Background Presentation

Human Powered Dental Mixer

ME476C
Majed Bourosli (Project Manager)
Minekher Almari (Budget Liaison)
Mubarak Alajmi (Website Developer)
Mohammad Almutairi (Client Contact)
Sultan Alotaibi (Documenter)

Dr. Sarah Oman
Client: Amy Smith
February 22th 2017

Introduction

- A Dental Triturator is used to mix dental formulations by dentists
- A Dental Triturator uses electricity to work
- This project seeks to redesign the Dental Triturator
- Student traveling abroad necessitated this project
- The goal is to make them to use a dental mixer comfortably in their overseas assignments.

Project Description

- The main objective of our project is to create a human powered mixer.
- Project undertaken by NAU's Dental Hygiene (DH) Dept and NAU Mechanical Engineering Dept .
- Top priority was to make sure that new model did not run on electrical energy.
- The major reason behind the project is to make students able to work overseas comfortably.

Who is our Client ?

AMY SMITH, RDH, MS, MPH

“Assistant Clinical Professor at Dental Hygiene department at NAU”

Background & Benchmarking

- Original system runs on electricity
- The capsule compartment has a transparent plastic window
- There are two hooks that holds the capsule
- The base is metallic and solid
- There is a scale on the fore side for timing the shaking time

EXISTING DESIGN #1

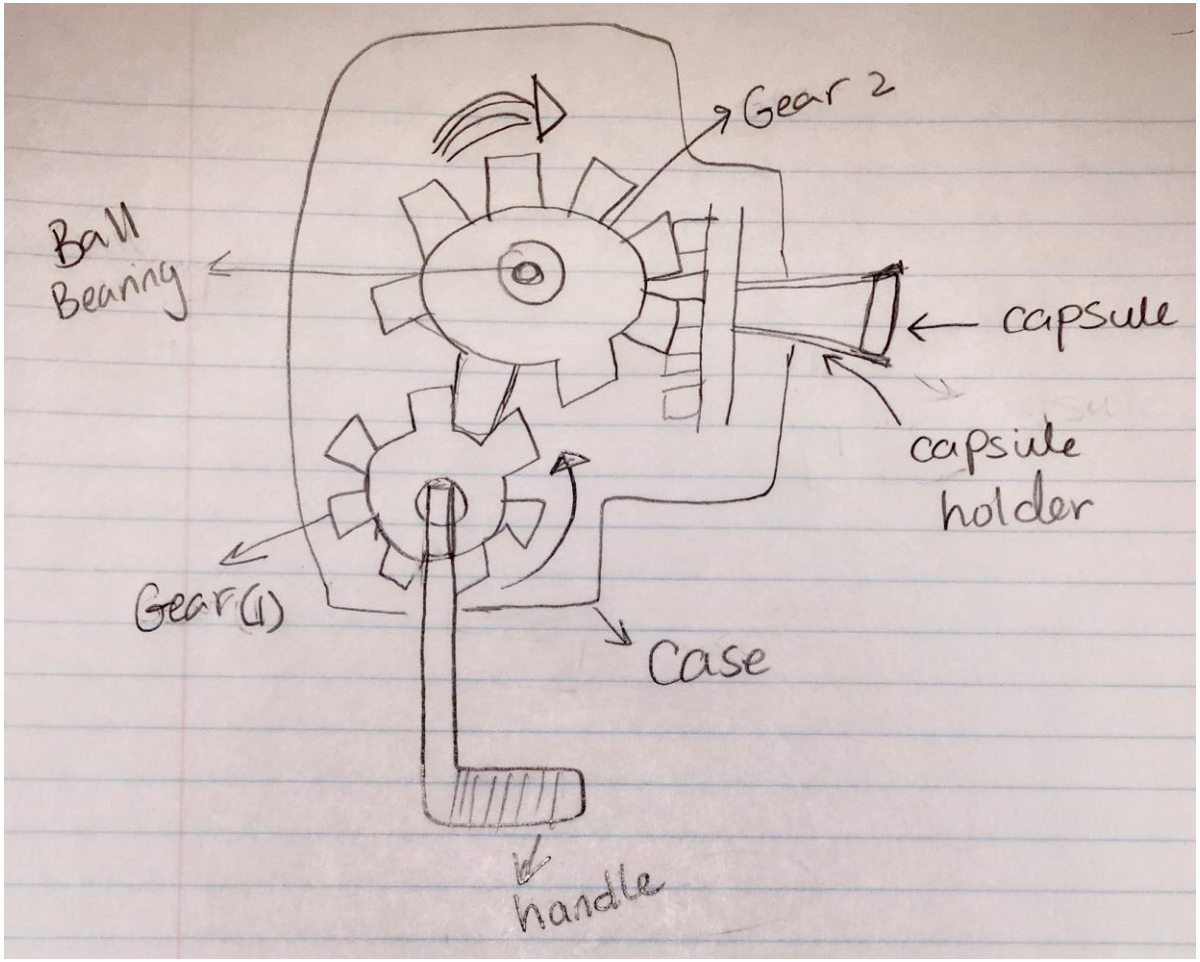
- **Mixacap Dental Triturator**

Developed by Benjamin Lowry

Existing Design#2

- **Maxine Janis' Triturator**

Design


Gear 2
Ball Bearing
capsule
capsule holder
Gear (1)
Case
handle

Customer requirements

Customer requirement due to our client:

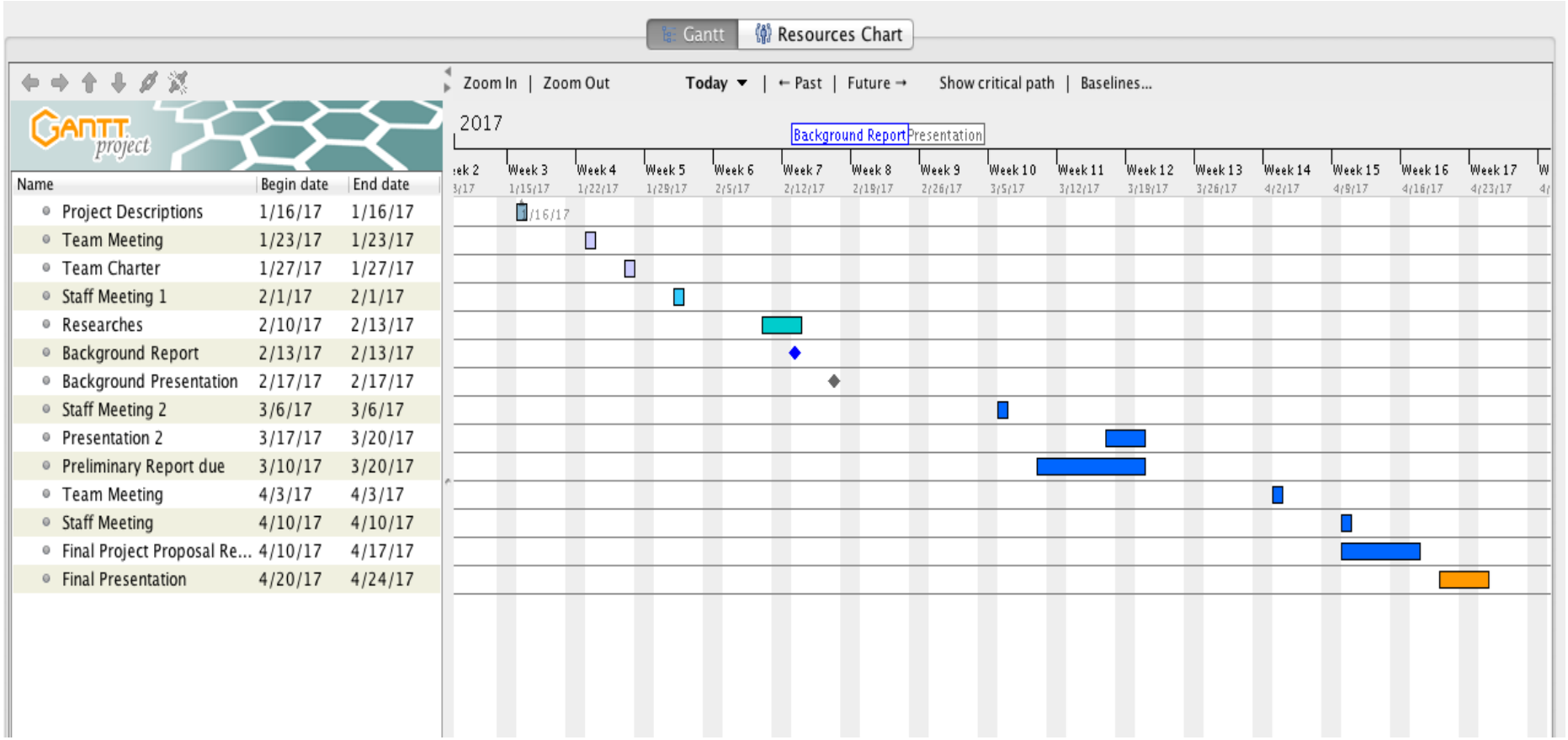
Requirements	Scale from 1-5
Shake capsule for 10 seconds	5
Easy to Transport	5
Light weight	5
Easy Operation	4
Reliability	4
Cost	3
Quality	3
Easy Maintenance	3
Shape	2

Design requirements

- Device should shake the formulation that is in the capsule for ten seconds
- enough power to shake the capsule thoroughly
- Safety in the use of the device should also be observed
- Device should be stable and light weight to travel when it is placed on a level ground
- Should use easy material to maintain and operate.

- Should be high quality and high life design.

Project schedule



Schedule and budget cont’

- We are currently on schedule on the project.
- The expected budget is about $750 for whole project.
- Our estimation for the material is $250
- Manufacturing parts is estimated to be $150
- Remaining $350, and it will be used for urgent changes in our design.

Any Questions?

References

- Sam logan. “Why the time is right for a radical paradigm shift in early powered mobility: the role
- of powered mobility technology devices, policy and stakeholders”. Retrieved 25 September 2016, from http://www.ncbi.nlm.nih.gov/pubmed/26340446
- Classification of Dental Instruments".*Arkansas Tech University*. Retrieved2017-01-12
- "Kaeser Compressor Applications".*Compressed Air Systems*. Retrieved2017-01-12
- Mahmood Kazemi, Ahmad Rohanian,Abbas Monzavi & Mohammad Sadegh Nazari*(March*
- *2013).* "Evaluation of the accuracy and related factors of the mechanical torque-limiting device for dental implants