



**Today's Students are
Tomorrow's Innovators.**

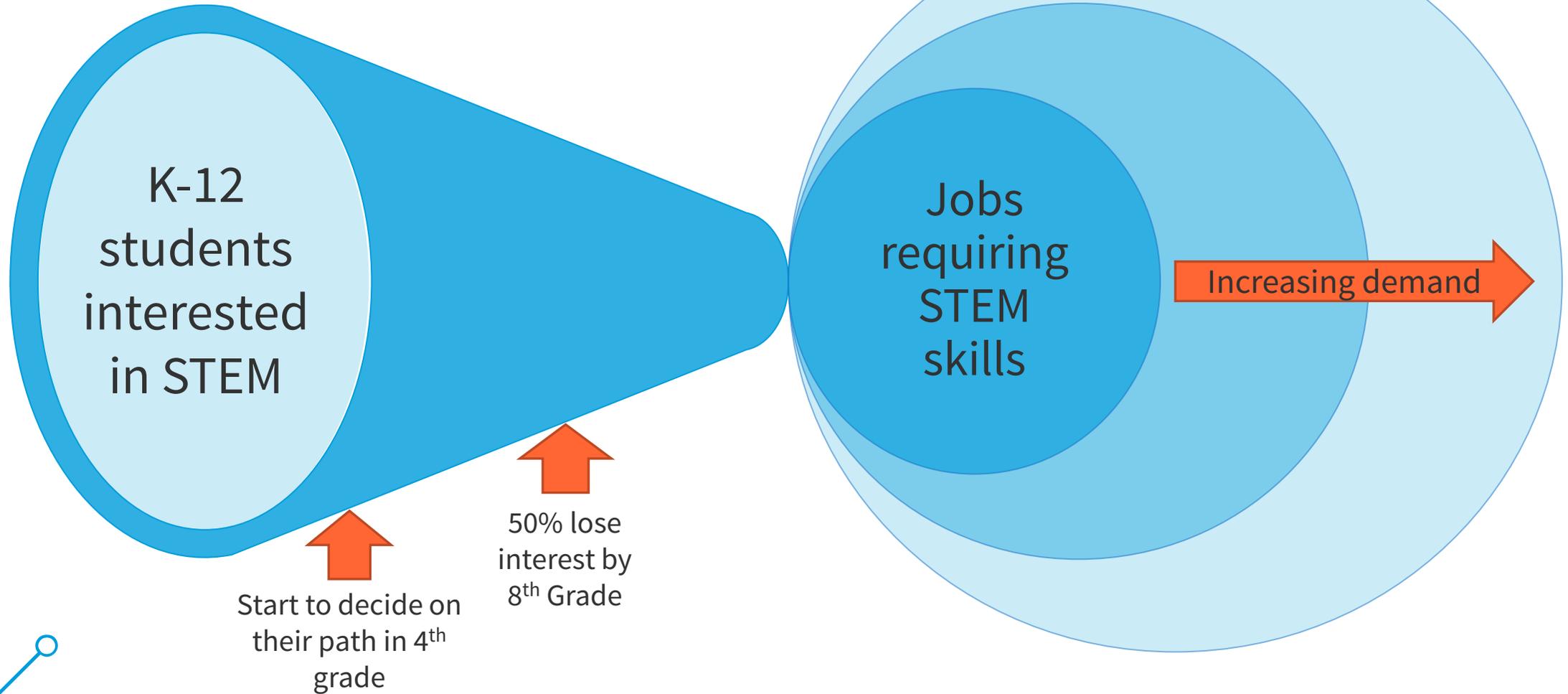
Challenger Center ignites their potential.



Katrina, Age 10

Too many lose interest in science, technology, engineering, and math (STEM) at an early age ...

which limits their opportunities in life and our country's competitiveness abroad.



What Do Students Need to Stay Engaged?

“Why does this matter to my life?”

Context



“Where could this lead?”

Vision



“This is cool! I want to know more!”

