ENGINEERING DESIGN

Smart Pillow

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INTRODUCTION:-

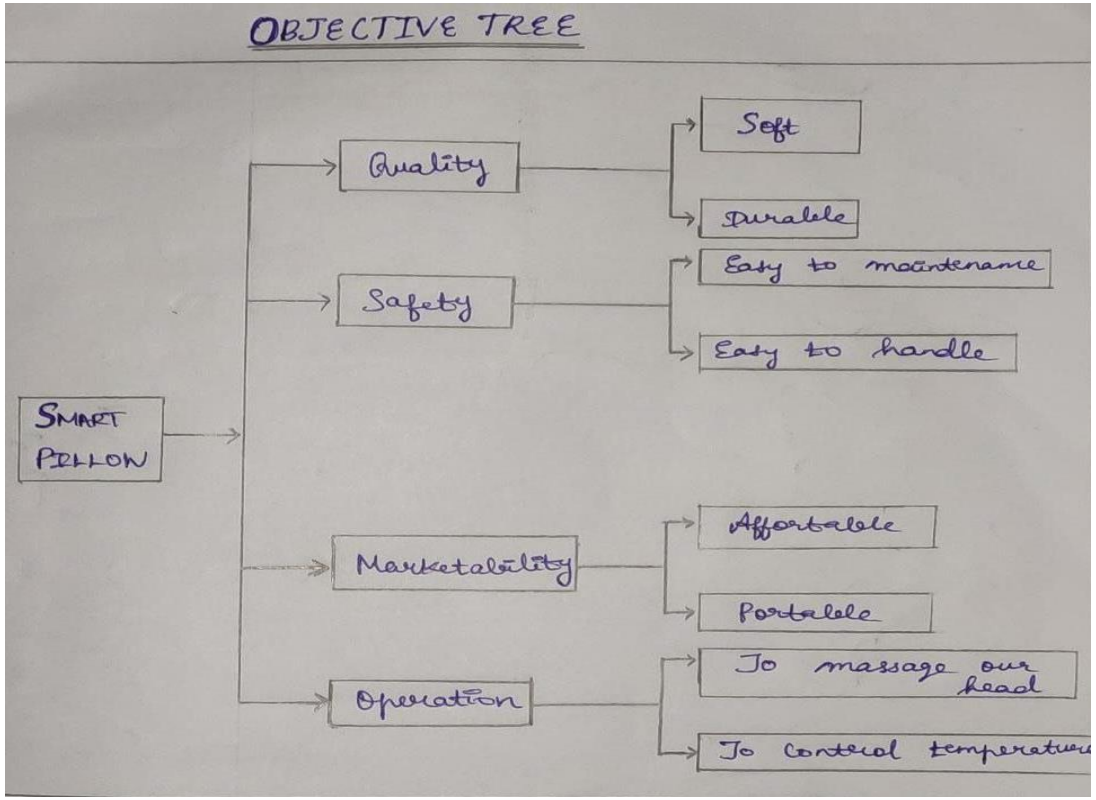
We are using pillow’s every day life to sleep.And also use them to leg’s while get pain,place below the neck to reduce back pain.It is very comfortable any shape to use.

OBJECTIVE:-

*The main objective of designing this smart pillow to reduce the headache and backpain while lying down.

*And also gives you an clean air surrounding.

*Sensor attachments to perform other works like temperature control...etc.



NEED OF SMART PILLOW:-

*To massage head&neck while feel's pain.

*To gives fresh air surrounding.

*To control temperature based on climate.

*Density of the pillow can be adjust.

PROBLEM STATEMENT:-

*In the ordinary pillow,we face many problems.

*We can't massage our head(or)neck while it's get pain.

*Ordinary pillow easily get's flat and the softness will be gone in some days.

*Can't adjust the height of the ordinary pillow.

*It gives bad smell after some day's.

FUNCTIONS:-

PRIMARY FUNTION:

*To provide comfortable while sleeping.

*To adjust temperature based on climate.

*Massage while headache.

