



# **MAKERS** of Change

## ASSISTIVE TECHNOLOGY CHALLENGE

— Benefitting —



# THANK YOU, SPONSORS!

onsemi™



# OVERVIEW

- About Levi
- Current Therapies and Assistive Technology
- Therapy Goals
- Family Goals
- CHALLENGE STATEMENT
- Team Deliverables
- Awards
- Submission Levels and the Judging Rubric
- Supplemental Information

# About Levi

Levi is a 5-year-old boy (04/28/2020) who is the oldest of three children. He lives with his mom, dad and brothers Baruch (2.5 years old) and Yehudah (14 months old).

Levi loves:

- Music and has recently started playing the xylophone
- Watching Bluey
- Learning his alphabet and practicing phonics
- Exploring puzzles, with some help
- Basketball



# Levi's Medical Diagnosis

Levi was born at 25 weeks and was in the NICU for 134 days. In addition to significant respiratory distress, he had a large patent ductus arteriosus that required surgical repair. During his stay, Levi developed E. coli meningitis, had anemia that required two blood transfusions and phototherapy for hyperbilirubinemia.

Levi was diagnosed with Cerebral Palsy before his 2<sup>nd</sup> birthday.

Currently, Levi:

- Has profound hearing loss in his right ear only
- Recently began experiencing seizures
- Has Hypotonia in his trunk and Hypertonia in his legs
- Has difficulty with his Fine Motor Skills because overall coordinated movement is challenging. His movements can be jerky and when he's excited or uncomfortable, his overall tone increases, making smooth movements more difficult.
- Displays Gestalt Language Processing and often uses movie titles, scripts from songs or videos to express his emotions
- Is able to ask for the toys he wants to play with and also say when he is done
- Songs capture his attention





# Current Therapies

- Levi has been involved with the Arizona Early Intervention Program (AzEIP) since discharge from the hospital. After age three he transitioned to the Division of Developmental Disabilities (DDD) services. He receives about two hours a week of therapy in addition to some intensive therapy sessions.
- He was first referred to the ADAPT Shop on 8/26/2022. He has received a custom chair, and stand-up bar. His family has also been a regular user of the loan closet for gait trainers, standers, bath equipment, trikes, and the hiking cart.



# Current Assistive Technology

Levi has a Zing stander at home, Jay Zip manual wheelchair, and a Rifton Tricycle.

[Zing Stander](#)



[Jay Zip Manual Wheelchair](#)



[Rifton Adaptive Tricycle](#)



# Therapy Goals

- Visual perception to gain more independence in completing puzzles and games that require hand-eye coordination
- Pre-writing to work on holding a pencil, imitating lines and tracing a name
- Emotional regulation for identifying feelings and coping with feeling sad or mad
- Potty training readiness with interoception and communication
- Socializing with peers to increase sharing and turn-taking abilities
- Motor skills to build strength and stability when using the Gait Trainer



# Family Goals

In addition to supporting Levi's Therapy Goals, his family hopes to create play-based activities that he can enjoy on his own, with his brothers, or together with the whole family.



# CHALLENGE STATEMENT

We invite you to learn about Levi and his family. Identify a play-based activity that he and his siblings will enjoy.

With that activity in mind, develop an assistive device—or enhance one of his existing devices—to support Levi's participation.

The activity should promote shared fun, enhance physical activity and provide meaningful engagement for all siblings.



