

## VCU School of Education Partners with NASA to Connect & Engage Students with NASA's Missions through Performance Based Learning & Engineering Design Challenges!



The Center for Innovation in STEM Education (CISTEME) hosted a virtual teacher workshop for Richmond area middle school districts in collaboration with NASA Langley Research Center and the NASA Wallops Space Flight Facility this past summer. The first phase of this two-part experience provided an engaging virtual teacher professional learning experience August 28-30.

Approximately 27 middle school teachers and specialists from Colonial Heights, Petersburg, Henrico County and Richmond City participated in the offering. Dr. Al Byers, who leads [CISTEME](#), worked closely with the following district science and STEM leads across the four school systems to ensure the experience met each district's unique needs, and was grade-appropriate and standards-aligned using the compelling context of NASA missions to facilitate deeper understanding of STEM science and engineering content and practices:

- Dr. Decandra Jackson, STEM coordinator, [Petersburg City Public Schools](#)
- Dr. Joe Douglas, instructional specialist, [Colonial Heights Public Schools](#)
- Dr. Eric Rhodes and Dr. Rachael Toy, [Henrico County Public Schools](#)
- Josh Bearman, science instruction specialist, [Richmond City Public Schools](#)

Dr. Byers shared his enthusiasm, saying: "We are excited for CISTEME to help provide this high impact experience in cooperation with our local school districts. Virginia is the only state in the U.S. besides California that has not one but two NASA centers, and the only other state besides Florida that launches payloads directly into orbit, resupplying the International Space Station from Wallops Space Flight Facility. It's imperative for us to draw upon NASA's authentic STEM content as an inspiring context for STEM learning across our region!"

Part of this experience made teachers aware of the [many internships](#) for teachers and students that are also available at both NASA Langley and NASA Wallops.

Extensive planning with the district coordinators and specialists occurred with insight and expertise from NASA that included the following individuals:

- NASA Langley Research Center: [Office of STEM Engagement](#)
  - Dr. Kimberly Brush, director
  - Dr. Anne Weiss, education specialist
- NASA Wallops Flight Facility: [Education Directorate](#)
  - Dr. Joyce Winterton, senior advisor for education and leadership development
  - Patricia Benner, education specialist
  - Victoria Danna, education support specialist

Across the three days, NASA's [Artemis Program](#) provided a compelling backdrop for hands-on learning at a distance with the sixth grade teachers. Artemis will land the first woman and next man on the moon by 2024, using innovative technologies to explore more of the lunar surface than ever before. There has never been a better time to inspire students to be the next generation of engineers, scientists and explorers! The workshop shared the latest developments of the Artemis mission with respect to the design challenges assigned to each NASA location, in addition to discussing the [Commercial Crew Program](#), and the Global Learning and Observations to Benefit the Environment ([GLOBE](#)) citizen science program.

Dr. Brush elaborated on the importance of the Artemis Program.

"The Artemis Program is providing career opportunities in all areas of STEM, requiring creative and innovative people to fill new roles – some of which do not even exist yet. Teachers who are informed on NASA's work are our greatest allies in inspiring the students, who will become the workforce of the future. We are grateful for this opportunity to bring NASA subject matter experts, videos and classroom activities to teachers who are so excited to share NASA's work with their students," Brush said.

Teachers learned how to access and leverage NASA engineering design challenges and performance-based learning projects that addressed many sixth grade components of the Virginia Standards of Learning from biology, geology, environmental science and physics. Teachers working virtually learned first-hand from NASA scientists and engineers and participated in hands-on activities they could replicate for their students, including 2-liter rockets and engineering design challenges for life support systems that will soon be on the moon!

Dr. Winterton shared feedback from the teachers.

"The teachers reported that they will use the NASA information in their classes and that it will add a 'real-world' connection to their lessons. Middle school teachers are so important in helping students understand that STEM careers can be exciting and rewarding. It was a privilege for NASA to work with such dedicated educators," Winterton said.

CISTEME worked with their partner at the Science Museum of Virginia (SMV), Timshel Purdum, director of playful learning and inquiry. A virtual earth-moon and solar system tour by Justin Bartel, SMV's immersive experience manager and astronomer provided an online planetarium experience that may also be delivered to schools directly if desired.

At the end of the three-day workshop, Wallops Flight Facility's Benner awarded NASA professional development certificates documenting the teachers' contact hours for their effort. Educators report that they are already using instructional strategies learned this summer with their students while teaching virtually, posting videos of their experiences! The group hopes for a follow-up onsite experience before the school year is out. Stay tuned for more on this front as it launches.

