

**National Scholar award For Workplace Innovation and Design  
Project Proposal**

**Rochester Institute of Technology**

**Students**

Devin Hamilton – Team Manager  
Beth Kiefer  
Mike Gabrian.  
Samantha Huynh

**Contact information**

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**Faculty**

Robert Merrill
Carl Lundgren
William Leonard

## **Project Objective**

According to the 2000 U.S. Census, approximately 21 million individuals have a physical disability. Many of these disabilities affect the individuals' ability to grasp different objects. As well as having difficulty grasping objects, some individuals also have difficulty aligning objects such as plugs. Many times, this is because the individual does not have enough control to align the prongs in order that he or she can insert the plug. This ultimately leads to the individuals' inability to set up their own electronic equipment. As technology grows, the workplace expands which means the electronic equipment must repeatedly be set up and taken down whether it is a laptop or a diagnostics cart in a laboratory. This forces the disabled individual to either work from home or bring an assistant to work with them to aid in the setup of their equipment. If the individual could plug in their own equipment, they would not need an assistant. To give disabled individuals this occupational independence, a series of plug adapters are to be developed which will enable the disabled person to easily plug in their equipment. As well as giving the disabled occupational independents, these plug adapters will also enable the elderly to easily plug in various devices.

## **Work Scope**

As with any other project, the development of these plug adapters will involve many steps. In order to ensure that the end product will be beneficial to a wide range of users, members of the design team will engage in external collaboration with the cooperating NPA in order to gain a full understanding of the many different disabilities and how they affect the individuals' ability to grasp and align electrical plugs. These collaborative efforts will allow the team to generate a set of external and internal requirements. While these requirements are being generated, the team will also be collecting data on various styles of plugs. This data will allow for the intended accuracy and versatility of the design. The various concepts will then be generated and analyzed for the best designs. After preliminary designs are finalized, rapid prototyping will begin. Prototypes will then be tested by potential users. Test data will be collected, analyzed, and used to make any necessary modifications to the designs. The team will continue this process until a final design and prototype is reached for each plug adapter. This project will then lead to more adaptive equipment and the creation of intellectual property

## **Budget**

- Rapid prototyping - \$500.
- Testing -\$100
- Materials - \$100

## **Department Co-Funding**

We are requesting a grant of \$350, all additional development costs will be supported by RIT.

## **Schedule**

- December 4<sup>th</sup>- First organizational meeting. Work schedule and scope will be introduced. Collaborative member will also be elected.
- December 18<sup>th</sup>- Internal and external requirements will be complete.
- January 10<sup>th</sup>- Preliminary designs will be complete.
- January 30<sup>th</sup>- Preliminary prototypes will be complete and testing will begin.
- February 20<sup>th</sup>-Testing and design modifications are complete. Final design is reached
- March 22<sup>nd</sup>- Design report is completed and ready for submission.

## **Project Team**

This project team will consist of Rochester Institute of Technology students advised by three faculty members. Team members include Three engineering technology students; Devin Hamilton, Beth Kiefer, and Mike Gabrian. Samantha Huynh will also be on the team, she is a student in mechanical engineering. Three faculty members will serve as team advisers. These faculty members are Robert Merrill, Carl Lundgren, and William Leonard. A special topics course has been created for the students on the team to facilitate common meeting times and recognize the value of their project.

## **External Collaboration**

Lifetime Assistance, Inc. has agreed to serve as an external collaborator on this project. They are listed on the NISH website as a non-profit agency willing to help with such endeavors. The following two paragraphs are a statement they provided to professor Merrill in support of this project.

“Lifetime Assistance, Inc. was founded in 1978 by a group of parents of individuals with developmental disabilities living in the Western Monroe County. Lifetime has grown from one program serving 32 individuals to over 40 program sites serving more than 1000 individuals. Lifetime Assistance, Inc. is a community leader providing comprehensive services to children and adults with developmental disabilities and their families. Our goal is to foster independence, self-reliance and respect for individuals with disabilities. Our vision is to assist each person to reach their fullest potential with a person centered approach.”

“We are not only willing but excited to collaborate with the students in your class who are involved in this competition to supply information that they may need to develop adaptive devices for individuals with disabilities.”

The primary contact at Lifetime Assistance is Shawn Wilson who is their Coordinator of Vocational Rehabilitation. She can be contacted by phone at (585) 426-4120 ext. 3415 or by e-mail at [shawn.wilson@lifetimeassistance.org](mailto:shawn.wilson@lifetimeassistance.org).

### **Faculty Advisor Contact Information**

Three faculty advisors have volunteered to assist students with this project. Their contact information is provided below.

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Robert Merrill	78 Lomb Memorial Drive Rochester, NY 14623	585-475-2005	ramite@rit.edu
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