Inspiration



CONE OF LEARNING (EDGAR DALE)

After 2 Weeks
we tend to remember

Nature of Involment

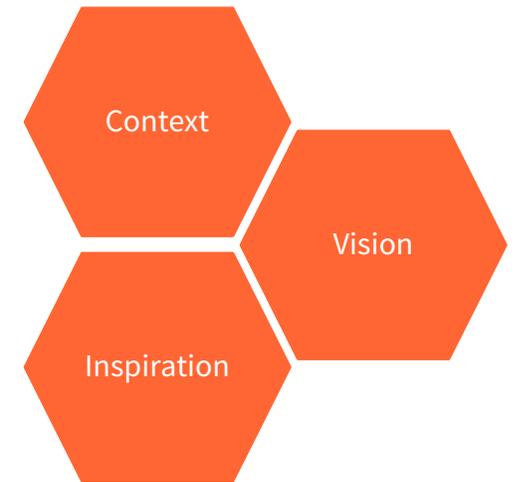


Source: Edgar Dale's Cone of Experience

Our Programs: Hands-on STEM Experiences

Core Elements of All Programs

- Combination of computer-driven simulation and hands-on activities
- STEM concepts in context of exciting real-world scenarios
- Build critical 21st century skills: communication, critical thinking, collaboration, and problem solving
- Introduce STEM careers
- Informed by real science data, delivered at an age appropriate level
- Aligned to current national education standards



Our Programs: **Impacts**

Core Impacts Measured in All Programs

- **STEM Engagement:** Increase student engagement in STEM
- **STEM Self-Efficacy:** Increase student feeling that they can “do STEM”
- **STEM Career Awareness:** Increase students awareness of a range of STEM careers
- **21st Century Skills:** Increase student communication, collaboration, critical thinking, and problem solving skills

Our Programs: Hands-on STEM Experiences

CENTER MISSIONS

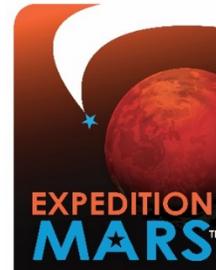
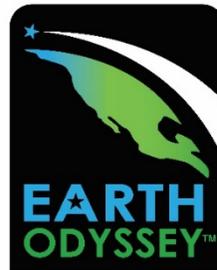


CLASSROOM PROGRAMS



Center Missions

- Grade range: 5th-8th grade
- Delivered only at **Challenger Learning Centers** by trained Flight Directors
- Custom, fully-immersive environment (Space Station and Mission Control)
- ~2 hour simulation, plus pre- and post-mission curriculum
- Theme: Space



