Deliverable F: Prototype 2

Group 25

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Abstract

This paper covers group B25 development of prototype II. It covers the feedback that was received from the client, and how that was taken into consideration with the development of prototype II. Testing was performed on this new prototype, and the results were discussed. Finally the group presents it's new project plan and it's plans on moving forward with the project, as well as a brief discussion on some things learned.

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F.1 Feedback From Last Client Meet

The feedback received from the last client meeting was overall positive. She liked the created design very much. The only thing that was asked to be changed was the proposed design for the privacy tent; to be able to accommodate someone else within the tent, rather than having to take the wall down to be able to have someone be changed.

With this feedback the group was able to begin development on a prototype II. With the main idea and focus being seeing how the design worked in real life, and seeing the feasibility of this design on a small scale.

Also from this feedback the group is beginning to rework the proposed idea for the privacy tent. The solution to fix it is quite simple and was actually proposed by the client herself, simply give the canvas on the privacy tent more slack and we will be able to meet her requirements of having two people contained within.

F.2 Prototype II

The idea for prototype II was to build a small scale model of the main component of the design. This was done for two main reasons.

The first was to test the feasibility of the design and how well the parts fit together. The main test was to see if on a small scale we left enough room to put together the parts. How the parts look folded as well as just overall aesthetics. Just general things to know to be able to actually build the prototype without wasting expensive material.

The second reason was to test how well the small scale design was able to handle a proportional load. What that means, is that the model is going to be built at approximately 1/5 of the size so it should be able to handle 1/5 of the proposed maximum load. The proposed maximum load is 100lbs, so we will want to be able to give some leeway so 150lbs is what we will be testing. Applying a simple calculation we see that the model should be able to ideally 30 pounds, with the minimum weight being 20lbs.

F.3 Testing and Results

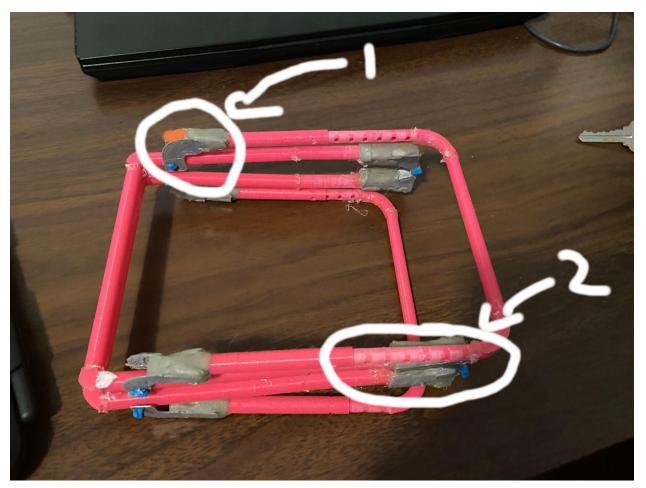


Figure 1: Folded Prototype

This is the small model folded up. As seen at point 1, at the u-joint, there is no curve underneath the material. It was found that this made it difficult for the table to lay completely flat as there is nothing pushing up on it from underneath. Looking at point 2 now, there are visible sanding marks as it was found that the diameter of the material inserted into the bottom needs to be adjusted as the current one is too thick to allow it to fit in.

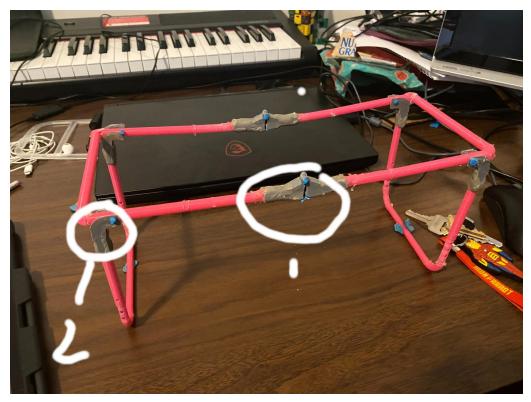


Figure 2: Unfolded Prototype

This is a picture of the prototype when folded down. 2 key things were also found in this state the first was that with the current design there is not enough support in the middle to be able to support a load. Therefore the design needs to be updated to include something to support the middle so it doesn't collapse in on itself. The second key thing found was listed in Figure 1, but is better illustrated in this picture. As can be seen here there is no real resting place for the table top which means that if weight is pushed onto those corner pieces the points will bend and have a higher rate of failure.

The key result that was found was that in its current state the prototype is unable to sustain a proportional load. As such adjustments need to be made. The idea for the current adjustment is to add a bar going from the bottom of each leg to the middle joint to give it some structural support

There were also a few other key things learned from the making of this prototype. We learned that the diameter for the part that attaches to the table legs needs to be shortened. We also learned the general idea of what the prototype will look like put together.

F.4 Moving Forward

The next deliverable due, is deliverable G. Which is to identify a potential business model for the proposed project. Work is already beginning to be done on this as the group is researching the current as well as the projected future market for disability devices, particularly disability devices for those who are unable to change themselves. While this research is going on, as well as the deliverable is being done, two group members are going to split off and begin development of the third prototype for design day. These two group members are currently working on a finalized bill of materials which will be sent before the due date for deliverable G.

F.5 Updated Project Plan

