EYE DROPPER ASSISTANT, BME 402

Date: 04/18/2024

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Co-Team Leaders: Kasia Klotz (kmklotz@wisc.edu), Anabelle Olson (amolson27@wisc.edu)

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BSAC: Tevis Linser (<u>linser@wisc.edu</u>)

Note: Team member Tommy is currently participating in a Co-Op and is devoting time to that position. Tommy will work on what he can this semester for the project but due to this conflicting commitment, his contributions *may* be limited.

Problem Statement

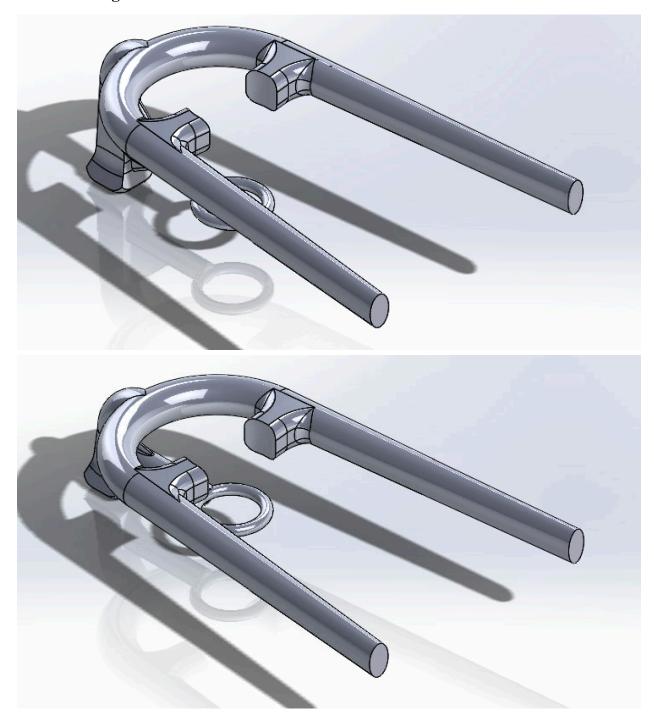
Administration of eye drops is difficult for patients, especially older adults and those with limiting diseases like arthritis. This results in eye drop waste and tip contamination. The team will design a device to assist patients in squeezing the eye drop bottle while releasing a consistent amount of solution per drop. This device will improve the administration of eye drops for the patient while minimizing eye drop waste.

Brief Status Update:

With the semester coming to an end, the team is working on finalizing the executive summary for the Tong award, as well as creating the final poster for presentations. There is still prototyping going on to explore options for a more universal design. There is also work being done on packaging and labeling for the device.

Difficulties & Advice Requests: N/A

Current Design:



Design Changes:

- Nose piece removed and platform implemented for user to rest on eyebrow bone.
- Altered the squeezing mechanism to be more uniform for injection molding.
- Separated components to allow for less complex injection molding procedures.

Materials and Expenses:

lka	Description		Part	Data	OTV.	Cost	Takal	Link				
Item	Description	Manufacturer		Date Devices	QTY	Each	Total	Link				
Existing Devices												
Droppy Eye Drop	Competing	Droppy,										
Dispenser	Design	Amazon	DR001	9/25	1	9.99	9.99	<u>Link</u>				
GentleDrop			ASIN:									
Eye Drop	Competing	GentleDrop,	вововн									
Guide	Design	Amazon	RKV1	9/25	1	17.99	17.99	<u>Link</u>				
Prototyping												
	Prototype											
Silicone	Materials	PETUNIA	ASIN:									
Eyelash	(Handle	SKINCARE,	B00UVL	_								
Curler	Grips)	Amazon	NDVQ	10/25	1	7.49	7.49	<u>Link</u>				
		UW										
		Makerspace										
MakerSpace Print	Drototypo v1	Ultimaker 3D Print	N/A	10/31	1	4.96	4.96	N/A				
Print	Prototype v1		IN/A	10/31	1	4.90	4.90	IN/A				
		UW										
MakerSpace		Makerspace Ultimaker 3D										
Print	Prototype v2	Print	N/A	11/10	1	5.07	5.07	N/A				
	,,	UW		<u> </u>								
		Makerspace										
MakerSpace		Bambu Labs										
Print	Prototype v3	3D Print	N/A	11/13	1	4.5	4.5	N/A				
		UW										
		Makerspace										
MakerSpace		Bambu Labs										
Print	Prototype v3	3D Print	N/A	11/14	1	4.96	4.96	N/A				
		UW										
		Makerspace										
MakerSpace Print	Drototuno v2	Ultimaker 3D	N / A	11/15	1	0.16	0.16	N / A				
Print	Prototype v3	Print	N/A	11/15	1	8.16	8.16	N/A				