Many teachers provided wonderful feedback such as:

- Great job! Very informative! I can't wait to attend more NASA workshops for educators!

- Everything provided was very useful. Time flew by. Loved the videos that added excitement and just learning about what NASA is doing...I feel I can explain more to my students about what is going on in space exploration and get them excited!
- Loved it. Each day was better than the day before. Helpful workshop. You also modeled how to do virtual lessons and get students involved.
- This was great. It was content rich and I have a better understanding of the "How" and where we are going in the future. Thank you for the insight into how the Research and Pioneering Facility works. I hope to inspire my students to work at NASA in the future.
- My key take-away is how to incorporate the ENTIRE Engineering process in our Science Standards. These presentations encouraged soft skills as team-work, collaboration, creativity and to dream about the future. I got an idea of the work ethics and guiding principles of NASA's workspace (i.e. perseverance, failing forward, improve designs and keep trying). I'll also take away all the resources available to enhance and bring imagery, movement and activities to my instruction.
- Great organization and use of time! It honestly has been the most rewarding and useful PD I have had this summer.

**URL SHARED BY Joanna Minott, Earth Science Teacher, Huguenot High School, Richmond City Public Schools (rocket from student at home with parents):** <https://drive.google.com/file/d/1--ej-0BJK4d3eiie61sd2UgiYkPDW7Jz/view>

### NASA Langley Research Center History, Artemis and STEM Careers: DR. Kimberly Brush



NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Dr Brush, VCU Teachers Welcome to NASA Langley Research Center1.pptx

# Langley's Past

Video (1)

Kimberly Brush

Ann Adrove  
Anne  
David Tack  
Debbie  
Eri Willis  
Isaac Presley  
Joanna Minott  
Karen Thomas  
Kate Ewalt  
Kiera Thompson  
Kimberly Brush

Chat (Everyone)

Al Byers: Coolest stuff...drones are accessible here on Earth too for learning STEM.

Anne Weiss: July 30 7:50AM Eastern

Al Byers: Yes, good morning Kimberly!

Al Byers: We appreciate you making this possible for us Kim. THANK YOU!

Anne Weiss: <https://www.youtube.com/watch?v=6qA8tA0d8k>

Anne Weiss: Please let us know if you can hear and see the video...

Stephanie: Looks and sounds good!

Karen Thomas: yes

Al Byers: So inspiring...

Rhonda Kass: love it!

Al Byers: VA is the only state with 2 NASA centers, and I love the spirit of exploration: Passion and Perseverance!

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Dr Brush, VCU Teachers Welcome to NASA Langley Research Center1.pptx

# Langley and Artemis

**BUILD**

**ARRIVE**

**PROTECT**

Video (1)

Kimberly Brush

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NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio

Dr Brush\_VCU Teachers Welcome to NASA Langley Research Center.pptx

# Langley's Workforce Today





Kimberly Brush

Attendees (18)

- Ann Adrewe
- Anne
- David Turk
- Debbie
- Erin Willis
- Isaac Presley
- Joanna Minott
- Karen Thomas
- Kate Ewalt
- Kiera Thompson
- Kimberly Brush

Chat (Everyone)

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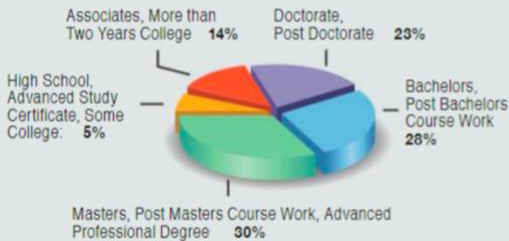
Karen Thomas: yes

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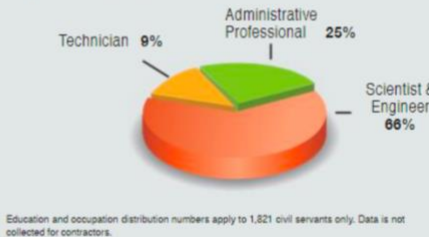
Al Byers: VA is the only state with 2 NASA centers, and I love the spirit of exploration: Passion and Perseverance!

### Education Distribution



Education Level	Percentage
Associates, More than Two Years College	14%
Doctorate, Post Doctorate	23%
Bachelors, Post Bachelors Course Work	28%
Masters, Post Masters Course Work, Advanced Professional Degree	30%
High School, Advanced Study Certificate, Some College	5%

### Occupation Distribution



Occupation	Percentage
Technician	9%
Administrative Professional	25%
Scientist & Engineer	66%

Education and occupation distribution numbers apply to 1,821 civil servants only. Data is not collected for contractors.

