

Warren J. Baker Endowment

for Excellence in Project-Based Learning

Robert D. Koob Endowment *for Student Success*

FINAL REPORT

I. Project Title

Joseph's Jogger

II. Project Completion Date

June 7, 2017

III. Student(s), Department(s), and Major(s)

(1) Robert Trujillo, Mechanical Engineering Department, Mechanical Engineering

(2) Carolina Reyes, Mechanical Engineering Department, Mechanical Engineering

(3) Josh Egli, Mechanical Engineering Department, Mechanical Engineering

(4) Luke Kraemer, Mechanical Engineering Department, Mechanical Engineering

IV. Faculty Advisor and Department

Sarah Harding, Mechanical Engineering Department

V. Cooperating Industry, Agency, Non-Profit, or University Organization(s)

Mechanical Engineering Department

San Luis Obispo County Special Olympics (Non-profit organization)

VI. Executive Summary

The goal of our project was to construct a new jogger for a young man name Joseph Cornelius with spastic quadriplegia. Joseph enjoys participating in marathons on his jogger and has been an inspiration to many. However, his jogger has been worn down with the foot rests breaking often due to the immense force he exerts on them. The old jogger itself did little to provide comfort to Joseph as he would experience the bumps on the road which was issue especially as his right femur is dislocated from his hip making his right hip sensitive.

With comfort as key in our design, we decided to make a new frame from scratch. The components of the new jogger were divide into parts with Luke Kraemer in charge of the frame, Robert Trujillo in charge of the seat, Carolina Reyes in charge of the harness, and Josh Egli in charge of the sunshade canopy and finances.

Some issues in our process were that we had expected to finish constructing the jogger a month earlier and spend the remaining time testing the jogger. However due to an error in our

measurements on our frame design, the jogger frame and seat had to be redesign. Fortunately, this error was seen when we built a prototype prior to the final design. Another cause of delay was the upholster for the seat and the manufacturer for the wheels took more longer then estimated. If done again we would be more cautious of complications that we may face and not be too confident that everything will work out, but make preparations in case something doesn't.

After months of designing, ordering, prototyping, building, and testing we were finally able to construct a new jogger that met the most essential needs of Joseph. The new jogger is able to provide a comfortable ride for Joseph as it is layered with a foam seat as well as having a headrest and cushions on his side that will secure Joseph in place without feeling restraining. The jogger also rides smoothly with it being made of a single unit rather than being collapsible, feeling much sturdier. In addition, it has custom quick release pneumatic wheels that can be easily removed when loading and unloading into a van.

VII. Major Accomplishments

- (1) Designed, manufactured, and tested a functioning jogger
- (2) Provided Joseph Cornelius with a jogger that adapts to his body
- (3) Successfully met design requirements established by customers

VIII. Expenditure of Funds

Most of the grant was spent on supplies and labor for the frame and wheels of the project including rims, hubs, tires, steel pipes, and labor totaling to \$2113.89 with the remaining balance spent on supplies for the seat and harness.

Grant	\$ 2,500.00
Grant Expenditures	\$ 2,500.00
Distribution of Grant	
Subsystem	Cost
Frame & Wheels	\$ 2,113.89
Harness	\$ 138.71
Seat	\$ 247.40

Expenditure of Funds

IX. Impact on Student Learning

This project meant a lot to not only our group, but also to Joseph, his father, and the members of Team Joseph. We are glad to have been able to improve Joseph's participation in marathons by providing him with a customized jogger that adapts to his needs. This project allowed us to experience the designing, manufacturing, and testing stages of an engineering project. We dedicated a full academic year to engineering a useful and reliable jogger for a young man with cerebral palsy. Although we did experience a number of obstacles along the way, the hours put into designing, manufacturing, and testing Joseph's new jogger have paid off. As students, we learned how to work in a team and communicate among each other, with our vendors and contractors, and customers. In addition, we gained project management skills. However, the major takeaway from our project was the way we used engineering to improve our customer's daily life.