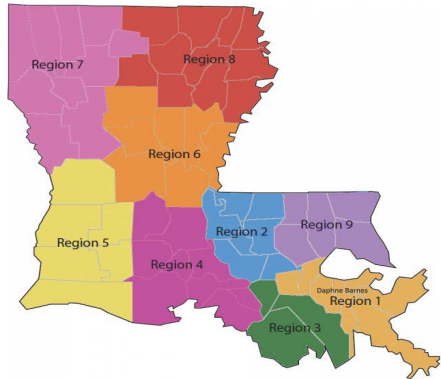




**‘Ideas Are Easy, Implementation Is Hard’**  
**Lessons Learned From Our Virtual NASA Astro Camps**

Dr. Clint A. Coleman  
Program Administrator of LaSTEM/Cybersecurity  
Louisiana Board of Regents

# Who am I? How did I get here?

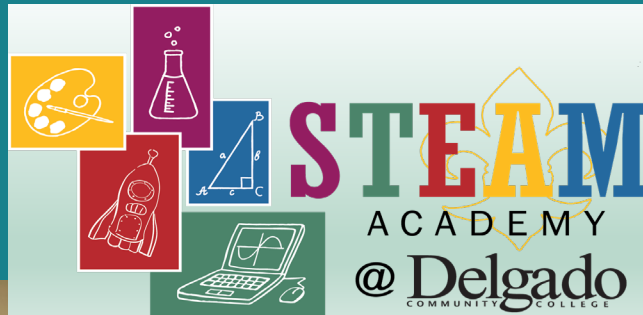


- Program Administrator of LaSTEM/Cybersecurity
  - Louisiana Board of Regents
- Dean of STEM
  - Fletcher Technical Community College
- Assistant Professor, Biotechnology
  - Delgado Community College
  - Gambit Magazine '40 under 40' *STEAM Academy*
- Ph.D. in Microbiology and Immunology
  - Tulane University
  - Multiple shuttle payloads to ISS
  - *Columbia/Katrina* changed research focus



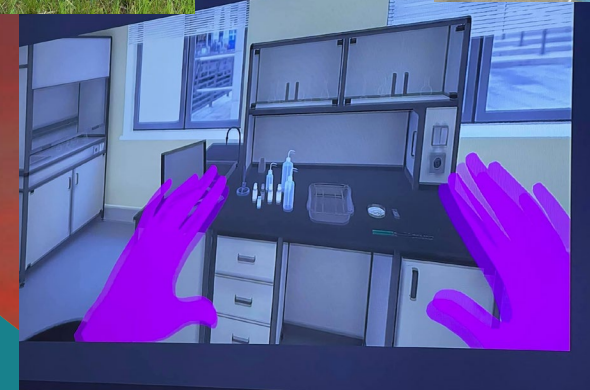
# Delgado Community College

- Joined faculty in 2011 with plan to develop a Biotechnology program
- Founded STEAM Academy @ DCC as a recruitment vehicle for the Biotechnology program
- The 2014-17 Summer STEM Challenges Program introduced over 420 students to the exciting world of technology driven career opportunities.