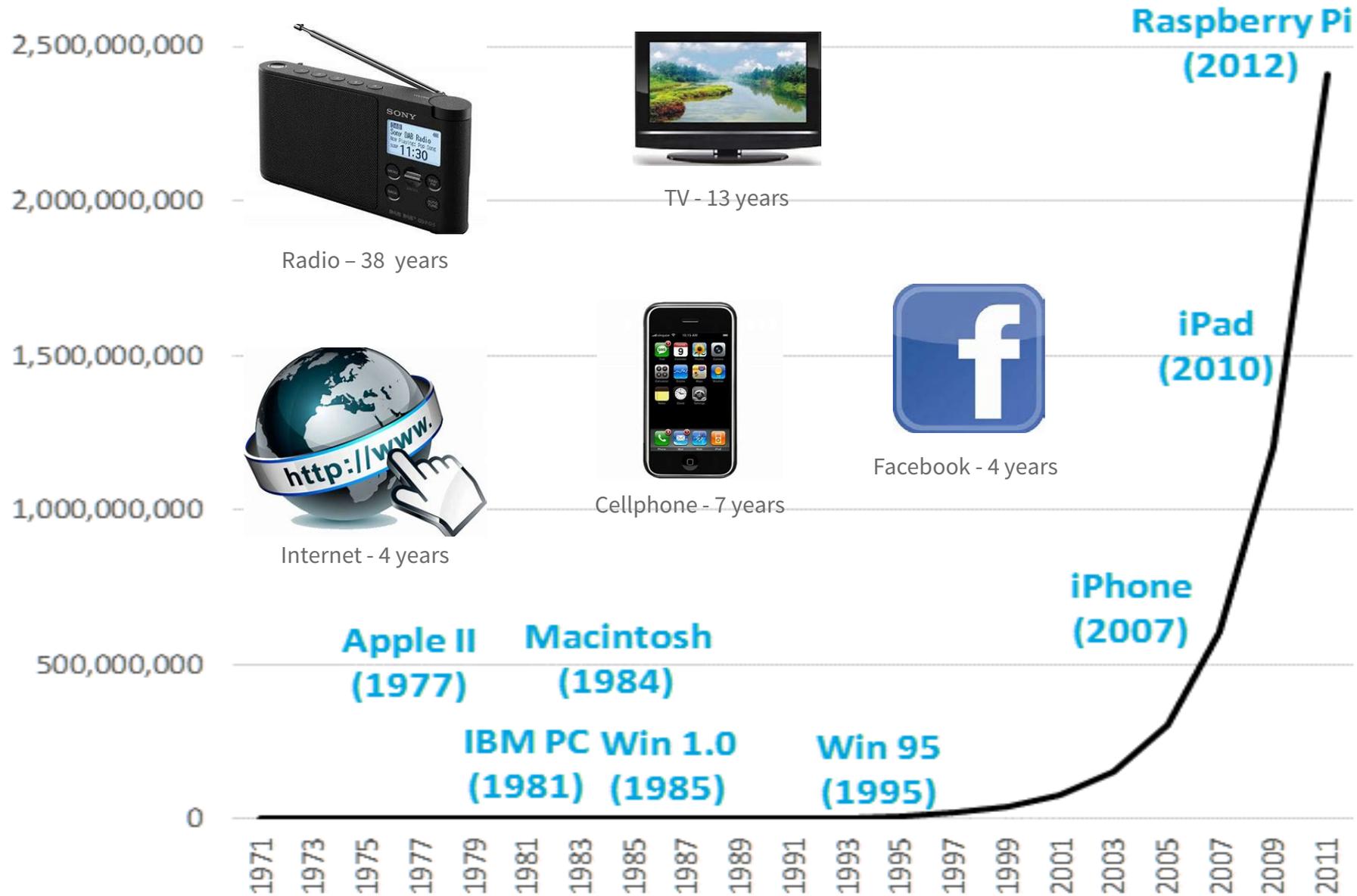
The Challenger Center Experience

3 minute video

<https://www.youtube.com/watch?v=seb3fhx8axw>

Technological change in the last decade
has changed education.

The Digital Age - Years to 50 million Users



Source: Graph of growth in transistor count (1971-2011)

<https://internetofthingsagenda.techtarget.com/blog/loT-Agenda/The-internet-of-things-is-in-your-future-the-law-says-so>

Today's Classroom



- Flexible
- Students are encouraged to collaborate and problem-solve, more than practice rote facts and memorize content
- Access to various forms of technology throughout the school day

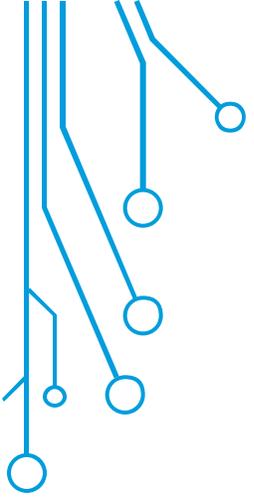
Technology in Schools

- Devices for every student.
- Internet connectivity in school.
 - In 2003, 4 million students (less than 10%)
 - In 2014, 39 million (75%).
- New generation of tech-savvy teachers and administrators.
- New generation of tech-savvy kids: “digital natives.”

How is Challenger Center Responding?

Bringing Challenger Center's expertise in simulations to millions of students in classrooms across the country via the Internet





Opportunity in the U.S.

