



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

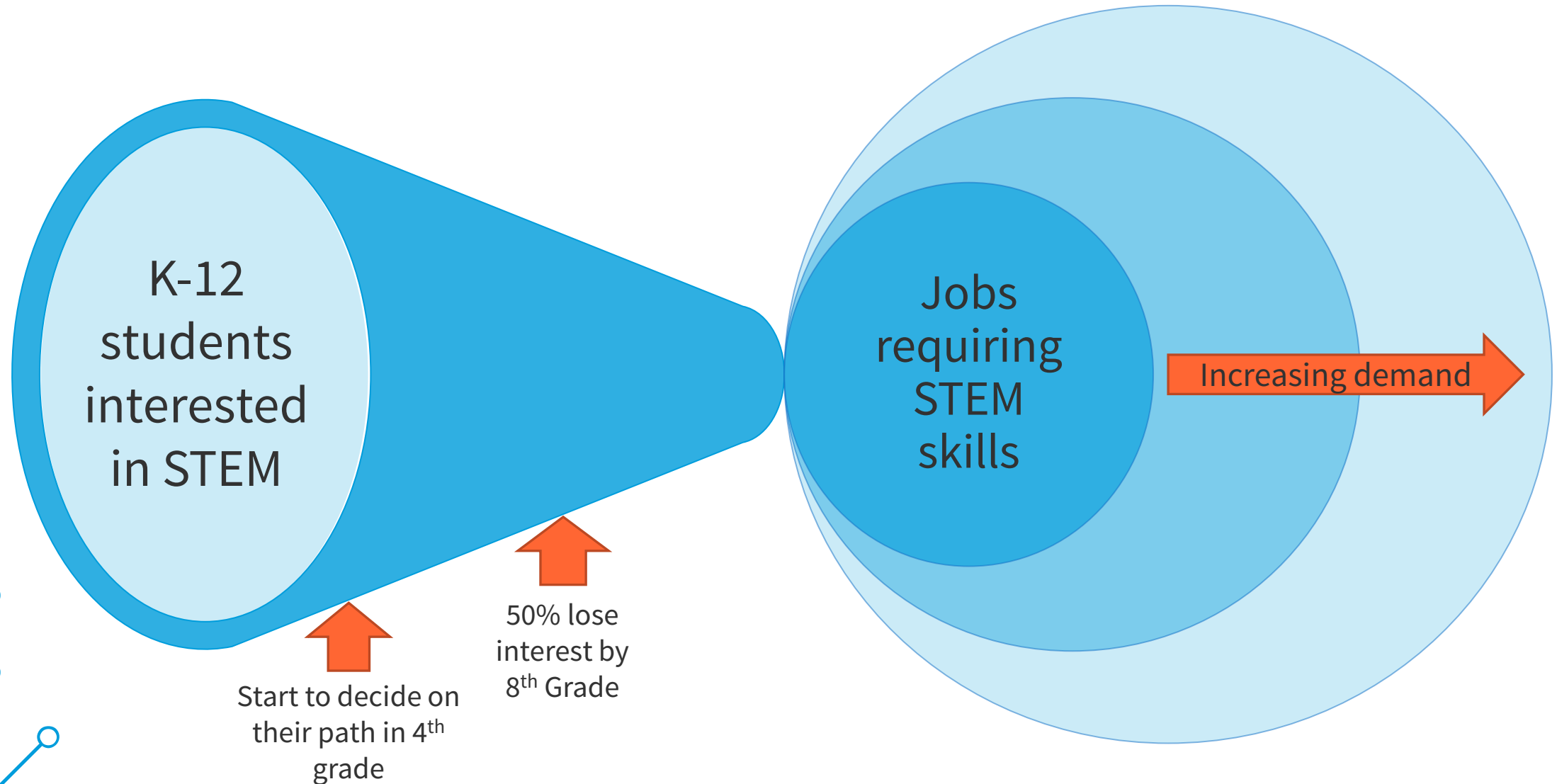
Challenger Center ignites their potential.