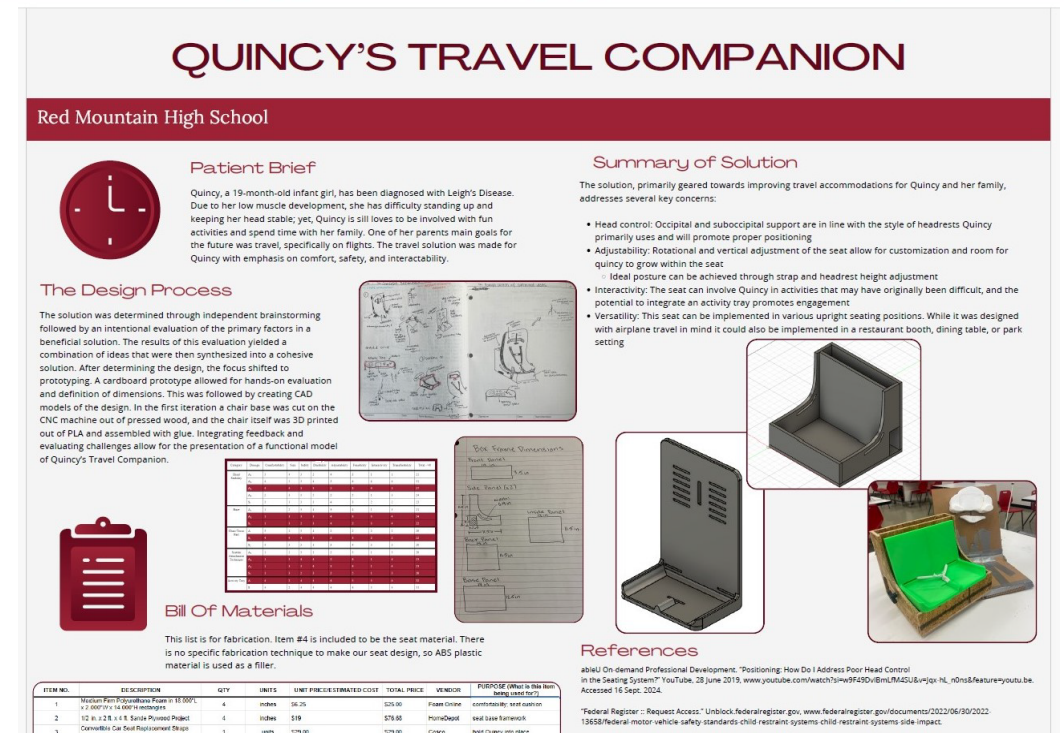
# TEAM DELIVERABLES

Due September 22 by 4pm



## VIDEO SUMMARY

Max five (5) minutes, explaining your solution and introducing your team



## DIGITAL POSTER

See Instructor/Student Guide for specifics





# Awards



# Finalist Presentations

## October 17

### 2pm-5pm

After being judged, teams with the highest scores will be invited to present before a live panel of judges and are eligible to receive a monetary award.

Award categories:

1. Newcomer
2. Newcomer Runner Up
3. Presentation/Poster
4. Presentation/Poster Runner Up
5. Levi's Choice
6. Level 1 (Concept)
7. Level 1 Runner Up
8. Level 2 (Fabrication)
9. Level 2 Runner Up
10. Best in Show (overall winner selected from Level 1 or 2)





## **LEVEL 1**

# **Concept & Analysis**

Conduct problem definition, research and ideation, to define the specific criteria that the solution must meet. Develop sketches or computer drawings with descriptions sufficient to clearly define your concept to a reviewer. This is design phase only.

### **Rubric Objectives**

- Research: Conducted research on the problem; various sources, including the patient, were taken into consideration in defining the solution
- Breadth: Explored multiple approaches; demonstrated an understanding of options and implications before deciding on a course of action
- Reasoning: Team provided explanation for chosen approach and demonstrated an understanding of relevant factors and implications.
- User Experience and Safety: Solution provides an easy to use, fun, effective, safe and practical approach to supporting family needs and adds to their quality of life
- Cost: The cost of a prototype design was estimated, with a goal of less than \$150
- Poster Quality: All objectives are included; graphics clearly and creatively enhance the overall visual impact; solution is clearly defined
- Video Quality: Clear visuals with appropriate lighting and audio quality. Creativity engages the audience throughout. The solution is clearly defined and explained. Presenters give a clear and engaging delivery.

## **LEVEL 2**

### **Design & Prototype\***

Conduct Level 1 concept and analysis. Then conduct Level 2 Design and Prototype which consists of finalizing the design, building and testing the prototype. Conduct additional analysis and design to provide sufficient detail to build the prototype. Using prototype, conduct testing to validate your concept. Based on testing results, make adjustments and improvements to the design and prototype.