~50

million students in the U.S. K-12 education

Our Programs: Hands-on STEM Experiences

CENTER MISSIONS



CLASSROOM PROGRAMS



Classroom Programs

- Grade range: 3rd-10th grade
- Simulation delivered in the **classroom** by **teachers**
- Flexible design for easy classroom implementation
- Built in assessment tools allow teachers to see how students are progressing through the program
- Supplemented by hands-on extension activities – e.g., engineering challenge
- Themes (examples): Ocean, energy, space, weather, erosion, geology,
- Currently two programs: Aquatic Investigators (3-5th) and Earth to Mars (9-10th)



Can deliver to millions of students across the country

Aquatic Investigators



- First mission on our EngiLearn software platform
- Built with Department of Education funding
- Informed by NOAA data and Subject Matter Experts
- Based on our 30 years of leadership in simulated learning and teaming with other partners like NASA

The Mission



Pilot in 2016-17



- **Tested with over 2,100 students and teachers in central Virginia**
 - **Underserved students in rural areas**
- **87%** of teachers said they would use the program again in their classrooms
- Teachers rated student engagement with the Aquatic Investigators mission at 4.73 out of 5, with 5 being “very engaged”
- Teachers asked for more missions to cover all science modules in their curriculum
- Informal feedback from parents and students demonstrated deep, lasting engagement in ocean science

Frederick County Public Schools
Aquatic Investigators Pilot Experience
School Year 2016-17
3 minute video

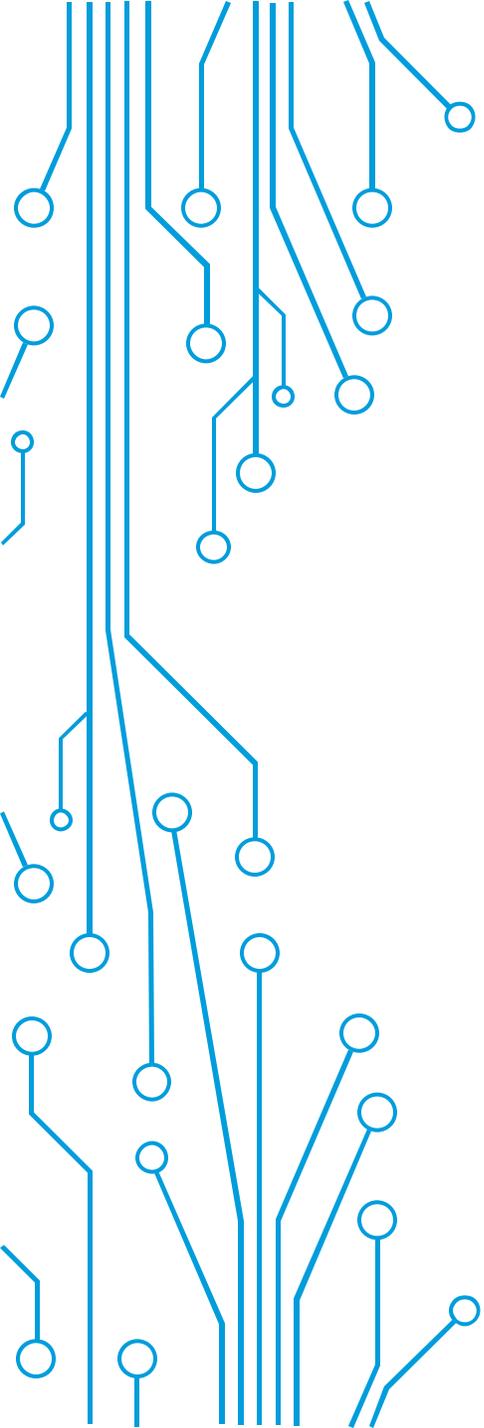
https://www.dropbox.com/s/nyko7dm6188bntg/the%20challenger%20project_640x480_mp4.mp4?dl=0



Next Steps



- Editing in response to teacher feedback
 - Use the mission as an introduction to the ocean science unit of study
 - Want missions for all science units throughout the year
- Re-piloting with upgrades and a new technical character in 2018-19 school year
- Scale to DC, Maryland, Virginia area, and possibly a few key locations in the U.S. first; then will scale nationwide



Our Impact



SPARK A PASSION FOR
LEARNING
5+ MILLION
STUDENTS



National Science Foundation Awards & Board Meeting



2016–2017 School Year



164,000
students
participated in a
Challenger Center
Mission



2
new Challenger
Learning Centers
opened



2,100
students transformed
into Aquatic
Investigators in their
classrooms



8,500
Students have already
experienced our
newest mission,
Expedition Mars



95,000
Students took part in
another STEM
program at a Center

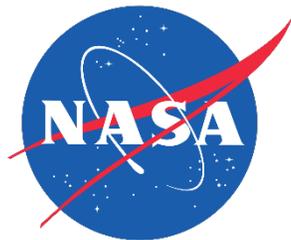


1
national recognition
from the National
Science Board (Public
Service Award)

