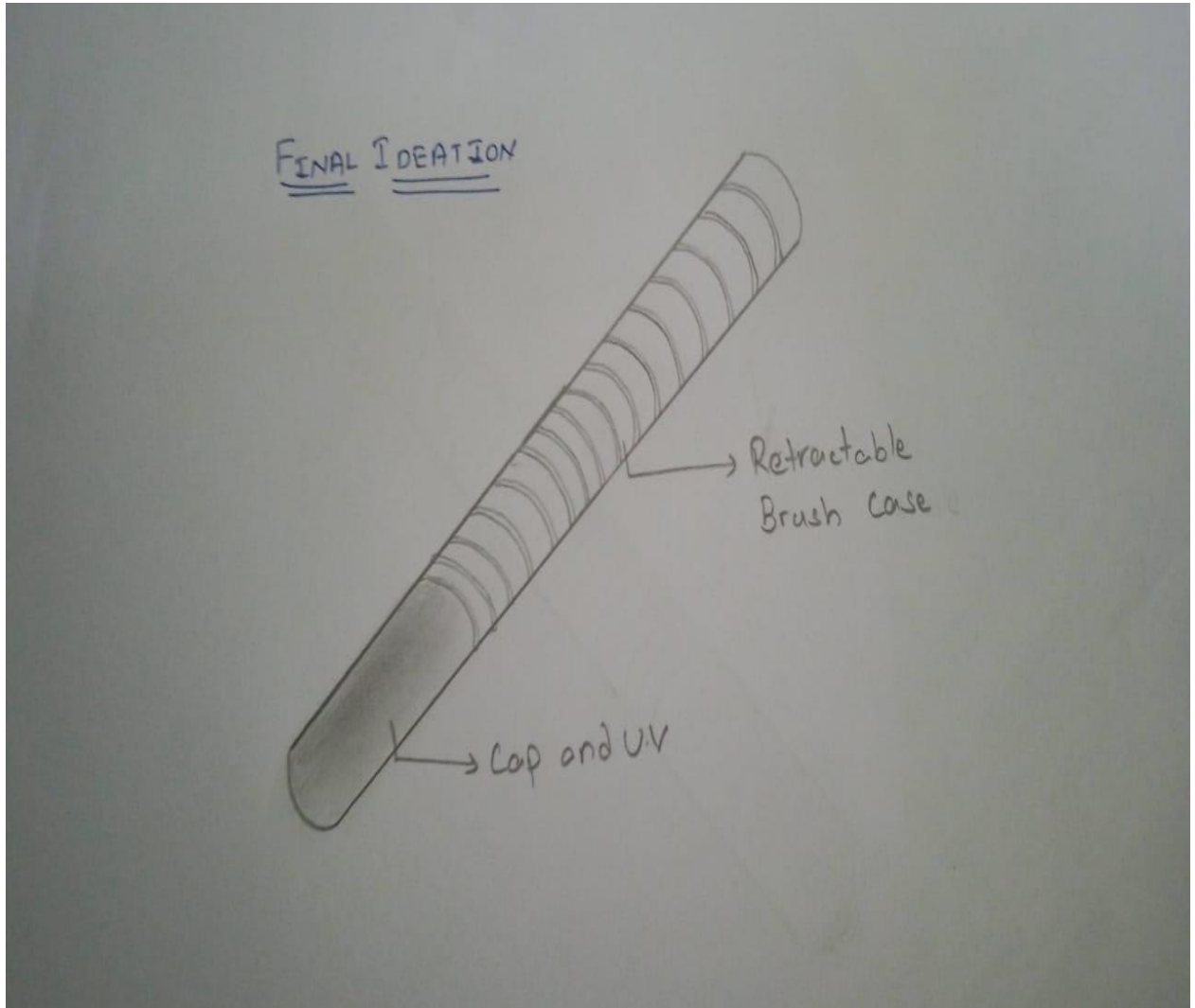
➤ CONCEPT-2: -



➤ CONCEPT-3: -



❖ FINAL DESIGN: -



DESIGN FEATURES:

BASIC:

- It fulfills the basic need of covering the whole brush.
- It keeps the brush completely covered free from pathogens and harmful chemical substances
- Portable and durable