\*Raspberry Pi components are available for any team interested. The prototype may incorporate Arduino or Raspberry Pi technology as appropriate.

#### **Rubric Objectives**

- Design: The design of Level 1 is assessed to determine the adequacy of the documentation for construction of a prototype. Additional research, analysis and design is performed to achieve this goal.
- Practicality: Team considered the feasibility of production and demonstrated understanding of potential challenges
- Prototype: A well-constructed prototype was made and used to demonstrate functionality without ambiguity or issues. Prototype embodies refinements of the initial design concept of Level 1.
- Testing: Team exhibited resourcefulness and creativity in defining testing to validate their concept. Testing was conducted to demonstrate the validity and effectiveness of their solution.
- Data: Team clearly defines materials used and test data generated to validate their design.
- Reflection: Team addresses successes and shortcomings with the prototype and provides analysis and lessons learned for future improvement.
- Production: Team examines and discusses how design could be refined for production

# Opportunities for Support

- **Challenge Q&A Webinar – August 21 @ 5pm**
  - We've lined up an expert panel ready to answer your questions. Panelists include Levi's parents, a physical and occupational therapist, and an ASU Engineering Professor to share considerations for designing to support people with different abilities.
- **Virtual Mentor Meetings – September 2-5, during your class time**
  - Available advice and guidance for your team from a business professional or graduate student. Your instructor must notify us by August 25 if your team or school would like to be paired with a mentor for a one-hour session.
- **Therapeutic Considerations Webinar – September 10 @ 4pm**
  - Dr. Jessica Brandt provides a Physical Therapy overview and how adaptive equipment is recommended and utilized by children with disabilities.
- **Virtual Office Hours – September 17 from 3pm-5pm**
  - Take advantage of our experts who will be available by Zoom to answer any final questions prior to submitting your solutions.



# Helpful Tips

- Use your imagination!
- Refer to the Challenge video and Therapy Session video.
- If developing a prototype, it does not need furniture grade materials. See **Kyle the Fabricator's Tips & Tricks video**.
- If you need access to equipment (router, 3D printer, etc.), contact Louann Phillips at [lophillips@swhd.org](mailto:lophillips@swhd.org).
- Track your supplies and expenses by using the **Bill of Materials**.
- Teams participating at Level 2 are eligible to receive a \$100 Amazon gift card for materials if **requested by August 29**.



# ★ Pre- and Post-Event Survey ★

**Sharing your thoughts on how you feel before starting the Challenge and then again after you have completed the Challenge, is very important to us.** Your feedback allows us to know when changes are needed in the program, and it helps us raise financial support to host the annual Challenge by showing impact on participants.

- Google Form
- Takes no more than five minutes
- Completion by due dates puts your name into a drawing for gift cards at the end of the program!





# Important Dates

- August 12 – Pre-Surveys and Participation Waivers distributed to Instructors
- August 18 – Challenge Launch
- August 19 – Parent Welcome Webinar (5:30pm-6pm)
- August 20 – Pre-Surveys and Participation Waivers due from students
- August 21 - Student Q & A Webinar (5pm-6pm)
- September 2-5 – Mentoring meetings held virtually
- September 10 – Therapeutic Considerations Webinar (4pm-5pm)
- September 17 – Last chance for guidance by asking questions during our Office Hours (3pm-5pm)
- September 22 by 4pm – Team Challenge Submissions Due (Video and Poster)
- September 23 – Post-Surveys distributed to students
- September 29 – Post-Surveys due from students
- September 30 & October 1 – Teams pick up shirts and certificates at ADAPT Shop
- October 3 – Finalist Teams notified
- October 17 – Finalist Presentation (Teams must be in person from 1:30pm-5pm)



# On behalf of Easterseals Southwest Human Development and the Moreno Family, **GOOD LUCK, MAKERS!**

Please be sure to read the **Instructor and Student Guide** emailed to you for links to supplemental information and resources.

If you have any questions, please talk with your instructor or email Louann Phillips at [lophillips@swhd.org](mailto:lophillips@swhd.org).

— Benefitting —

