

# Dental Hygiene

## Team B

KEENAN LACEY (PROJECT MANAGER AND CLIENT CONTACT)

RODRIGO OJEDA (SCHEDULE AND BUDGET)

MESHAL ALRASHIDI (WEBSITE DEVELOPER AND DOCUMENT MANAGER)

# Project Description

- ▶ Re-Engineer a dental triturator
- ▶ Dental capsules are used to fill holes in teeth
- ▶ NAU Dental Hygiene Department (Sponsor)



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[1] Dental Capsule

[1] [http://images.alfresco.advanstar.com/alfresco\\_images/dental/2015/09/07/6746d5db-e746-422f-9f2d-f22205b448ee/Riva-Luting-Capsule-hi.jpg](http://images.alfresco.advanstar.com/alfresco_images/dental/2015/09/07/6746d5db-e746-422f-9f2d-f22205b448ee/Riva-Luting-Capsule-hi.jpg)

# Designs Considered

- ▶ Gear Design
- ▶ Quick Return Design
- ▶ Spinning design
- ▶ Chain Design
- ▶ Battery Operated Design
- ▶ Compressed Air Design

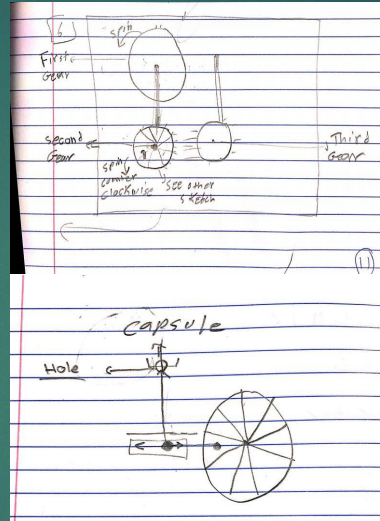


Figure 1: Gear Design

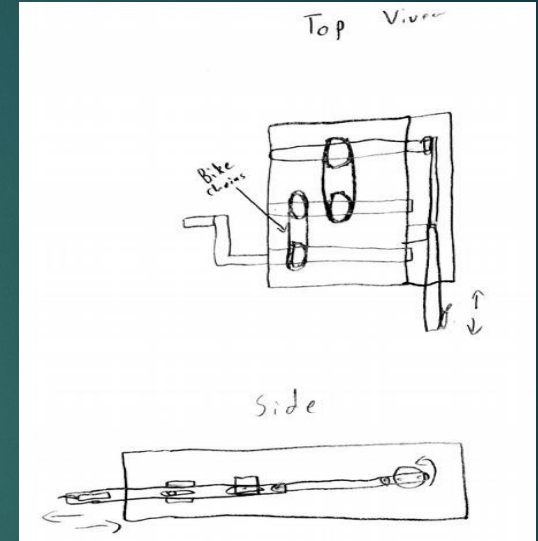


Figure 2: Chain design

# Designs Considered

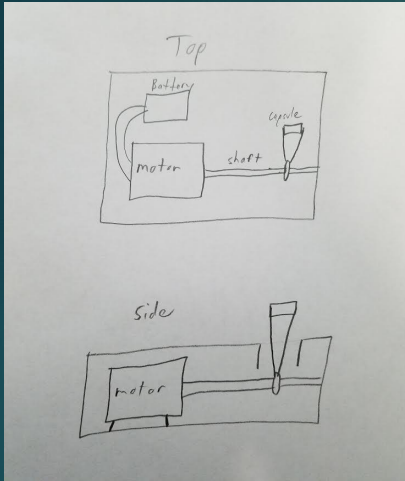


Figure 3: Battery operated design

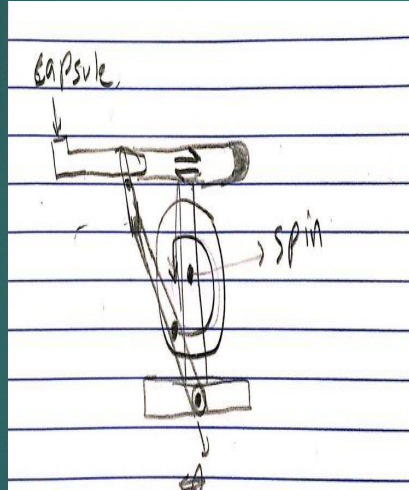