261,000+

students impacted by a Challenger Center
program during the 2016-17 school year

Partners



Raytheon

Tyler-Little

Family Foundation

theISTATfoundation



Humble Bundle



redmon group inc
interactive media

MICHAEL R SOLURI



LATHAM & WATKINS LLP



France Jackson

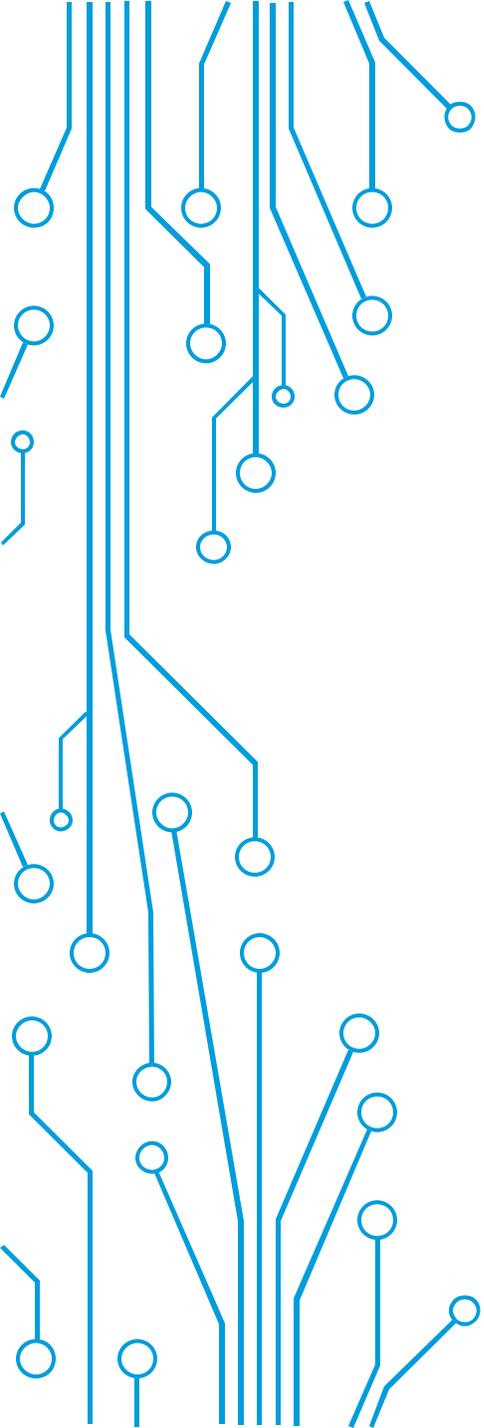
“I am not sure I would be an engineer if it were not for the hands-on experience I was able to engage in while at the Challenger Learning Center. I definitely consider the Center and my experience there a major event in my life that I often look back on and consider its profound impact.”

Education: B.S. Industrial Engineering, M.S. Industrial Engineering, Ph.D. Human-Centered Computing,(May 2018)

Currently works at Intel Corporation



“My experience at the Challenger Learning Center was simply life changing.”



**Today's Students are
Tomorrow's Innovators.**

Challenger Center ignites their potential.

POSSIBLE FORWARD WORK WITH NOAA

- Additional missions for schools, aquariums, science centers to use in outreach to K-12 students
 - Disaster Dispatch, a 3rd-5th grade mission on Extreme Weather and Weather Resiliency
 - Proposed to NOAA's Environmental Literacy Grant program in 2018
 - Challenger Center could create and distribute a mission on any Ocean Exploration topic for any K-12 age group

POSSIBLE FORWARD WORK WITH NOAA

- National Ocean Exploration Forum in Boston – November 2018
- Challenger Center could help increase reach
- Concept: Enable every Boston elementary school run the Aquatic Investigators program during the week of the forum
- Would require sponsorship to cover cloud fees and related costs (<\$15,000)