

# Serinity's Toilet Stool

Nicholas True

*University Of Tennessee At Chattanooga*

## Background

Serinity is a 41-inch tall micro-cephalic five-year-old who cannot use the restroom independently. She can use a toilet once she gets on to it, however she currently needs the teachers help and a stool to reach. The current stool, however, is too tall for Serinity to step on to alone, and it does not have enough surface area for Serinity to feel comfortable using. Because she cannot stand on the stool alone without support, it is impossible for her to spin around or pull down her pants. Serinity needs a stool that allows her to use the restroom independently and that is portable for her to move with her as she travels throughout the school.

## Purpose

The purpose of this project was to design and build a portable stool that would give Serinity access to a toilet. Serinity's small stature makes it difficult for her to use a toilet without the aid of her teacher.

## Design/Method

The methodology of the project took place in 4 steps - conducting research by talking to Serinity's teachers about her needs, brainstorming design ideas, deciding on a design, and prototyping/testing. The design process began by deciding on design objectives, functions, and constraints. The functions describe what the stool should do. The objectives describe what the stool should be, and constraints gave limitations for the design. One example is an objective for the stool to be safe for Serinity to use. The function that accomplishes this is that the stool maintain (its) position while in use. A constraint for safety is that the stool must not have any pinch points.

## Results

The stool was designed in Solid Works and constructed from pinewood. The stool is 9 inches tall, 15 inches wide, and 11.25 inches deep. The sides of the stool are arched, and the underside of the stool is pocketed to make the stool light. The stool is purple, blue, and pink - Serinity's favorite colors. For ease of moving and using, the stool has two roller wheels and an adjustable handle on the side. The handle and wheels allow Serinity to roll the stool like a suitcase. The handle also gives Serenty support during use.



## Conclusions

The stool built for Serinity meets the design objectives well and allows her to use the restroom alone. When the stool was delivered to Serinity she was very excited and loved playing with the handle. Transporting the stool was no problem for her, and she felt comfortable standing on the stool to access both the toilet and the sink.