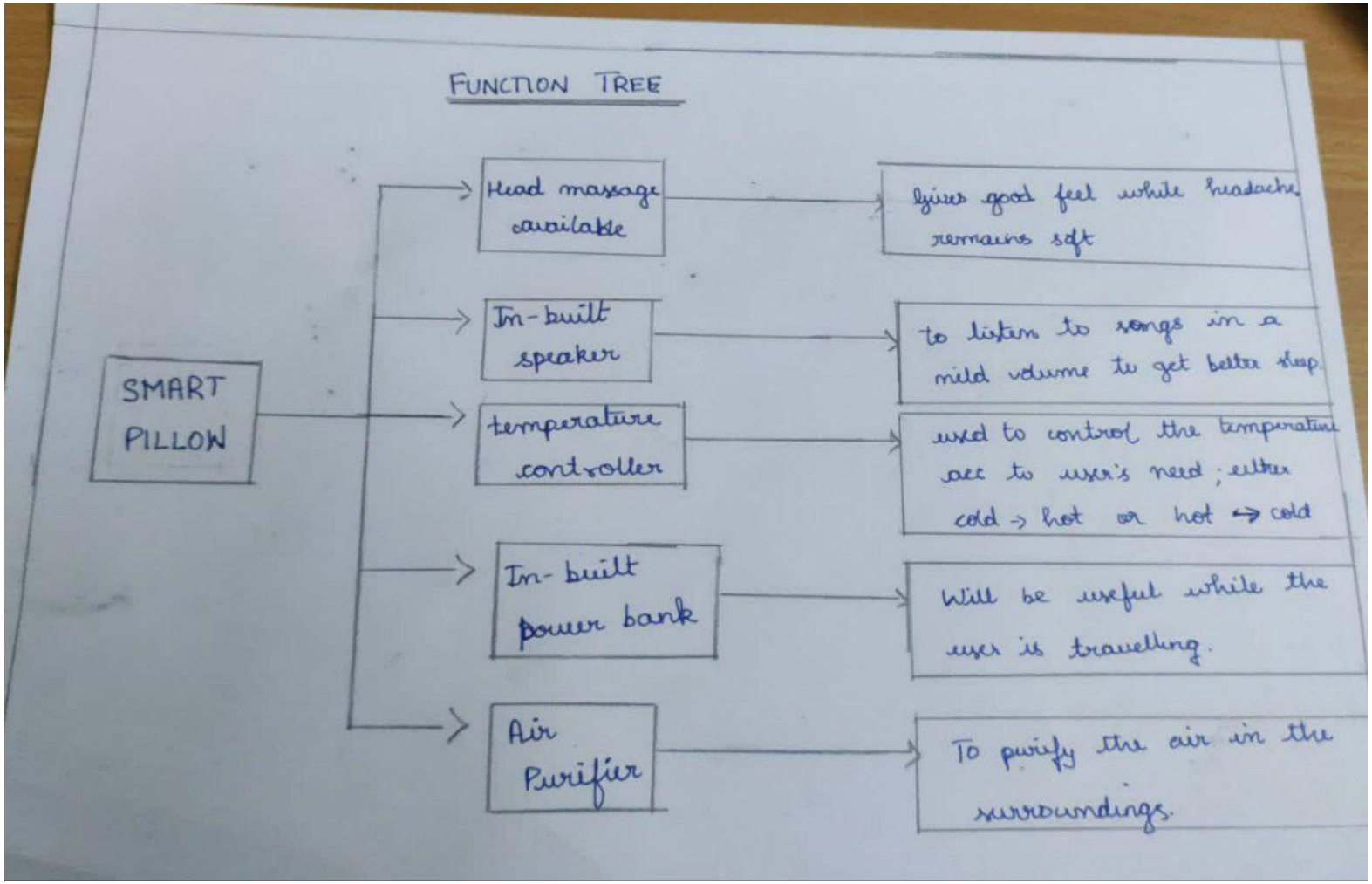
SECONDARY FUNCTION:

*In-built speaker were attached to listen music while sleeping in mild volume.

*In-built powerbank where fixed.

*Small air-purifier fixed to purify the surrounding.

FUNCTION TREE:-



SURVEY:-

I enquired some elder people’s and some working people’s about their stress and what are the ways they have to solve this problem.On that time I said about this smart pillow and explain the feature’s and facilities.They showed their intrest to buy this product.