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
		UW Makerspace						
MakerSpace		Ultimaker 3D						
Print	Prototype v4	Print	N/A	11/17	1	10.08	10.08	N/A
		UW						
		Makerspace						
MakerSpace		Ultimaker 3D						
Print	Test Fixture	Print	N/A	11/29	1	13.78	13.76	N/A
		UW						
		Makerspace						
MakerSpace	Final	Ultimaker 3D						
Print	Prototype	Print	N/A	12/1	1	7.36	7.36	N/A
		UW						
	Multiple	Makerspace						
MakerSpace	Final	Ultimaker 3D						
Print	Prototypes	Print	N/A	12/8	1	11.6	11.6	N/A
		UW						
	Multiple	Makerspace						
MakerSpace	Final	Ultimaker 3D						
Print	Prototypes	Print	N/A	2/6	1	7.84	7.84	N/A
		UW						
	Prototype	Makerspace						
MakerSpace	Adjusted For	Ultimaker 3D						
Print	IM	Print	N/A	2/23	1	2.15	2.15	N/A
		UW						
	Parts for	Makerspace						
MakerSpace	Connection	Ultimaker 3D						
Print	Mechanism	Print	N/A	2/26	1	2.8	2.8	N/A
		UW						
		Makerspace						
MakerSpace	Prototypes	Ultimaker 3D						
Print	for Testing	Print	N/A	3/4	1	8.2	8.2	N/A
		UW				_	_	
		Makerspace						
MakerSpace	Prototypes	Ultimaker 3D						
Print	for Testing	Print	N/A	3/4	1	8.75	8.75	N/A

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
		UW						
		Makerspace						
MakerSpace	Universal	Ultimaker 3D						
Print	Prototype	Print	N/A	4/17	1	1.70	1.70	N/A

Upcoming Team and Individual Goals:

Team: The team will be working on finalizing the poster for presentations next Friday. The team is also working on creating packaging with labeling and instructions to have as a prop during presentations.

Individual:

- Jenna:
 - > Finish editing the poster and final dimensions
 - > Print stickers for packaging through student print
 - > Practice final presentation
- **&** Eva:
 - > Create box plots for single drop test rather than bar graphs for poster
 - > Finalize poster and practice final presentation with team
- ***** Tevis:
 - > Finalize dimensions and practice my parts for poster presentation
 - > Gather all the items that the team will present as props for the presentation
 - > Finalize thematic analysis for the journal
- **❖** Kasia:
 - > Finalize poster sections
 - > Practice presenting
 - > Assist in creating labeling for packaging
- **❖** Anabelle:
 - > Finish poster sections and practice presenting with the team
 - > Finish instructions for device packaging

Timeline:

Took	Jan	Feb			March				April				May			
Task	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10
Project R&D																
Research	/	/														
Prototyping	1	/	1	1												

Testing					1	1	1	1	1	1	1		
Deliverables													
Progress Reports	1	1	1	1	1	1	1	1	1	1	1		
Prelim presentation			1										
Final Poster													
Meetings													
Client		1		1		1		/		1			
Advisor	1	1	1	1	1	1	1	1	1	1	1		
Website													
Update	1	1	1	1	1	1	1	1	1	1	/		

Project Goal	Deadline	Assigned	Progress	Completed
Preference Human Testing	2/29	All	Completed	Yes
Preliminary Oral Presentation	2/9	All	Completed	Yes
Preliminary Deliverables	2/28	All	Completed	Yes
Show and Tell	3/22	All	Completed	Yes
Executive Summary	4/19	All	In Progress	
Final Poster Presentation	4/26	All	Not Started	
Final Deliverables	5/1	All	Not Started	

Summary of Weekly Team Member Design Accomplishments

Team: The team is working on their final deliverables for the end of the semester. The final draft of the executive summary was completed, and will be sent to the team's connection at AbbVie at the end of the week. The first draft of the poster has also been completed.

Individual:

Jenna:

- > Worked on the final poster and putting information into correct section
- > Check poster dimensions with college print
- > Put dimensions into the final poster

& Eva:

- > Worked on the final poster
- > Edit executive summary
- ➤ Made bar graphs for single drop test data

***** Tevis:

- > Worked on thematic analysis for poster and report
- > Printed the newest version of the prototype
- > Edited sections of the poster to get preliminary feedback

***** Kasia:

- > Created final poster and worked on sections
- > Annotated executive summary
- ➤ Analyzed single drop test data

❖ Anabelle:

- > Worked on final poster
- > Performed a thematic analysis on preference testing data
- > Continued working on drawing for instruction manual