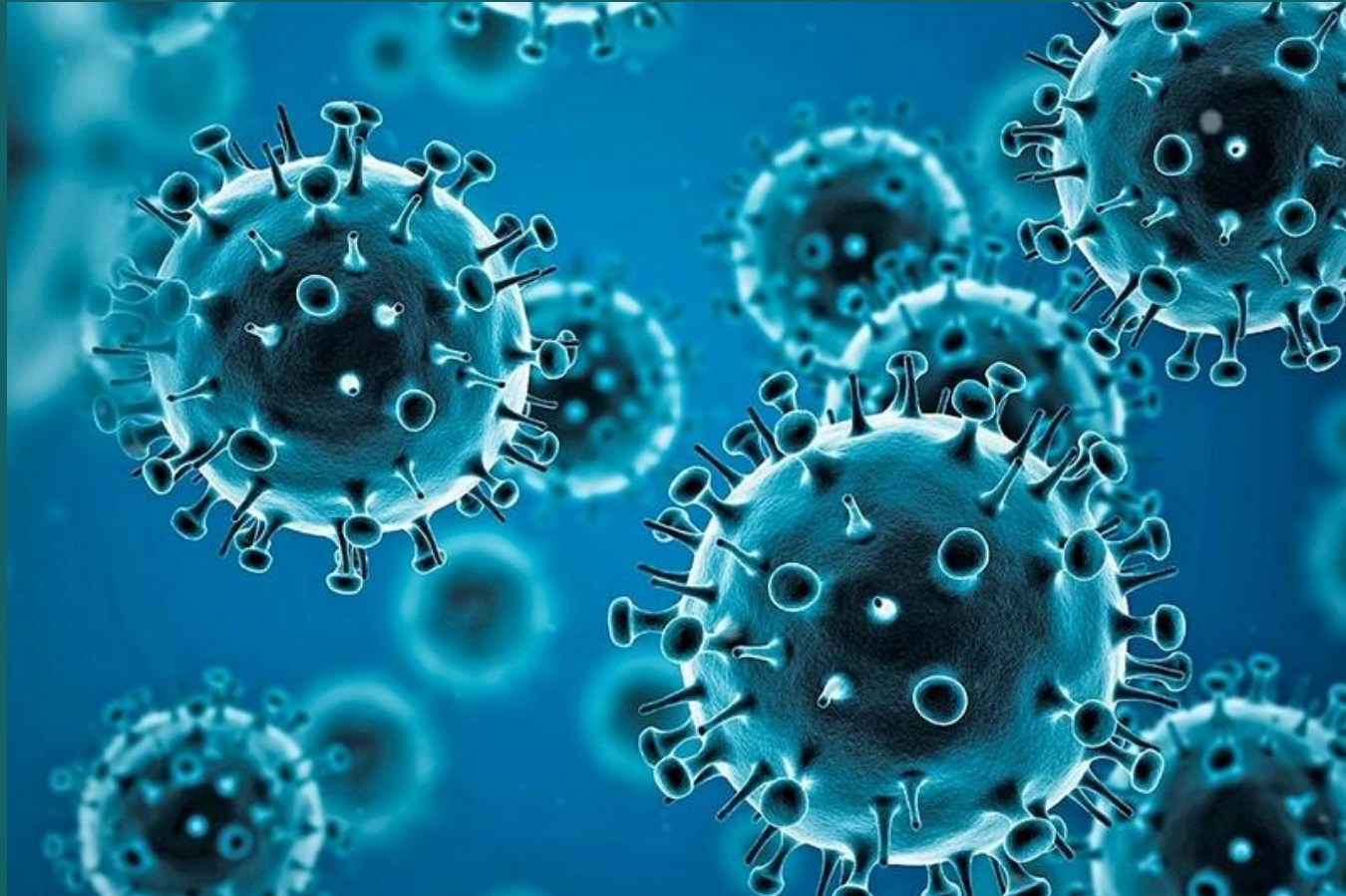
# Fletcher Technical Community College

- Named founding Dean of STEM in Jan 2019
- Implemented new programs across STEM Division
  - UAS, Precision Ag, Instrumentation, Geology, Env. Sci, Math pathways
- Entered partnerships with local, state, and national groups
- Awarded the LaSTEM Region 3 Hub
  - Clone STEAM Academy
- Fundraising!
  - Grants
  - Sponsorships
    - Chevron, Shell, Brown Foundation



# Err Houston, we've had a problem....

*Jim Lovell, Apollo 13*



# Our Covid-19 Response



# Collaborative Team



Fletcher Technical  
Community College  
- *Host college*



Central Creativity  
- *Vendor partner*



John C. Stennis  
Space Center  
- *Home of NASA  
Astro Camp*



Chevron  
- *Title Sponsor*

# A Comparison of Students Served:

- **Traditional (On-Site) Summer Camp Experience**

- Students served: ~30 per week, per classroom, per instruction team
- Limited by space and staff

- **Distance Learning Hybrid (Remote) Camp Experience**

- Students served: limited only by capacity to provide bandwidth and materials
- On-site event becomes the “stage” for live hosting of remote content
- Additional student populations served:
  - Disabled (cognitive or physical)
  - English Language Learners (formerly LEP)
  - Rural (too far to commute to Fletcher campus everyday)
  - Home School
  - Multiple child homes (1 kit can be shared with 2 children)





# How Does The Process Work? It's simple!

1.



2.



3.



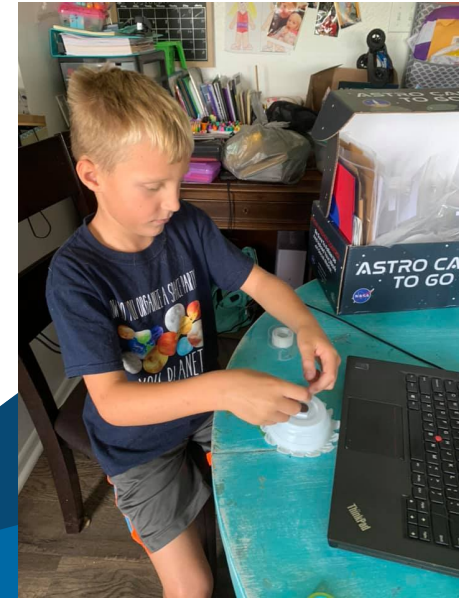
4.

Central Creativity designs the experience and creates a shippable Astro Camp Kit (K-2<sup>nd</sup>, 3<sup>rd</sup>-6<sup>th</sup>, 7<sup>th</sup>-12<sup>th</sup> grade).

Families register for camp through Fletcher's Bayou STEM website

Registered campers receive their Astro Camp Kit a week or so prior to the start of camp.

Once camp starts, campers use their Astro Camp Kits to complete daily activities, take lessons further, chat live with industry professionals, post work to social media, and more.



# How Does The Process Work? It's simple!

→ 5.

Campers will receive periodic follow-up resources to encourage them to continue the learning experience. These resources will achieve the following:

- Provide additional activities and experiments that facilitate campers using their kit components in new ways
- Sustain camper engagement and interest in the educational experience
- Raise awareness for host college events and programs



A promotional poster for NASA's Astro Camp. The background features a large circular window of a space station with an astronaut floating in space. The NASA logo is in the top left. Logos for Fletcher Technical Community College and the human energy company (Chevron) are in the top right. A large orange speech bubble contains the dates "JULY 12-16" and "GRADES K - 12". A green speech bubble contains the time "10 AM - 2:30 PM". The main title "ASTRO CAMP" is in large, colorful letters, with "Summer 2021" above it. Below the title is the subtitle "NASA'S Distance Youth Space Experience!". A red circular badge indicates "REGISTRATION \$200". Four circular images show campers engaged in activities: "VIRTUAL REALITY" (a child wearing a VR headset), "ENGINEERING CHALLENGES" (a child working on a project), "NASA TECHNOLOGY" (a child working on a circuit board), and "AMAZING SCIENCE" (a child launching a rocket). The bottom section is divided into "About Camp" and "How It Works".

BROUGHT TO YOU BY:

Fletcher TECHNICAL COMMUNITY COLLEGE™

the human energy company™

JULY 12-16  
GRADES K - 12

10 AM - 2:30 PM

Summer 2021  
**ASTRO CAMP**  
NASA'S Distance Youth Space Experience!

REGISTRATION \$200

VIRTUAL REALITY

ENGINEERING CHALLENGES

NASA TECHNOLOGY

AMAZING SCIENCE

**About Camp**  
Join Bayou STEM as we host the Bayou Region's Official **NASA Astro Camp!** You will receive your very own NASA Summer Camp kit stuffed full of out-of-this-world science!!!  
*Enroll early for this signature experience. Seating is limited.*

**How It Works**

- Absolutely everything you'll need is included in your box.
- PARTICIPATE LIVE with others or work at your own pace.
- Each day holds new challenges and opportunities.
- Work with NASA experts and more!

Online Registration [fletcher.edu/bayou-stem](https://fletcher.edu/bayou-stem)

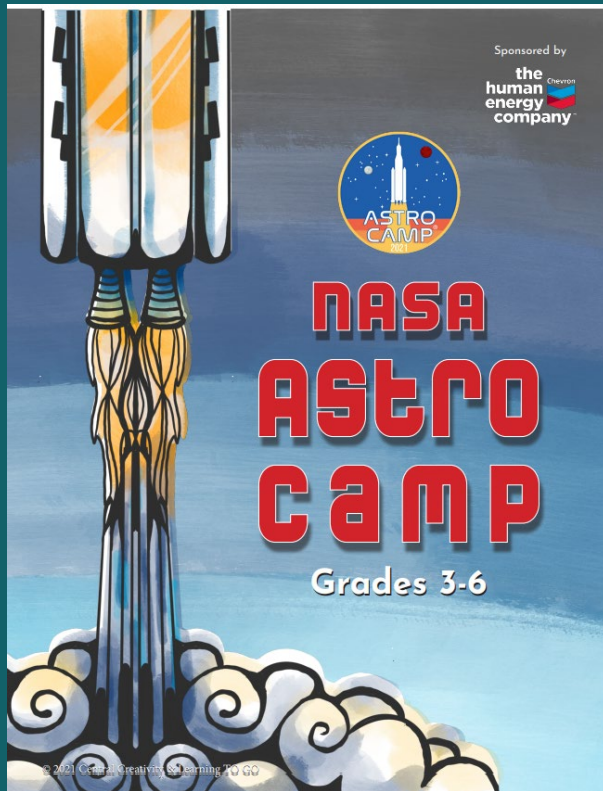
ASTRO CAMP

# The Build



# Manuals

- Carefully curated instructional manuals. Outlines all protocols for those without internet or using the kit asynchronously.
- 2021 manuals employed nationally renowned artist, Adam Trest



3-6 NASA Astro Camp

## Taste in SPACE



Astronaut Michael Hopkins has a snack on the ISS. Even keeping your food on your spoon is tricky in microgravity! (Image Credit: NASA)


### NASA Taste Test

The **Space Food Team** at NASA has a pretty big job. They have to make sure the astronauts have food that's nutritious, tasty, and can be stored for a long time without going bad. They also have to think about the challenges of eating food in a place without gravity.

Several months before an astronaut goes into space, he gets a list of over 300 recipes from the NASA Space Food Team and chooses which ones he'd like to take with him on his mission. He gets to try all the foods to make sure he likes them, and his menu is also reviewed by a **dietitian** to make sure it's well-balanced and has all the nutrients and calories he'll need.

### Taste Bud Trickery


The **miracle berry** is a little red berry that's native to West Africa. It's been around for centuries but was brought to the United States in 1960, where scientists began to study it. They found that the miracle berry contains a protein—which they named **miraculin**—that binds to the taste buds' sweet receptors and temporarily causes them to send signals to your brain to tell it you're tasting something sweet when you're actually tasting something sour. It makes pickles and lemons taste like candy!



© 2021 Central Creativity & Learning TO GO 7

3-6 NASA Astro Camp

Your Mission: "Trick" your taste buds into thinking sour foods are sweet by chewing a miracle berry.



### Materials

- Miracle berries
- Sour candy
- Lemon powder
- Plastic cup
- Water

#### Step 1

Fill your cup most of the way full with water and stir in one packet of lemon powder. Take a little taste of it and of the other taste-testing items you have so you know what they normally taste like.

#### Step 2

Chew one of your berry halves up really well and then move it around your mouth for at least 30 seconds so the berry's pulp can coat your tongue. After that time's up, you can swallow it or spit it out.

#### Step 3

Now it's time for a taste test! Taste each of the items we've provided. Do they taste the same as before?

### How's it taste?

Fill in the table below with how each food tasted before and after the miracle berry.

	Lemon	Sour Candy	
Before			
After			

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# The Camp Schedule

- Participants log on at 10 am via zoom for opening session
- Continue to breakout rooms after opening session activities



## Daily Log In Steps

1. Every day you will log in by clicking on the Opening Session Zoom Link listed here.
2. On Day 1 you will be assigned a Team # during the opening session. This will be your Team # for the remainder of the week.
3. Once the Opening Session has finished, you will click on the Zoom Link listed to the right for the Team # that you are in.