It is user friendly.

It is easily portable.

It is multifunctional.

It is eco friendly.

USER REQUIREMENTS:-

*It should require less frequent repair.
*It should not be weight.
*It should be in affordable price and durable.
*Colour of the pillow should meet the users needs.
*It should be safe.
*It should be made from good quality tools.

KANO MODEL:-

MUST:

*It should be soft.

*Should be clean.

WANTS:

*Adjust & massage.

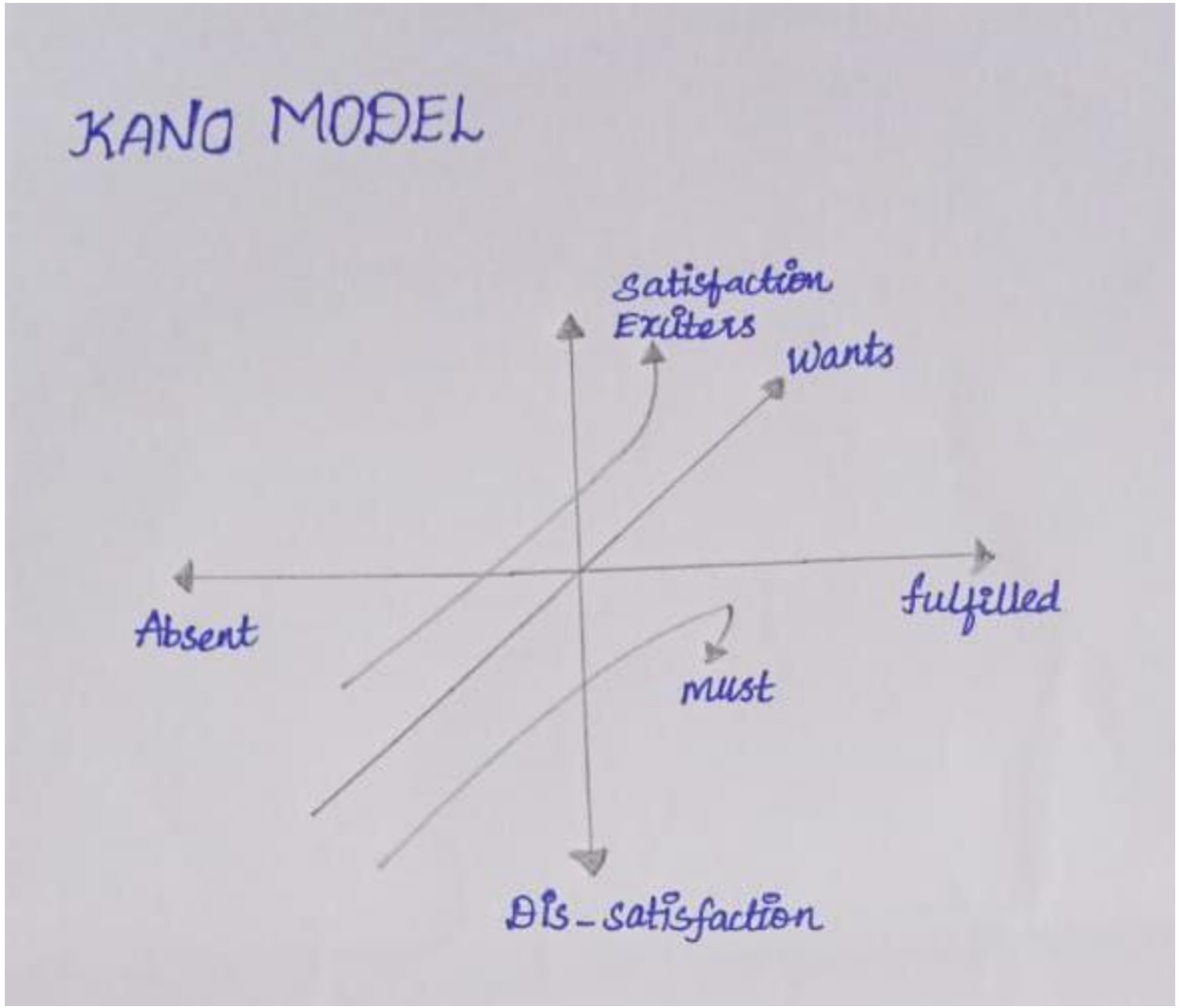
*Charging port.

