3D Printing Airway Trainers

Progress Report 3

Client: Dr. Kristopher Schroeder

Advisor: Dr. John Puccinelli

Date: 9/27/2024

Team:

Maribel Glodowski mjglodowski2@wisc.edu (Co-leader)

Jack Sperling jwsperling@wisc.edu (Co-leader)

Maiwand Tarazi mtarazi@wisc.edu (BWIG)

Elle Heimer eoheimer@wisc.edu (Team Communicator)

Nathan Klauck nklauck@wisc.edu (BSAC)

Ilia Mikhailenko imikhailenko@wisc.edu (BPAG)

Problem Statement

Airway management is important in keeping a patient stable in various medical environments. While novel techniques and innovative devices for better airway management have decreased the difficulties medical professionals face, developing airway management skills in difficult and unique scenarios is essential to positive and effective patient outcomes. Developing a method of using 3D printing and existing patient imaging to create realistic airway training manikins would allow medical professionals to practice airway management skills with physiologically consistent results.

Brief Status Update

The team started the design matrix by assigning designs and criteria. The team continues to research relevant topics, such as airway mechanics, materials, and important intubation landmarks.

Summary of Team Role Accomplishments

- Maribel Glodowski
    - Continued research into materials, mechanical properties, and printing methods
    - Started creating a design matrix
- Jack Sperling
    - Work on a detailed and flushed out design matrix
    - Continue researching commercially available products
    - Coordinated with Client to acquire an AirSim mannequin to provide the team with a physical representation of what we are trying to create.
- Maiwand Tarazi
    - Researched into potential materials to use for design
    - Analyzed two competing designs to prepare design matrix
- Elle Heimer
    - Research on potential materials and existing airway models
    - Began looking at design matrix criteria assignments
- Nathan
    - Preparation for second BSAC meeting
    - Attended BSAC exec meeting
- Ilia
    - Conducted more research regarding the potential materials to be used in our design, as well as the critical features of the airway that we need to ensure are included.

Weekly/Ongoing Difficulties

- None to report currently

Upcoming Team and Individual Goals:

The team goals include brainstorming and researching new designs and materials. The team also aims to create a quality preliminary presentation to showcase our work so far.

- Maribel Glodowski
    - Finish creating a design matrix that leads to the best design

    - Create a slideshow and practice preliminary presentation
- Jack Sperling
    - Assist in completing the design matrix to decide which route our team will chose to create our final project
    - Work closely with Maribel to provide the team with guidance and feedback on our preliminary presentation
    - Ask Dr. P about past airway trainer project and potential resources from that
- Maiwand Tarazi
    - Begin drafting design matrix with team
    - Finalize design matrix and present it next week
- Elle Heimer
    - Prepare preliminary presentations
    - Finalize design matrix
    - Communicate with client about next meeting
- Nathan Klauck
    - Conduct further research on materials for design matrix
- Ilia
    - Continued to research 3D airway trainers present on the market
    - Finalized assigned portion of Product Design Specification

Activities Timesheet

Team Member	**Time for the Week**	**Total Time for the Semester**
Maribel Glodowski	2	8
Jack Sperling	4	10
Maiwand Tarazi	3	8
Elle Heimer	2	7
Nathan Klauck	1	7

Ilia Mikhailenko	1	7

Expenses:

- No expenses to report at this time

Project Timeline:

Task	**Sept.**			**Oct.**					**Nov.**					**Dec.**
	13	**20**	**27**	**4**	**11**	**18**	**20**	**25**	**1**	**8**	**15**	**22**	**29**	**6**
Project														
Brainstorming	**X**	**X**	**X**											
Researching	**X**	**X**	**X**											
Manufacturing														
Testing/Remodeling														
Deliverables														
Progress report	**X**	**X**	**X**											
PDS		**X**												
Mid-semester			**X**											
Final														
Meetings														
Team	**X**	**X**	**X**											

Advisor	**X**	**X**	**X**											
Client	**X**													
Website														
Update	**X**	**X**												