Figure 5: Quick Return design

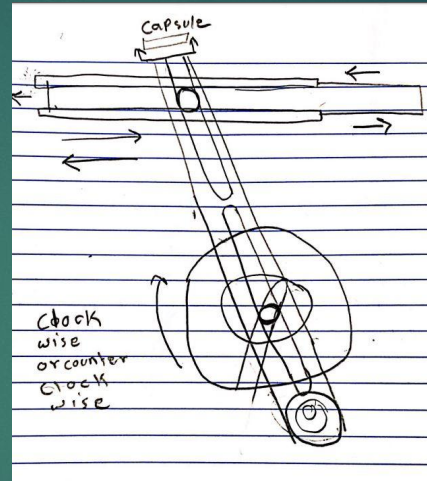


Figure 4: Spinning design

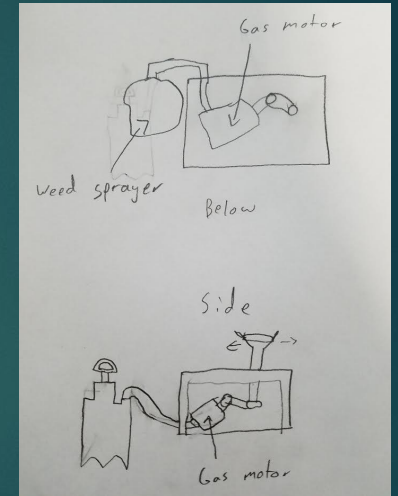


Figure 6: Compressed air design

# Selected Designs

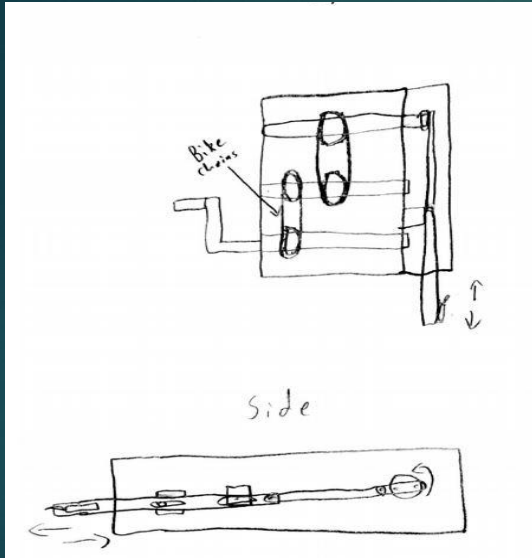


Figure 8: Chain design

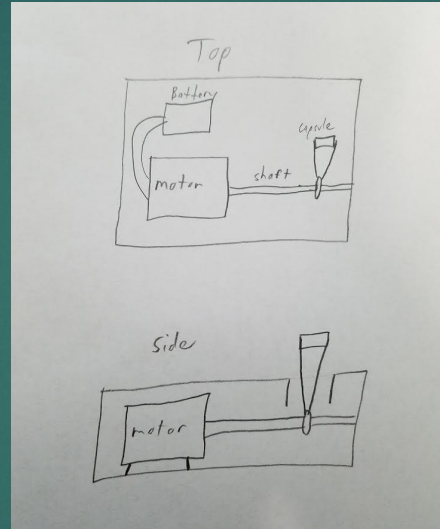


Figure 9: Battery operated design

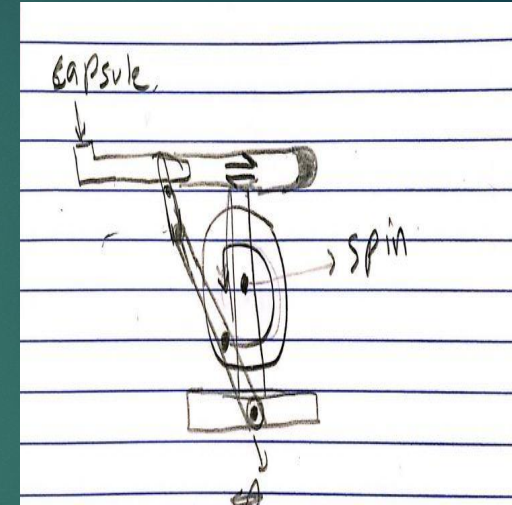


Figure 10: Quick Return design

# Pugh chart

Pugh Chart								
Criteria	Importance Rating	Designs						
		Datum: Dental Titrator	Gear design	Chain design	Battery operated design	Quick Return Design	Spinning Design	Compressed Air Design
Lightweight	5		S	+	S	S	-	S
Shake capsule for 10 seconds	5		S	S	S	S	S	S
Easily Transportable	5		+	+	+	+	-	+
Reliability	4		+	+	+	+	+	+
Easy Operation	4		S	+	+	+	+	S
Quality	3		-	+	+	-	-	-
Cost	3		+	+	+	+	+	+
Easy Maintenance	3		-	-	S	S	S	S
Aesthetics	2		-	-	-	-	-	-
	Sum of Positives		3	6	5	4	3	3
	Sum of Negatives		3	2	1	2	4	4
	Sum of Sames		3	1	3	3	2	2
	Weighted Sum of Positives		12	24	19	16	11	12
	Weighted Sum of Negatives		8	5	2	5	15	5
	<b>TOTALS</b>		<b>4</b>	<b>19</b>	<b>17</b>	<b>11</b>	<b>-4</b>	<b>7</b>