EXCITERS:

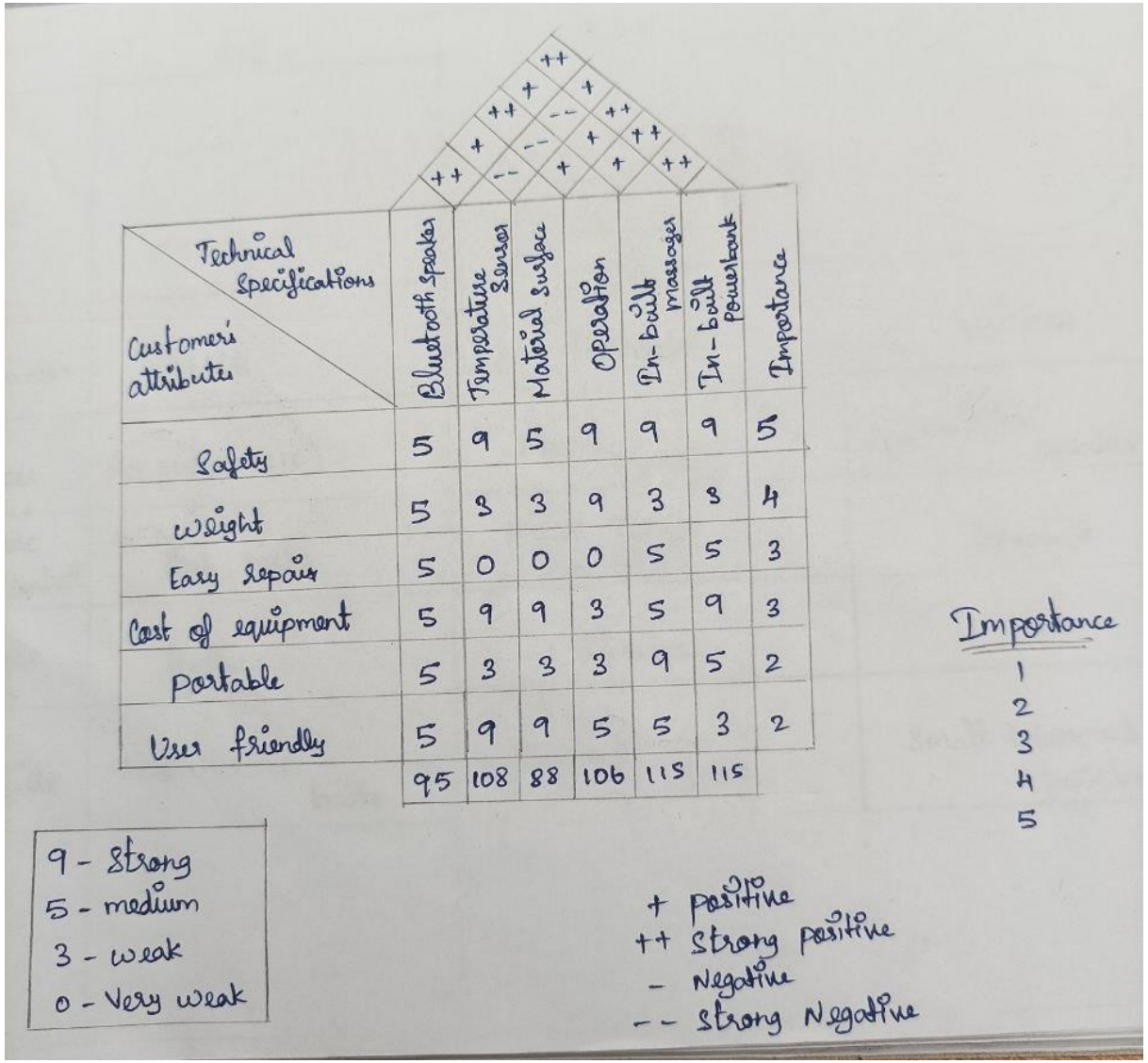
*All controls were controlled by smart phone.

