

Thomas the Train as a Mobile Communication Stand

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The purpose was to design a mobile communication stand (MCS), which is functional and appealing to a child. The stand will house a Vantage Communication Unit (VCU) which is an interactive touch screen communication system for Gabriel, a 3 year old child at Siskin Children's Institute with arthrogryposis, which prevents his speech and limits limb movement. Gabriel uses the VCU to communicate with teachers, classmates, and family, but because he has to crawl he has to rely on help to move the VCU. Gabriel needed a Mobile Commutation Stand (MCS) to assist him in his activities. The team wanted the MCS to be more than a simple functional tool, but a tool that Gabriel can enjoy. Gabriel's favorite children's character is Thomas the Tank Engine, which was the inspiration for the design and appearance of the MCS.

The team was formed from individuals choosing a project from six proposals. The team had an open structure; meeting on a weekly basis to identifying objectives and separating work among team members. Members observed Gabriel identifying his needs and VCU use needs. Sketches were created of the desired MCS. The sketches were transferred to Solid Works for dimensional plans for construction. The Solid Works design parts were then assembled view was created, showing the first glimpse of the train. We then took the Solid Work design plans and created a prototype.

The MCS operation is the most important way to understand the role in providing assistance to Gabriel. The MCS body is constructed of pine wood, which was the most cost effective sturdy material available. Train parts were shaped using ban saw and other tools. Coaster wheels were used to allow movement over multiple surfaces, 360 degree mobility, and a turning radius of 17 inches. The Cow Catcher is designed to prevent the unit from tilting on its side, while a drop down train hitch keeps the unit from tipping back. The placement of a handle behind of the train allows Gabriel to push or pull the unit, also facilitating transportation when not in use. A second smaller handle is placed in front to help movement of the unit from that side. The VCU mount is 11 inches off the ground at a 45 degree angle, which give greater access and viewability. The VCU is held in place by "V" shaped clamp with a spinning bar to securely hold it. A team member was able to paint the unit to resemble Thomas the Train, providing the magical touch.

MCU meets the needs of Gabriel and his VCU providing mobility, accessibility, viewability, and greater independence at school and at home. The MCU was such a success, a request was made for a future project for a walker.

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