#JOURNEYTO MARS

## NASA Langley Content Research Discussion: Mars Helicopter Rover: Anne Weiss

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio

zenity Mars Helicopter... Attempting the First Powered Flight on Mars.mp4



Anne Weiss

Attendees (21)

- Ann Adrewe
- Anne
- David Turk
- Debbie
- Erin Willis
- Isaac Presley
- Joanna Minott
- Karen Thomas
- Kate Ewalt
- Kiera Thompson

Chat (Everyone)

Al Byers: Welcome Debbie!

Joanna Minott: Awesome Anne! 20 years!!

Erin Willis: I've already gone

Isaac Presley: Yes I went!

Kate Ewalt: yes

Al Byers: We got it...if we move the boxes, they are moving them for everyone!

Al Byers: The power :)

Al Byers: Go Anne, what a career. Thank you for sharing with us!

Anne Weiss: 7:50am

Al Byers: Here's the URL to the shared Google Drive: [https://drive.google.com/drive/holders/1DE\\_4yHs4U87WS3AMUR\\_KW1EQhaptD](https://drive.google.com/drive/holders/1DE_4yHs4U87WS3AMUR_KW1EQhaptD)

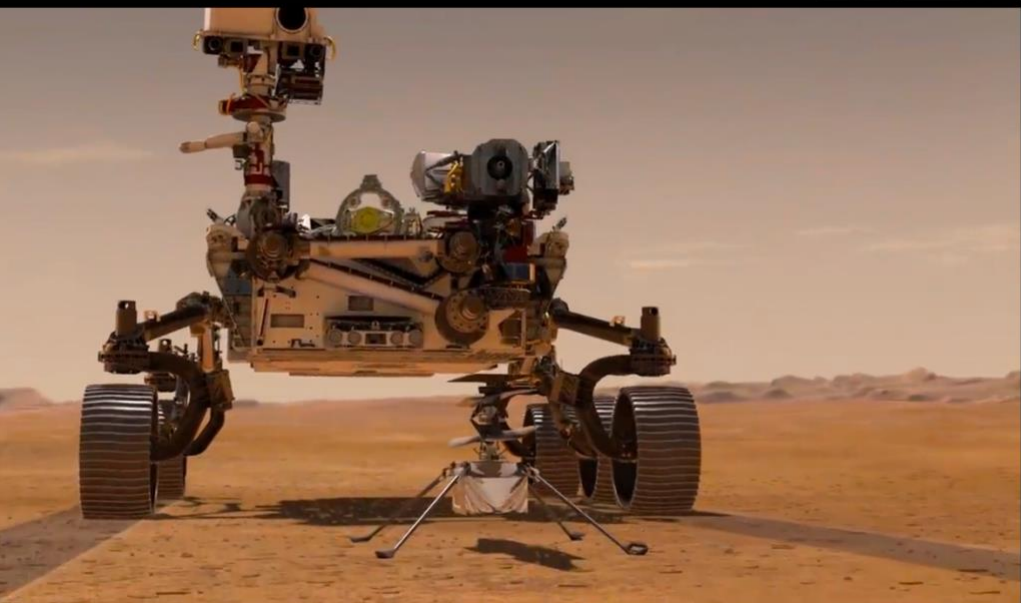
Anne: I'm not hearing it

Anne Weiss is typing...



Meeting Layouts Pods Audio NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

genovity Mars Helicopter... Attempting the First Powered Flight on Mars.mp4



Video (1)

Attendees (21)

Presenters (18)

- Ann Atrove
- Anne
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- Kate Ewalt
- Kiera Thompson

Chat (Everyone)

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Al Byers: We get it. If we move the boxes, they are missing them for everyone!

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Anne Weiss: 7:50am

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Anne: I'm not hearing it

Anne Weiss: @Anne, you might need to turn up your volume



Anne: I can hear you typing though

Karen Thomas, Stephanie are typing...