*Sensors to change temperature.

*Air purifiers to purify the surrounding.



HOUSE OF QUALITY:-



Technical specifications / Customer's attributes	Bluetooth speaker	Temperature sensor	Material surface	Operation	In-built messages	In-built powerbank	Importance
Safety	5	9	5	9	9	9	5
weight	5	3	3	9	3	3	4
Easy repair	5	0	0	0	5	5	3
Cost of equipment	5	9	9	3	5	9	3
portable	5	3	3	3	9	5	2
User friendly	5	9	9	5	5	3	2
	95	108	88	106	115	115	

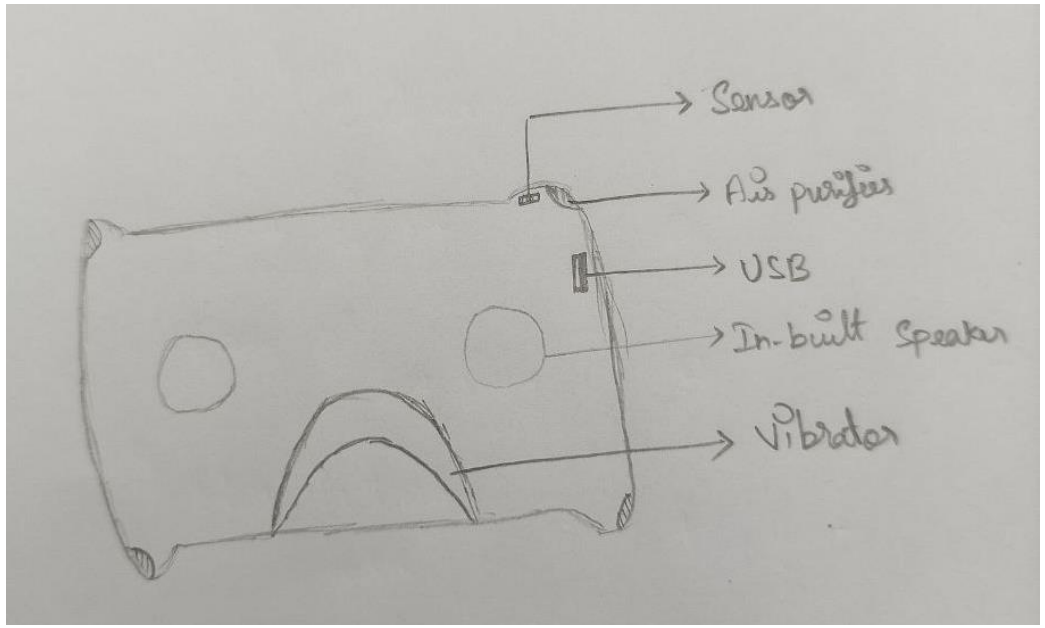
Importance
1
2
3
4
5

9 - Strong
5 - medium
3 - weak
0 - Very weak

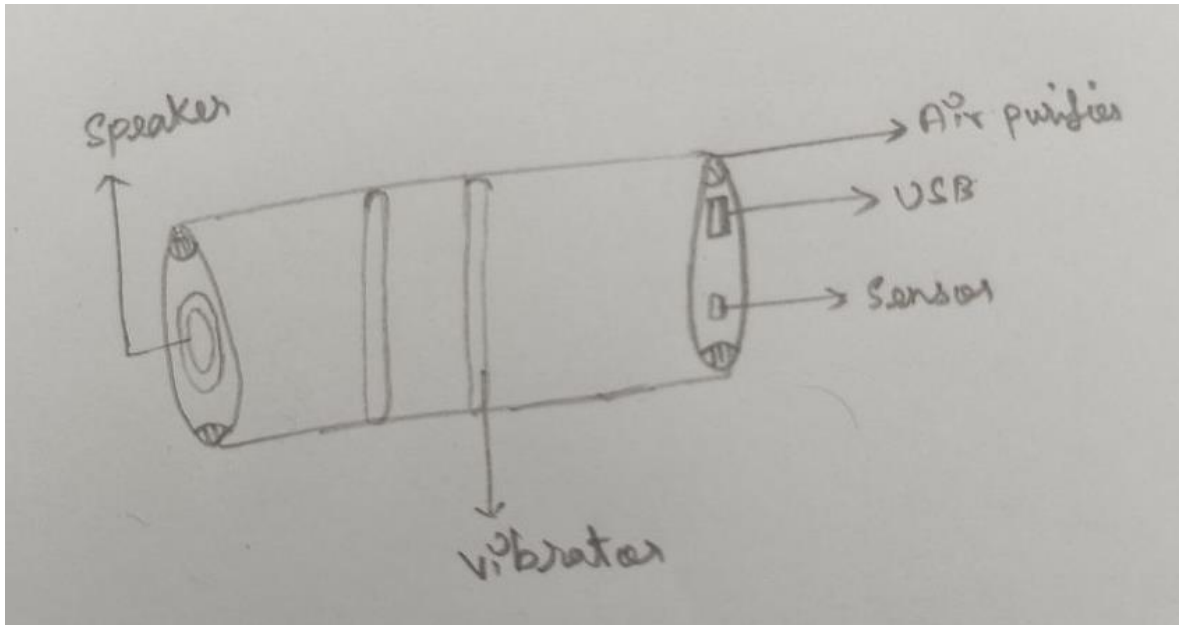
+ positive
++ Strong positive
- Negative
-- Strong Negative

CONCEPTUAL DESIGN:-

MODEL 1:



MODEL 2:



MORPHOLOGICAL CHART:-

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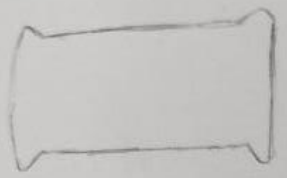
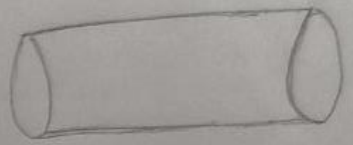
SHAPE			
CHARGING PORT	USB	Portable	Wireless
SPEAKERS	PIEZOELECTRIC	Electro Dynamic	wirless Speaker
TEMPERATURE SENSOR/controll	Gel packs	phase change material	Graphite
Massages	Rollers	Vibrators	-
Air purifiers	Naphthalene balls	Fragment Spray	Small & compact air purifier

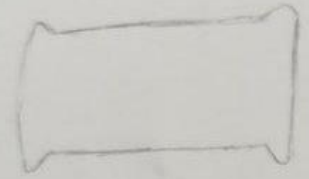
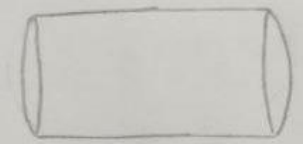
CONCEPT SCORING:-

		CONCEPT			
		(A) Cylindrical pillow		(B) Rectangular pillow	
Selection Criteria	weight	Rating	weight Score	Rating	weight Score
Ease of handling	5%	3	0.15	4	0.6
Ease of use	16%	2	0.45	3	0.15
Total score Rank		266 II		355 I	
Continue ?		NO		Develop	

