

GNG 1103 – Engineering Design

Faculty of Engineering

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Prototype III and Customer Feedback

Group 9

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Abstract

This document focuses on the feedback we were given from our client/users and the steps we are taking to impact design choices and improve our solution. Prototype 3 testing and test results are included in this document. An analysis of critical components is also included.

Feedback

- Sand pieces of wood to prevent splinters
- Reinforce handle joint so it doesn't spin or break
- Ensure teeth of cylinder fit together
- Use hinges to attach sections of wood (Home depot employee)
- Use longer singular piece of wood (Home depot employee)
- Use PVC pipe (Home depot employee)

After having users handle and use our wooden insertion section they mentioned that splinters would be an issue and handling the wood is not ideal. We have decided to sand down the wooden sections to make it more comfortable for the user. Based on feedback from prototype 2 we also decided to implement metal brackets for the wooden handle so that it does not break due to the torque required to rotate the tool. While shopping for materials we also got some feedback from home depot employees and they suggested using one singular longer piece of wood however that would no longer make our tool modular. They also suggested hinges to make the tool foldable, we considered this but we don't believe hinges would be strong enough based on prototype 2 testing.

Justification and reasoning

From our testing in prototype 1 we learned lots about 3D printing including time and precision constraints and how we can bring our design to reality. Prototype 1 gave us insight into how we will implement our lever mechanism and how we can connect the two halves of our collection cylinder in the final design. Our original design to connect two halves did not work and we learned from this to come up with another working design which we will implement in the final design.

During testing of prototype 2, the connection between the handles and the shaft broke. This issue will be remedied in the final design by adding metal brackets to reinforce the wood connections.

This prototype encompasses multiple subsystems and how they interact with each other to ensure our final product can come together to fulfill the user's needs.

Images of the prototype:





