

A Logical Approach for the Consumption and Handling of Hot Beverages for One-Fingered Individuals

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Abstract

Today, more than 41,000 US citizens are registered as someone who had an amputation of a lower, arm extremity specifically one or more fingers [1]. Therefore, some traditional products are not suitable for these individuals. To support such individuals with ease of functionality with everyday products, a challenge was introduced to create a coffee mug that would be suitable for such disabled people. No such products exist for such a case and little research has been conducted to determine what would make such products effective. In our proposed approach, we are set out to design a product that will suit the needs of one-fingered individuals, specifically with the handling of a coffee mug. The feasibility of proposed concepts is determined through concept selection, ranking, and determination of best possible ideas. A tall, slimmer mug, with separate finger handles for easier handling with an easy but secure pop off lid is proposed to best meet the needs of one-fingered individuals drinking from a coffee mug.

Key Words: Amputation, challenge, research, feasibility, suitable

1. Introduction

Product design and generation is a process that works to best suit the needs of customers while working under the constraints of feasible design and processing. Within the design process there are multiple steps that work to determine the best concepts and aspects of a particular

design. The purpose of this design process is to think, generate, and put together ideas as a team that would be effective for any one-fingered disabled person to enjoy a hot beverage easily and safely. For a one-fingered individual, handling of a coffee mug can be quite difficult. Therefore, manipulating the design of a traditional coffee mug will ensure that a one-fingered individual can effectively utilize the product.

2. Literature Review

While no prior research or development of a coffee mug design for a one-fingered individual exists, much of the research for our design was within the realm of a traditional coffee mug. A plethora of patents exist for traditional coffee mugs. From standard mugs, to ones that can be used on the go[2], many options exist that we could research in order to determine the best concepts for our new design. This gave an idea of what concepts should remain in the new design, as well as how we can manipulate the traditional design to better suit the needs of a one-fingered individuals. The traditional mug that we investigated is insulated, has a secure lid, and is designed in such a way to allow for use of the mug on the go[3]. We will use these traditional concepts to design a mug for one-fingered individuals with certain manipulations that will ensure safety and ease of handling for the individual.

3. Design Process

By investigating the proper design process, concepts were proposed that would best suit the needs of one-fingered individuals. By generating a mission statement, it was easy to decide which specific needs and concepts would be required in the design. These concepts were then narrowed down by ranking how effective each concept would be in the overall design. ranked the

needs by level of importance and then into different concepts. The concepts were then ranked by how easy to use, handling, and affordable that certain concept would make our product. Based upon importance, these concepts were narrowed down further to produce a final concept list that met the outlined specifications regarding aesthetic design, the body of the mug, possibility for finger pockets, type of lid, and the base of the mug. The best concepts were then finalized for the final design result.

4. Design Result

After working through the design process and narrowing down which concepts best met the needs and constraints of the customer, a one-fingered individual, a final design was generated. It was determined that the most important aspect of this design would be the tall, slim body of the travel mug. This design ensures that the individual can wrap their finger around, while ensuring stability and ease of handling. Within this body are finger pockets that the finger can be placed in to further ensure safety and easy handling. Other concepts that were important in this design include a pop-off lid. This allows for safety while travelling, as well as easy operation for the individual. The lid can easily be added and removed, but is secure enough to keep the product safe. The mug itself is made of stainless steel which makes it easy to clean, as well as affordable. Finally, the base of the mug will be made of a rubber, non-slip material to further ensure safety and stability of the product. This mug is expected to be safe, easy to handle, and affordable for one-fingered individuals.

5. Conclusion & Summary

Overall, the design process ensured that the final product would adhere to the best possible concepts for the product. Through ranking and customer needs determination, the final product is safe, affordable, easy to handle, and effective for one-fingered individuals. Although

there were problems within this design process, re-evaluation of customer needs and concepts helped to alleviate the struggles that were faced. The design process ensures the effective determination of concepts, an idea that is proven by the effectiveness of our final design product.

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