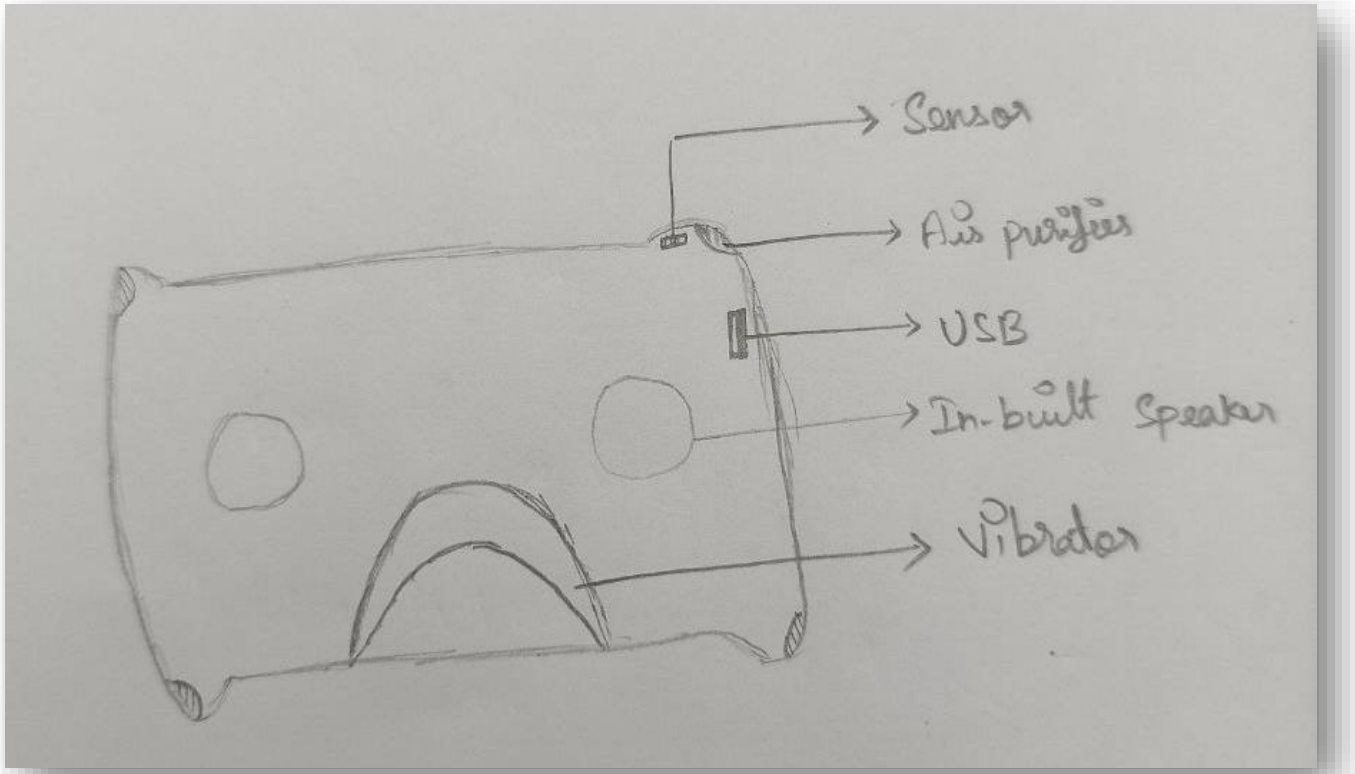
SCREENING MATRIX:-

Selection criteria	CONCEPT VARIANTS			
	A	B	C	REF
Ease of use	0	0	-	0
Ease of handling	0	-	-	0
Manufacturing ease	+	-	-	0
portability	+	+	-	0
pluses	3	2	2	
Same	4	3	1	
Minuses	0	2	4	
NET	3	0	2	
RANK	1	3	4	
Continue ?	Yes	Yes	NO	

MORPHOLOGICAL CHART FOR FINAL DESIGN:-

	Alt 1	Alt 2	Alt 3
SHAPE			
CHARGING PORT	USB	Portable	Wireless
SPEAKERS	PIEZOELECTRIC	Electro Dynamic	Wirless Speaker
TEMPERATURE SENSOR/Controll	Gel packs	phase change material	Graphite
Massages	Rollers	Vibrators	-
Air purifiers	Naphthalene balls	Fragment Spray	Small & compact air purifier

FINAL DESIGN:-



CRITERIA FOR BEST CHOICE:-

*Durable.
*Maintenance.
*Comfortability.
*Sustainability.

CONCLUSION:-

THE FINAL DESIGN WE CHOSE IS P1 .THIS THE FINAL DESIGN WE DECIDED TO MAKE USING CONCEPT 1.AS IT HAS ALL FEASIBLE FEATURES LIKE MASSAGER,EASILY ACCESSABLE,AFFORDABLE AND MANY MORE .IT FULFILLS ALMOST ALL NEEDS AND SPECIFICATIONS OF CUSTOMER TO MAXIMUM LEVEL,SO THIS IS OUR FINAL DESIGN WE CHOSE TO MAKE.

THANK YOU