## NASA Astro Camp Zoom Links

Click The Buttons to Launch Each Zoom Session

Opening Session

10:00 AM - 10:15 AM

### K-2nd Grade Training Room Links

10:15 AM - 2:15 PM

Team #1  
Room

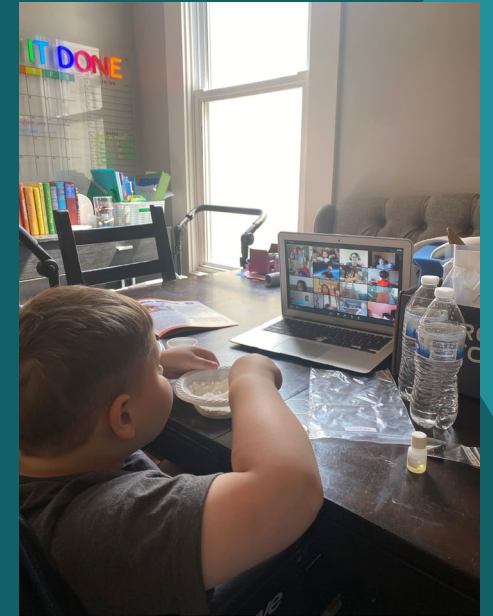
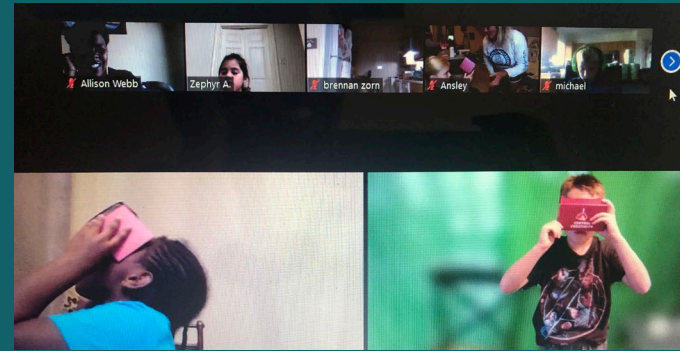
Team #2  
Room

Team #3  
Room

Team #4  
Room

Team #5  
Room

Team #6  
Room



Website: <https://www.centralcreativity.com/astrocamp/>

K-2nd Grade Agenda

3-6th Grade Agenda

HOME > SERVICES > GAMES AND WORKSHOPS  
7-12th Grade Agenda

## NASA ASTRO CAMP WEEKLY AGENDA (GRADES 7-12)

SESSION TIMES	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
<b>OPENING SESSION</b> (10:00 AM - 10:15 AM)	Welcome Keynote Speaker (Callie Russell)	Daily Briefing	Daily Briefing Subject Matter Expert	Daily Briefing	Daily Briefing
<b>SESSION 1</b> (10:15 AM - 11:15 AM)	Intro to Camp <a href="#">Mission Patch</a> <a href="#">Virtual Reality</a>	<a href="#">LED Rocket</a> <a href="#">Graphite Circuit</a>	<a href="#">Soda Straw Rocket</a> <a href="#">Balloon Helicopter</a>	<a href="#">Powering the ISS</a> Space Coding	<a href="#">Fizzy Rocket</a> <a href="#">Photochromic Slime</a>
<b>SESSION 2</b> (11:15 AM - 12:15 PM)	<a href="#">Taste in Space</a> <a href="#">Edible Water Pods</a>	<a href="#">Rocket Transporter</a> <a href="#">Tower Power</a>	<a href="#">Solar Cooker</a> <a href="#">Mission Log</a>	<a href="#">Microcontroller</a> <a href="#">Mission Log</a>	<a href="#">Sun Tea</a> <a href="#">Water Filtration</a>
<b>LUNCH</b> (12:15 PM - 1:15 PM)					
<b>SESSION 3</b> (1:15 PM - 2:15 PM)	<a href="#">Hydroponic Garden</a> <a href="#">Mission Log</a>	<a href="#">Sweeper Bot</a> <a href="#">Mission Log</a>	<a href="#">Thermochromic Coaster</a> <a href="#">Sun Print</a>	<a href="#">Crew Exploration Vehicle</a> <a href="#">Mission Log</a>	Mission Showcase Crew Exploration Vehicle Drop
<b>CLOSING SESSION</b> (2:15 PM - 2:30 PM)	End of Day Briefing Prize Drawing	End of Day Briefing	End of Day Briefing	End of Day Briefing	End of Day Briefing Keynote Speaker

Click on Each Activity Above To Watch A Short Demonstration Video.

# The Camp Experience



## Guest Speakers/Industry Experts

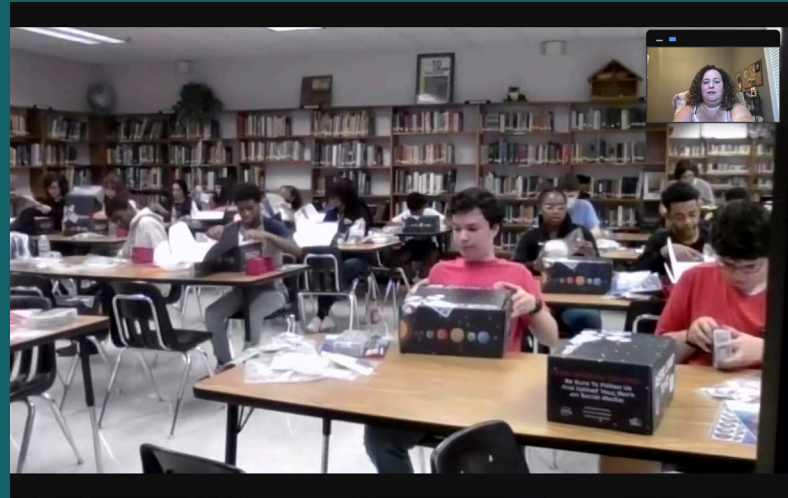
- 2021 Keynote Callie Russell, best known for surviving *Alone* in the Arctic wilderness for a record 89 days





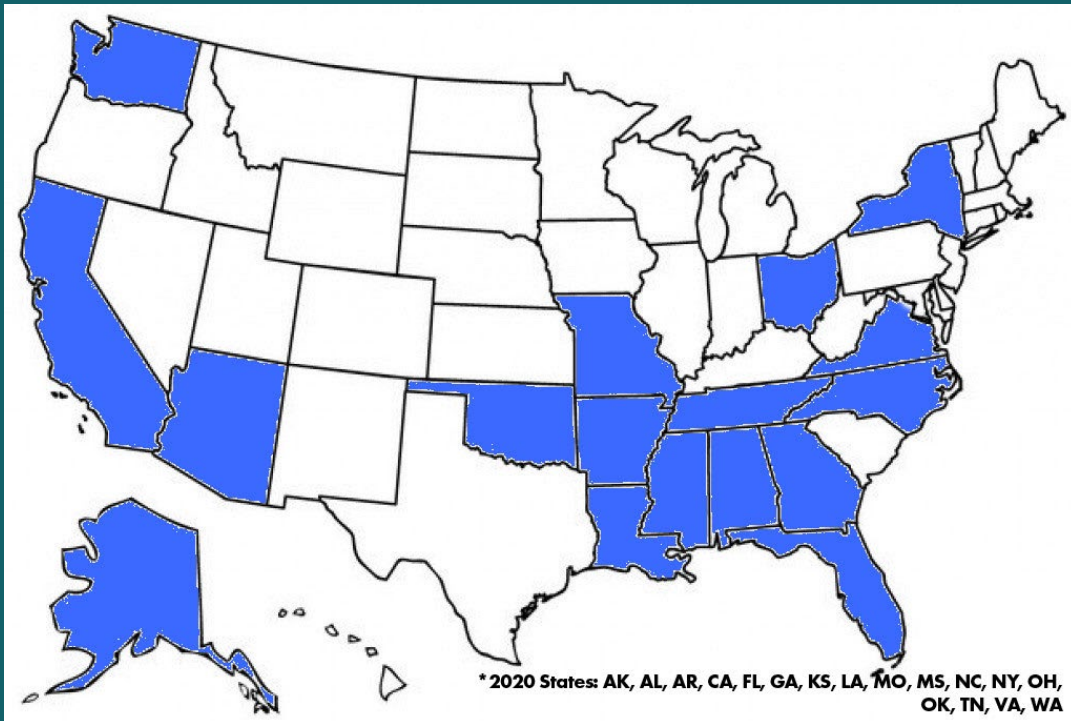
# 2020 vs 2021 Astro Camp model

- Due to COVID, the 2020 camps were conducted 100% virtual
- In summer 2021, some schools used the Astro Camp experience as part of their ‘in person’ summer enrichment
- Proving the model was just as successful for synchronous, in person learning!

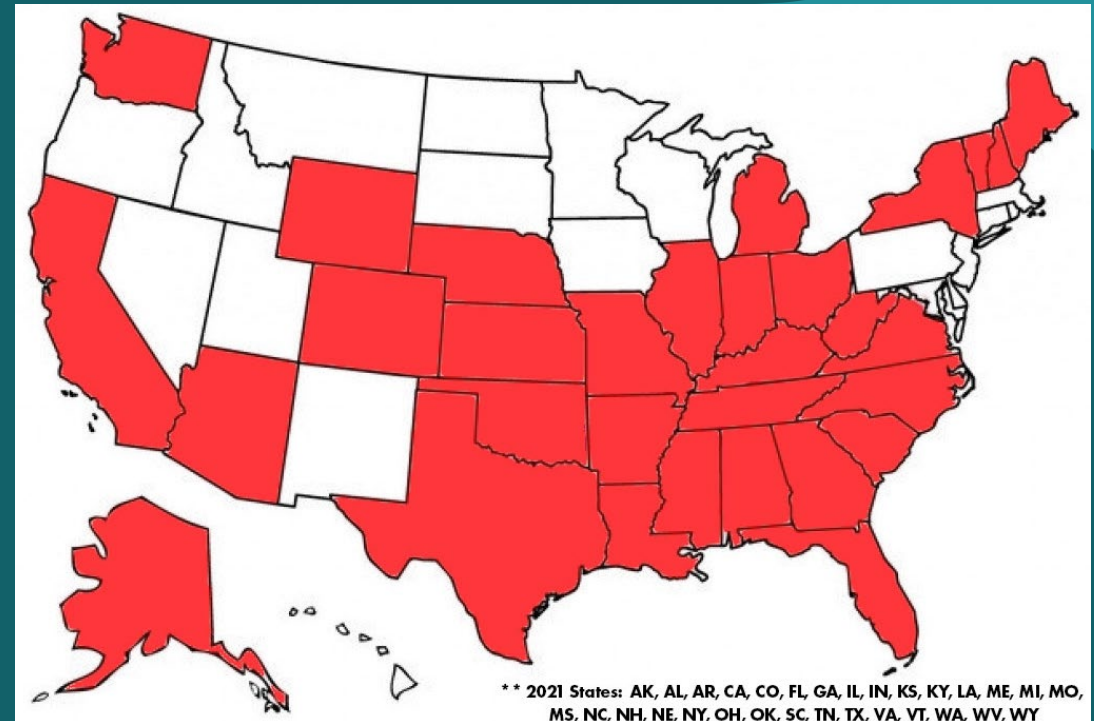


# 2020 vs 2021 Astro Camp model

Explosive Growth in 2021 over 2020!



2020 International Participant Countries (6):  
Canada, Netherlands, Finland, France, Ghana,  
South Korea



2021 International Participant Countries (9):  
Belgium, Canada, France, Germany, Guam,  
Mexico, Scotland, South Korea, Uganda

# 2020 vs 2021 Astro Camp model

	2020 NASA Astro Camps	2021 NASA Astro Camps	% change
Total # Participants (students, parents, family)	926 Individuals	3410 Individuals	268%
In Person	No In Person	1191 Individuals	---
Virtual	926 Individuals	2219 Individuals	140%
Females	51%	51.4%	---
Males	49%	48.6%	---
K-2 <sup>nd</sup> Grade	138 (15%)	1218 (35.7%)	782%
3 <sup>rd</sup> -6 <sup>th</sup> Grade	463 (50%)	1577 (46.3%)	241%
7 <sup>th</sup> -12 <sup>th</sup> Grade	325 (35%)	615 (18%)	89%
Underserved/ Underrepresented	500 (54%)	2156 (63.25%)	331%
IEP	174	575	230%

# 2020 vs 2021 Astro Camp model

Wanted to hate it bcuz my dad made me do it. I was surprised, it was a lot of fun! I apologized to my dad.

I have ADHD and its hard to focus at school, but I could do it at home real easy

I got to learn in the safe space of my home

Got to show off my work everyday!

No one made fun of me when my stuff didn't work. Instead, they helped me make it work.

Christmas in July! Seriously, I have two older brothers who NEVER do anything with me but they did this camp with me.

I got to turn off my camera when I felt shy, so I could work without feeling like everyone was staring at me.

Astro Camp made me like doing science again!

Everything excited my imagination. I can see myself becoming a NASA scientist one day...

My grandpa learned how to use a computer so he could work with me. We live two states away.

Teenager Approved!

I live in a wheelchair and cannot walk. I felt like a normal kid in camp

# Summary

- Our Virtual (now hybrid) NASA Astro Camp model has smashed all our expectations!

- The ability to reach students that previously would not have participated in camps.
- The impact data is phenomenal. Drafting publication.

- The 2022 NASA Astro Camps are already being requested.

- Taking it further, NASA TEAMS II grant is pending. If awarded, we will create a searchable, online database of NASA-approved activities matched to NGSS.



**The way to get started is to  
quit talking and begin doing.**

Walt Disney

**Thank You**

Dr. Clint A. Coleman

Program Administrator of LaSTEM/Cybersecurity

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