E. Prototype 1, Project Progress Presentation, Peer Feedback and Team Dynamics

E.1 Prototype 1

This is an overview of prototype one. It is a box with a solid lid so that no light will disturb the client while sleeping.

It is around the size of a large alarm clock the inner part of the bock holds the display for the interface with the Arduino as well as a space for the hearing aid charging device.

The front of the enclosure will hold the LED light which will alert the client based on their set time. The back of the enclosure will have ports so that the Arduino can be charged, and the hearing aid charger can also be charged. Also, the rear or sides of the box will hold an alarm buzzer that will create an audible signal in addition to the visual signal.

All of the electronics will be housed in the bottom part of the enclosure so that they can be accessed for repair but are not accessible to the client directly.

Testing of Prototype 1

Metric evaluation:

1- The weight of the box came out to be significantly lighter than the expected value because our prototype is cardboard and without many of the required electrical wires.
2- Evaluation of dimensions: The focus of prototyping 1 was to test how realistic are the ideal and marginal dimensions set out in the target specification based on our benchmarking. It was noticed that the ideal values were underestimated, and the actual values require to be larger due to the excess cut outs for assembly.
3- Sound: Unfortunately, sound was not considered in this prototype as there was no electronics included and we were more focused on the structural part. Therefore, we couldn't test the sound of the alarm.
4- Thickness: in terms of thickness, we were very close to our ideal thickness was 1/4 inch and the cardboard prototype was 3/16 of an inch. Therefore we were only 1/16 of an inch off. However, once we do our final prototype with the laser cutout it will hit our ideal value of ¼ inch
5- Cost: The cost for the 1st prototype was $0. The prototype was constructed using recycled carboard and leftover duct tape. The Arduino components used for test fitting were borrowed and are not part of the actual project budget. While the cost of the prototype was $0, many components will need to be purchased for the final product and some items may need to be purchased for the second prototype.
6- Sustainability: The prototype was made from complete reusable and recyclable materials. However, it is not strong or effective in terms of durability and usability as that was not the focus of this prototype phase.
7- Reliability of electronics: The goal of this prototype was not to test out the electronic components of the design but rather ensure that the components we plan on using will be able to fit in the encasement. The electronics will be assessed during the second prototype stage.
8- Aesthetic/contrast: we used cardboard in Prototype 1 and we connected each part using tape. We haven't added the customer's desired color yet, and the aesthetics are still lacking, but we've focused on the dimensions of the prototype, so we plan to fill in the gaps in the next prototype.

Key observations

1- Space/fitting for electronic components: All electronic components were gathered and tested to see if they fit in the box with proper spacing inside. The test was successful as everything fits inside with enough space.
2-
3- The overall size is adequate and is large enough to be seen. It perfectly fits on the bedside table. Hence, these dimensions can be set in our final product.

Values comparison table

#	Metric	Unit	Marginal Value	Ideal Value	Prototype 1
1	Weight of box and alarm combined	kg	<1.8	1.35	0.2
2	Dimensions of box (not including alarm attached)	in	<7 long	6.5	6.5
			<5 high	4.5	5.5
			<5 depth	4.5	4.75
3	Maximal sound of alarm clock	db	<85	80	N/A
4	Thickness of box only	in	<1/2	1/4	3/16
5	Cost of our final product	CAD $	<100	85	0$
6	Sustainability	1-5 scale	<3	4	3
7	Reliability of electronics	1-5 scale	<4	5	N/A
8	Aesthetic/contrast	1-5 scale	<4	5	2

E.2 Project Progress Presentation

E.2.pptx

E.3 Project plan update

https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=t4TDkuNmaFVUZZGIzHeAg
XUQuQOoZUc1%7CIE2DSNZVHA2DELSTGIYA