## Top 3 Designs:

1. Battery Operated Design
2. Toothbrush Design

Figure 7: Pugh Chart

# Schedule

## Table 1: Gantt chart

Task	Who	January							February														March														April														May		
		25	27	29	1	3	6	8	10	13	15	17	20	22	24	27	29	31	1	3	6	8	10	13	15	17	20	22	24	27	29	31	3	5	7	10	12	14	17	19	21	24	26	28	1	3	5						
1 Team charter	Team																																																				
2 Background report	Team																																																				
2.1 Come up with customer need	KL																																																				
2.2 Get customer needs approved by sponsor	KL																																																				
2.4 Background research	MA and RO																																																				
2.5 Existing Design	Team																																																				
2.5.1 Egg Beater	MA																																																				
2.5.2 Paint Mixer	RO																																																				
2.5.3 Sawzall	KL																																																				
2.5 Write up report	Team																																																				
2.6 Format and Turn in report	MA																																																				
3 Presentation 1	Team																																																				
3.1 Create Presentation	Team																																																				
3.2 Practice for Presentation	Team																																																				
Peer Evals # 1	Team																																																				
4 Preliminary proposal report	Team																																																				
4.1 Customer requirements	RO																																																				
4.2 Engineering requirements	MA																																																				
4.3 Update House of Quality	KL																																																				
4.4 Each Create seven designs	Team																																																				
4.5 Narrow down design	Team																																																				
4.6 Select Design	Team																																																				
5 Presentation 2	Team																																																				
5.1 Create Presentation	Team																																																				
5.2 Practice Presentation	Team																																																				
Peer Evals # 2	Team																																																				
6.1 Project description	Keenan lacey																																																				
6.2 Background & Benchmarking	Rodrigo Ojeda																																																				
6.3 Customer Requirement	Keenan lacey																																																				
6.4 Schedule & budget	Meshal Alrashidi																																																				
7 Final report	Team																																																				
7.1 Background	Rodrigo Ojeda																																																				
7.2 Report requirement	Meshal Alrashidi																																																				
7.3 Existing Designs	Keenan lacey																																																				
7.4 Design considered	Meshal Alrashidi																																																				
7.5 Design selected	Rodrigo Ojeda																																																				
7.6 Proposed design	Keenan lacey																																																				
8 Final Presentation	Team																																																				
8.1 Project description	Meshal Alrashidi																																																				
8.2 Background & Benchmarking	Rodrigo Ojeda																																																				
8.3 Customer Requirement	Keenan lacey																																																				
8.4 Schedule & budget	Meshal Alrashidi																																																				
Final Prototype due	Team																																																				
Peer Evals # 3	Meshal Alrashidi																																																				

# Anticipated Budget

Anticipated expenses: \$350

Prototype cost total: \$250

- ▶ Materials
- ▶ Manufacturing costs
- ▶ 3D printing

Unexpected costs: \$100

Final design: \$400

Total budget: \$750



Figure: 11

[2] [http://chicagoinpectorgeneral.org/wp-content/uploads/2011/03/500px-Emblem-money.svg\\_.png](http://chicagoinpectorgeneral.org/wp-content/uploads/2011/03/500px-Emblem-money.svg_.png)



# Questions?



Figure:12

[3][https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKFwjLv9zlop3SAhVFj1QKHR2MDhgQjRwIBw&url=https%3A%2F%2Fthewisemind.org%2F2015%2F09%2F03%2Fask-me-questions%2F&psig=AFQjCNHOSOhFzyfePuNhCL\\_NKLhRTfD7Q&ust=1487631810084733](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKFwjLv9zlop3SAhVFj1QKHR2MDhgQjRwIBw&url=https%3A%2F%2Fthewisemind.org%2F2015%2F09%2F03%2Fask-me-questions%2F&psig=AFQjCNHOSOhFzyfePuNhCL_NKLhRTfD7Q&ust=1487631810084733)

# References

- [1] [http://images.alfresco.advanstar.com/alfresco\\_images/dental/2015/09/07/6746d5db-e746-422f-9f2d-f22205b448ee/Riva-Luting-Capsule-hi.jpg](http://images.alfresco.advanstar.com/alfresco_images/dental/2015/09/07/6746d5db-e746-422f-9f2d-f22205b448ee/Riva-Luting-Capsule-hi.jpg)
- [2] [http://chicagoinspectorgeneral.org/wp-content/uploads/2011/03/500px-Emblem-money.svg\\_.png](http://chicagoinspectorgeneral.org/wp-content/uploads/2011/03/500px-Emblem-money.svg_.png)
- [3] [https://www.google.com/url?sa=i&rc=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjLv9zlop3SAhVFj1QKHR2MDhgQjRwIBw&url=https%3A%2F%2Fthewisemind.org%2F2015%2F09%2F03%2Fask-me-questions%2F&psig=AFQjCNHOSOhFzyfePuNhCL\\_NKLJhRTfD7Q&ust=1487631810084733](https://www.google.com/url?sa=i&rc=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjLv9zlop3SAhVFj1QKHR2MDhgQjRwIBw&url=https%3A%2F%2Fthewisemind.org%2F2015%2F09%2F03%2Fask-me-questions%2F&psig=AFQjCNHOSOhFzyfePuNhCL_NKLJhRTfD7Q&ust=1487631810084733)