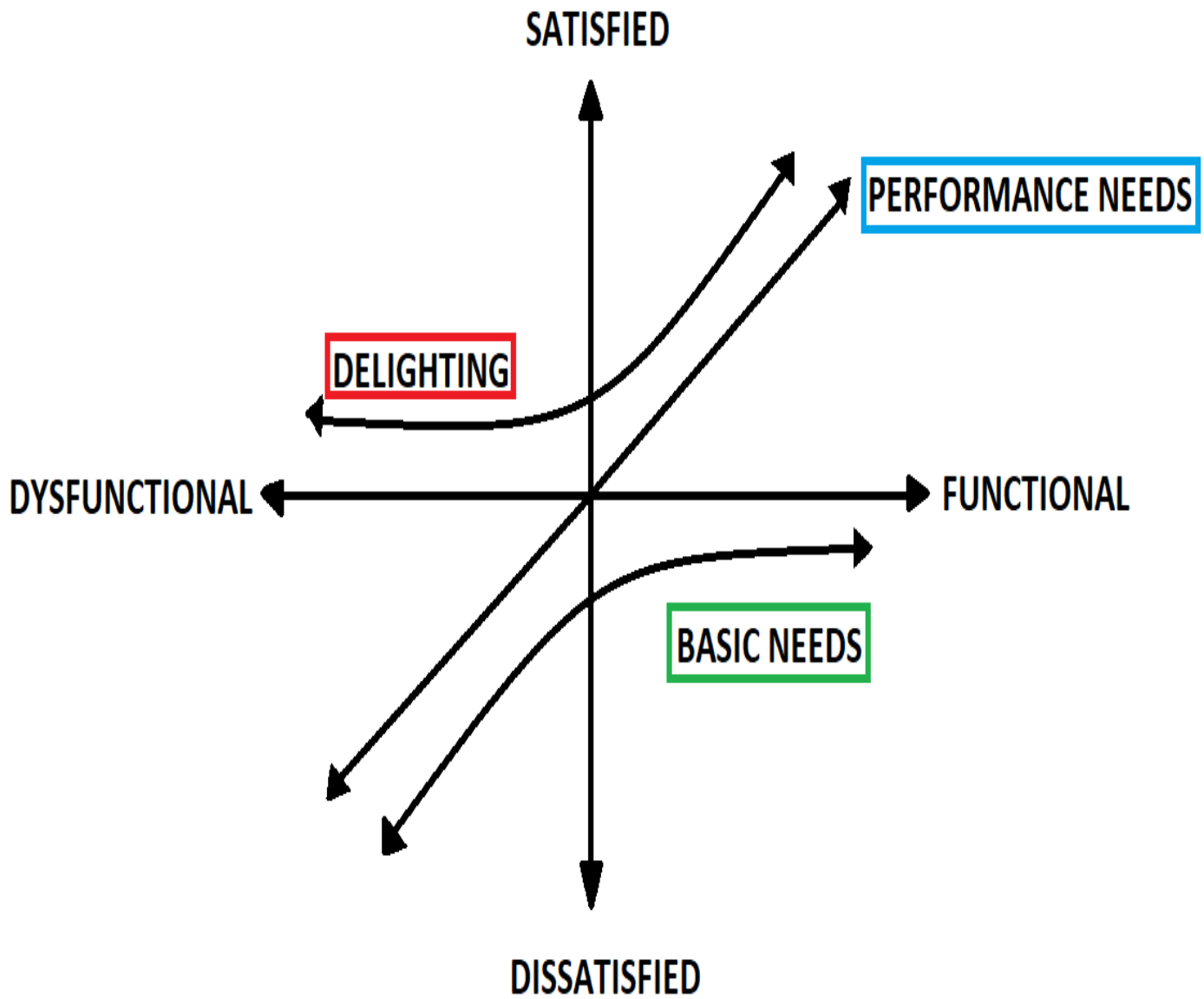
PERFORMANCE:

- It has a good quality lock system between cap and case, which ensures the brush tightly sealed in.
- It is giving better protection, sanitation and sufficiently sized holes to let water drain out from the bristles and lessen the dampness and fungi growth.
- It gives the best ever protection, portable, smartly handy.
- It keeps brush hygienic even during journey.

DELIGHTING:

- It is made of good quality, glossy silicon.
- It is strong and durable.
- Utilizes solar power to keep the UV sterilizer alive.
- Retractable => Handy and compact.
- Even can be stress relief and fidget stuff.

KANO MODEL:



CONCLUSION:

- The final design is better than the other three conceptual design solutions.
- It is more handy, efficient and aesthetic than the other conceptual design solutions.
- The final ideation is expensive over the previous ones', since it is more sophisticated in almost all the parameters

THANK YOU