**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!”

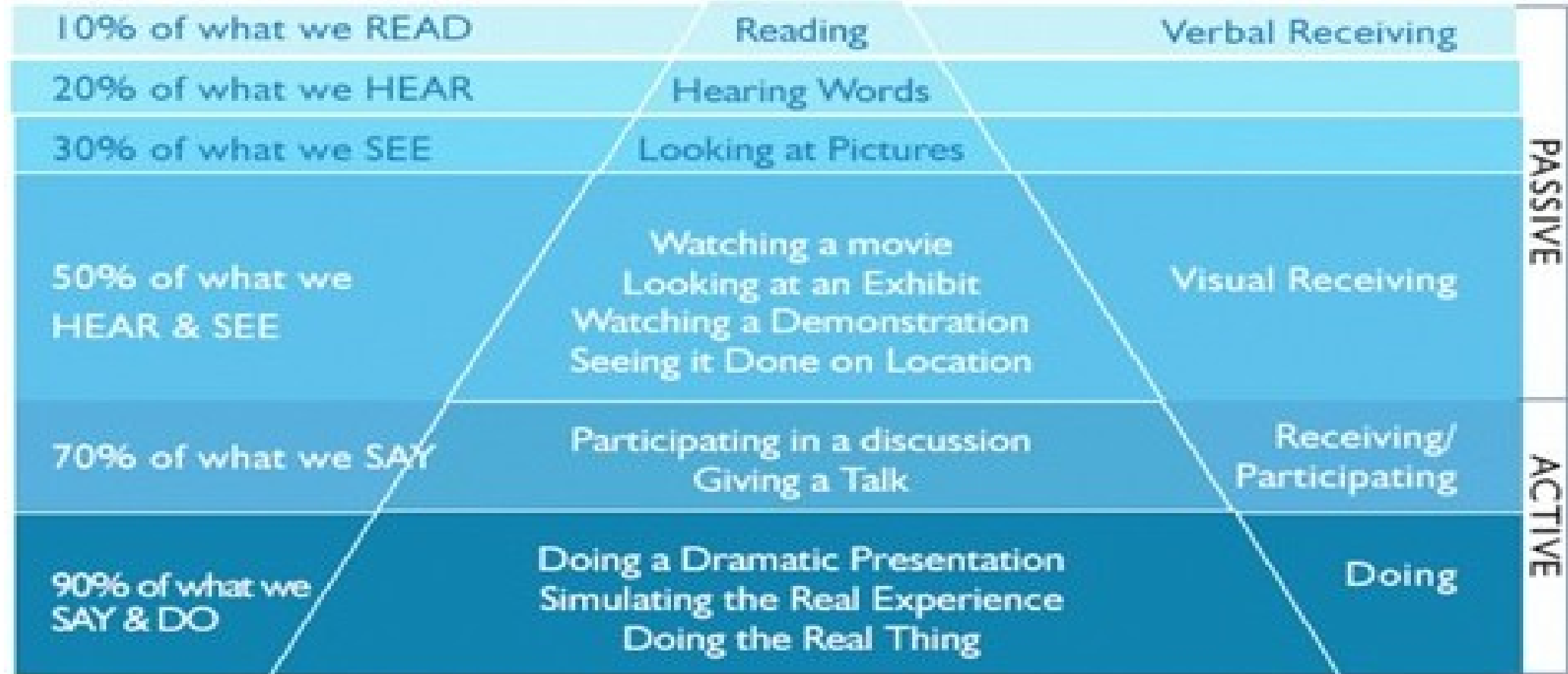
Inspiration



# CONE OF LEARNING (EDGAR DALE)

After 2 Weeks  
we tend to remember

Nature of Involment



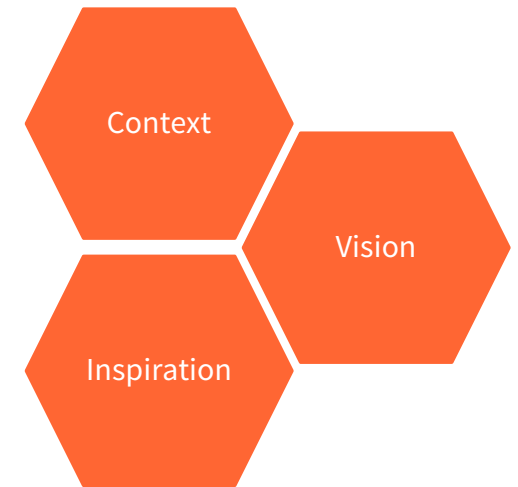
Source: Edgar Dale's Cone of Experience



# 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
- 21<sup>st</sup> Century Skills: Increase student communication, collaboration, critical thinking, and problem solving skills

# Our Programs: Hands-on STEM Experiences

## CENTER MISSIONS

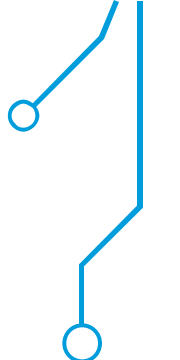


## CLASSROOM PROGRAMS





## A decorative graphic consisting of blue lines and circular nodes, resembling a circuit board or a network diagram. The lines are of varying thickness and connect the nodes in a non-linear fashion. The nodes are small circles, some of which are larger than others. The overall design is minimalist and modern, with a focus on geometric shapes and a limited color palette.



# 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/IoT-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: 3<sup>rd</sup>-10<sup>th</sup> 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 (3-5<sup>th</sup>) and Earth to Mars (9-10<sup>th</sup>)



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

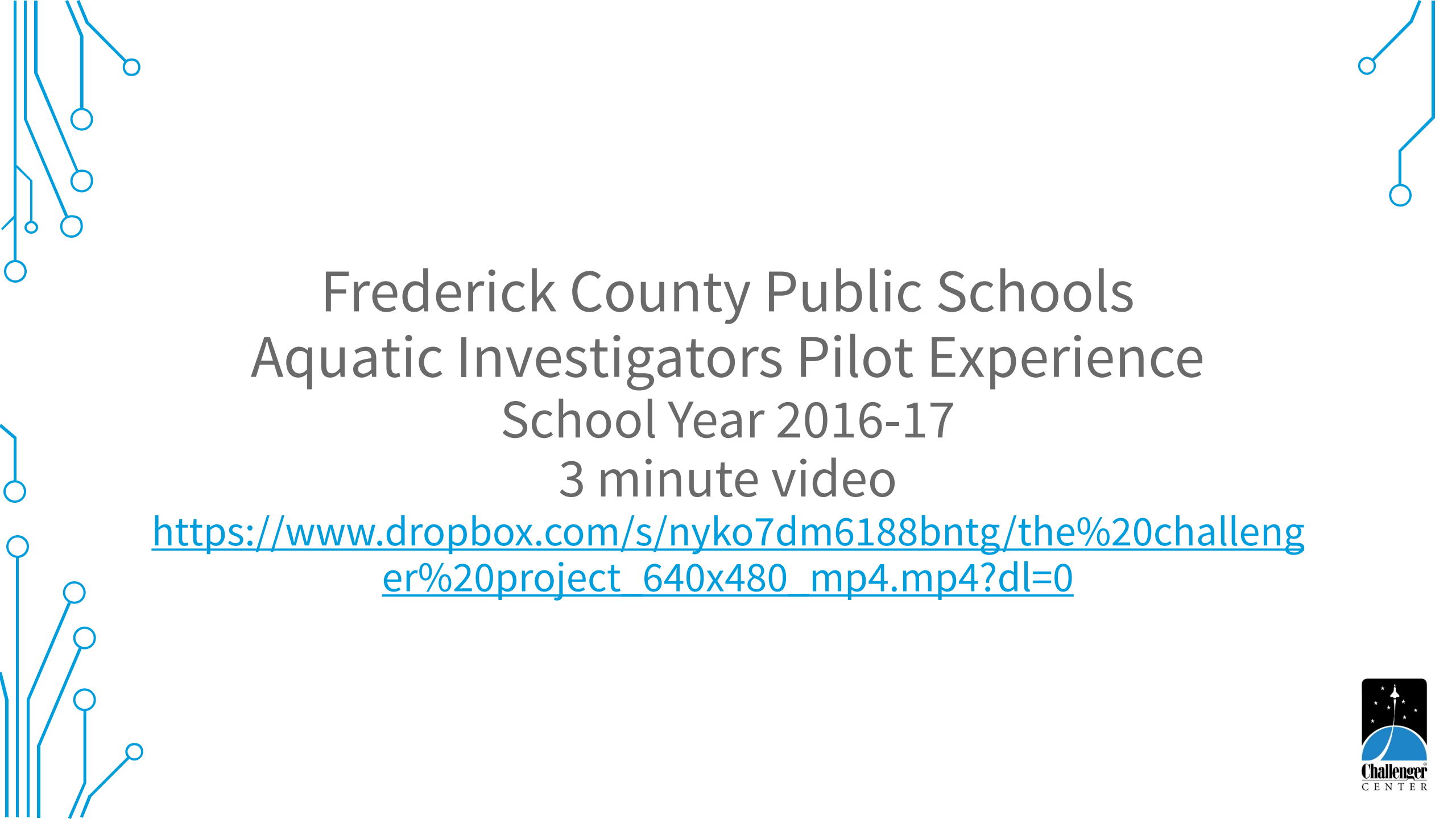
# The Mission



# 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

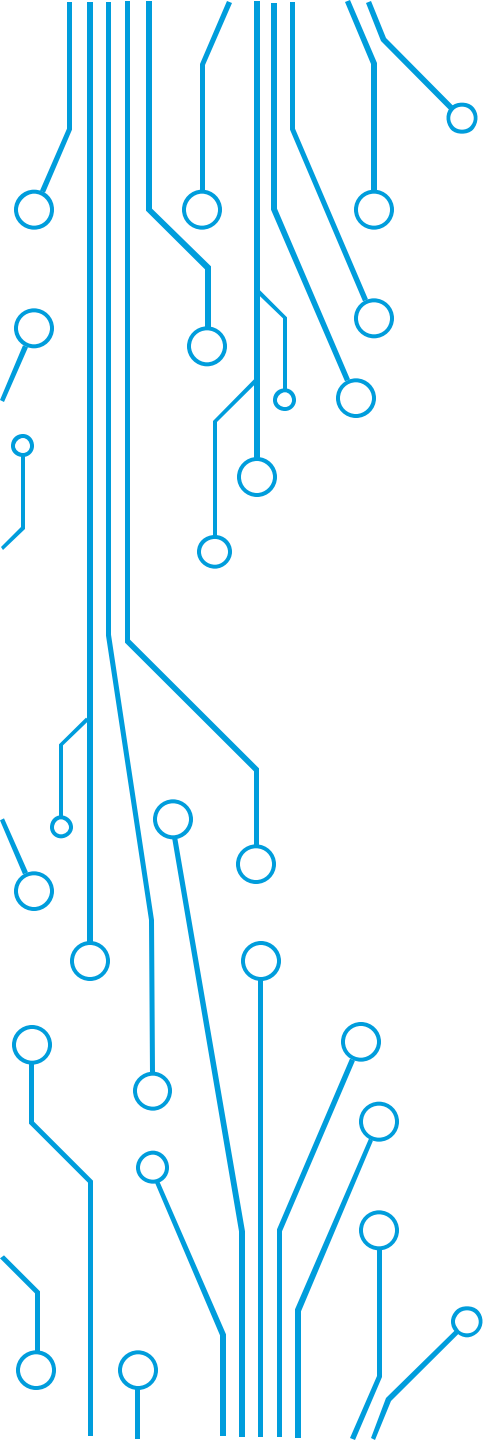
[https://www.dropbox.com/s/nyko7dm6188bntg/the%20challenger%20project\\_640x480\\_mp4.mp4?dl=0](https://www.dropbox.com/s/nyko7dm6188bntg/the%20challenger%20project_640x480_mp4.mp4?dl=0)



# 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



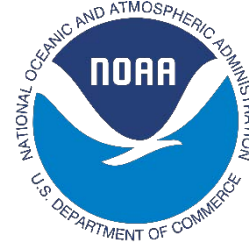
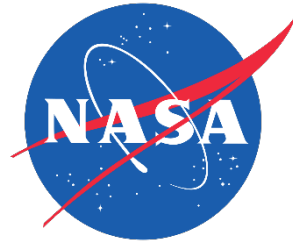
**1**  
national recognition  
from the National  
Science Board (Public  
Service Award)

# 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.”



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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)