

# Design Project 1


## Coffee Cup for Individuals with Disabilities

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### Background

There are many causes of hand/finger disabilities throughout the world such as birth defects (e.g., Symbrachydactyly), diabetes, injuries from work equipment (e.g., power saws) or military conflicts (deliberate amputations). In the United States alone, the National Institute of Health (NIH) estimates that 30,673 persons/year are treated with non work-related amputations, with over 90% of these cases resulting in amputations of 1 or more fingers <sup>1</sup>. Globally, there are over 3 million arm amputees in the world, with over 80% living in developing countries <sup>2</sup>.



 Upper management has put your team in charge of developing a concept for a new niche market for their disability-friendly coffee cup. Your team is to develop new concepts for a coffee cup that can be utilized by an individual with as little as one finger. You must gather the proper data to determine what this new coffee cup design will be, focusing on **global, societal, environmental** and **economic (GSEE)** impacts of your design. Also, you must compare the current product to what is on the market. It will be up to the board of directors to determine if your project will be carried on into production.



### Description of the Design Task

Your task is to analyze the current offerings in the market and design a coffee cup that an individual with hand disabilities (i.e., assuming the scenario of having only one finger) can use with ease.

#### Your design activities will include following steps:

1. Analysis of customer needs
2. Concept Design
  - A. External search for concept generation,
    - a. Literature search,
    - b. Patent searches,
    - c. Benchmarking
  - B. Revising the design statement,
  - C. Internal work for concept generation,
  - D. Concept Generation
3. Concept Selection
4. Final Design
  - A. Embodiment of the design and feasibility analysis,
    - a. Material and Manufacturing Process
  - B. Detail Design and prototype.

Note: Presentation and report are required.

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<sup>1</sup> Judith M. Conn et al., "Non-Work-Related Finger Amputations in the United States, 2001-2002," *Annals of Emergency Medicine* 45, no. 6 (June 2005): 630-35, doi:10.1016/j.annemergmed.2004.10.012.

<sup>2</sup> "LeBlanc-03a.pdf," accessed August 27, 2014, <http://web.stanford.edu/class/engr110/2011/LeBlanc-03a.pdf>.