## NASA Langley Discussion: Culturally Responsive Teaching: Anne Weiss

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Explore Moon to Mars EDP AA-2 Background.pptx

### Culturally Responsive Teaching (CRT)



*"The World Turtle" (Credit: Chibineo; Creative Commons (CC))*



*Space Shuttle Endeavour at the Kennedy Space Center (Credit: NASA)*

*"...a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural references [that they would be familiar with] to impart knowledge, skills, and attitudes." (Gladson-Billings, 1995)*

**Culturally responsive teaching (CRT) activities integrate cultural contexts, art and STEM content (an Engineer 2020 skill).**

Video (1)

Attendees (25)

- David Tuck
- Debbie
- Erin Willis
- Isaac Presley
- Joanna L Minott
- Karen Thomas
- Kate Ewalt
- Kiera Thompson
- Michael Jokodola
- Nick Cipolla
- Nikisha Charly

Chat (Everyone)

NOAA has some cool Oysters in the Chesapeake Bay modules/lessons for middle school: <https://oceanservice.noaa.gov/education/oysters-in-the-chesapeake-bay/edc.html>

Al Byers: NASA redundancy! Good planning

Stephanie: Flexibility and backup plans will be key!

Joanna L Minott: We can also have guest speakers on virtual platform who can then present...minus any fire drills and bathroom requests etc

Al Byers: Go...great idea, panels, guest speakers...wonderful idea

Al Byers: Jessica is a great resources for questions on GLOBE and My NASA Data: [jessica.e.taylor@nasa.gov](mailto:jessica.e.taylor@nasa.gov)

# NASA Langley Artemis Mission Overview: Anne Weiss

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio


Explore Moon to Mars EDP AA-2 Background.pptx

## The Artemis Program

Artemis is the twin sister of Apollo and goddess of the Moon in Greek mythology. Now, she personifies our path to the Moon as the name of NASA's program to return astronauts to the lunar surface by 2024.

When they land, Artemis astronauts will step foot where no human has ever been before: the Moon's South Pole.

With the horizon goal of sending humans to Mars, Artemis begins the next era of exploration.



Video (1)

Attendees (24)

Chat (Everyone)

Al Byers: The NASA mission is so compelling!

Nikisha Charity: @Al Byers link says page cannot be found

Al Byers: I'll double check...

Nick Cipolla: Generational relevancy is something to mention, too. When we were mentioning Challenger yesterday, I was thinking that I grew up with Colombia instead

Joanna L Minott: Does it speed up by momentum?

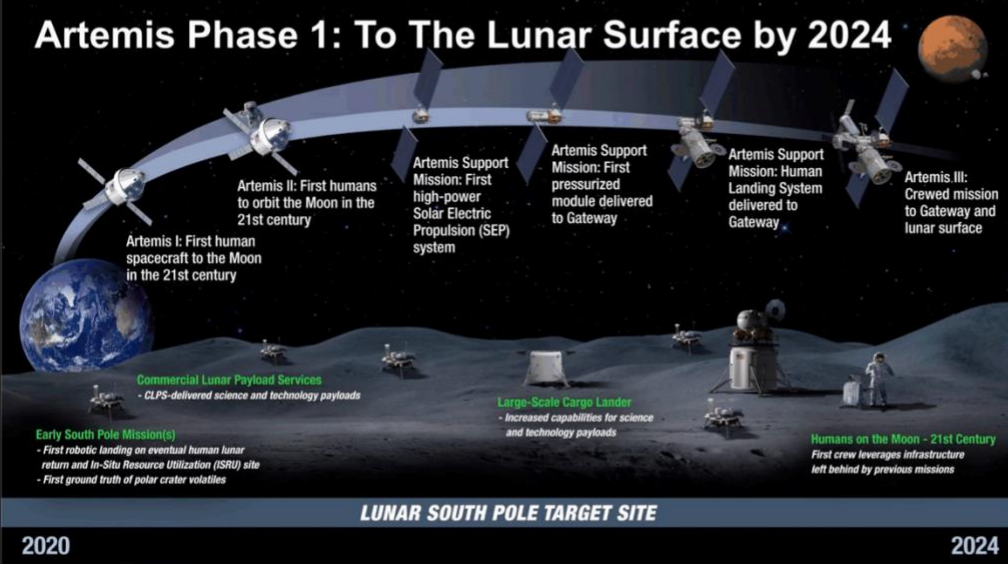
Rachelle Ruffner: So true Nick

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## Artemis Phase 1: To The Lunar Surface by 2024



Artemis I: First human spacecraft to the Moon in the 21st century

Artemis II: First humans to orbit the Moon in the 21st century

Artemis Support Mission: First high-power Solar Electric Propulsion (SEP) system

Artemis Support Mission: First pressurized module delivered to Gateway

Artemis Support Mission: Human Landing System delivered to Gateway

Artemis III: Crewed mission to Gateway and lunar surface

Commercial Lunar Payload Services - CLPS-delivered science and technology payloads

Large-Scale Cargo Lander - Increased capabilities for science and technology payloads

Humans on the Moon - 21st Century First crew leverages infrastructure left behind by previous missions

Early South Pole Mission(s) - First robotic landing on eventual human lunar return and In-Situ Resource Utilization (ISRU) site - First ground truth of polar crater volatiles

LUNAR SOUTH POLE TARGET SITE

2020 2024

Video (1)

Attendees (24)

Chat (Everyone)

Al Byers: Thank you Anne

Joanna L Minott: Once the rocket launches, it started off with more mass, so as it loses the initial mass, does it speed up? Not certain just asking.

Joanna L Minott: Thank you so much!

Al Byers: @Nick, good point about Columbia (relevancy), both terribly sad moments, but learning opportunities. Good point.

Tracye Hogans Foster: Why did we use Mars to colonize instead of the

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Explore Moon to Mars EDP AA-2 Background.pptx

## Artemis Phase 2: Building Capabilities For Mars Missions

Reusable human lander elements refueled

Artemis IV Artemis V Artemis VI Artemis VII

Artemis Support Mission  
Lunar surface asset deployment for longer surface expeditions

CLPS opportunities

**SUSTAINABLE LUNAR ORBIT STAGING CAPABILITY AND SURFACE EXPLORATION**

MULTIPLE SCIENCE AND CARGO PAYLOADS INTERNATIONAL PARTNERSHIP OPPORTUNITIES TECHNOLOGY AND OPERATIONS DEMONSTRATIONS FOR MARS

2025 2029

Video (1)

Anne Weiss

Attendees (24)

- Nick Cipolla
- Nikisha Charity
- Rachelle Ruffner
- Rhonda Kass
- Sarah Baker
- Shirlean Harris
- Shirlean Harris 2
- Stephanie
- Sydney Mosley
- Tracyee Hogans Foster

Participants (0)

Chat (Everyone)

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## NASA Jessica Taylor: GLOBE hands-on investigations for students

NASA Langley EPU Specialist (Rescheduled Webinar) - Adobe Connect

NASAEarthScienceResourcesJTaylor07282020.pptx

## GLOBE Students Do Science

### SOL: Investigate and Understand

- “Investigate” - scientific methodology and implies systematic use of inquiry skills (observing, communicating, measuring, predicting, experimentation, evaluating data...)
- “Understand” - knowledge application, include the ability to recognize, explain, apply, analyze, make judgements, etc.

### GLOBE Science Process

Science is something anyone can do. Doing science makes you a scientist! By doing science, scientists gain a better understanding of the world around them and share their findings with the whole world.

Observe Nature

Ask Questions & Develop Hypothesis

Plan & Conduct Investigation

Analyze & Interpret Data

Construct Explanations from Evidence

Communicate Conclusions

The GLOBE Program

Video (1)

Jessica Taylor, NASA Langley

Attendees (26)

Hosts (3)

- Al Byers
- Anne Weiss
- Anne Weiss 2

Presenters (23)

- Ann Astrove
- Anne
- David Tuck
- Debbie
- Decardra Jackson
- Erin Willis

Chat (Everyone)

Michael Jokodola: project based learning

Rhonda Kass: claim, evidence, reasoning

Ann Astrove: having students carry out investigations in a virtual learning environment

Tracyee Foster 2: Analysis of data making sure student understand what it says

Stephanie: Asking questions and develop solutions to current issues

Rachelle Ruffner: evidence and reasoning

Isaac Presley: How cells work and the importance of DNA!

Nick Cipolla: All practices, b/c emphasis



NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio

GLOBE Observer Clouds\_Getting Started.mp4

Video (1)

Jessica Taylor, NASA Langley

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Chat (Everyone)

Jessica Taylor, NASA Langley: <https://www.globe.gov/research/united-states-of-america/home/student-research-symposia/teacher-resources/science-practices>

Rhonda Kass: thanks a bunch!

Al Byers: Great scaffolding for student derived investigations in their own backyard and school!

Jessica Taylor, NASA Langley: NSTA Science Scope article: <https://observer.globe.gov/documents/1938957652621820/NSTA+Science+SCOPE+Integrating+Techwith+Clouds/6a63c44b-8832-47e4-85f4-fee021b7fdb>

Anne Weiss: <https://www.youtube.com/watch?v=CNZGfEvaCHU&feature=youtu.be>

## NASA Langley: Hands-On Lesson: Engineering Challenge-Rockets to the Rescue: Anne Weiss

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio

Explore Moon to Mars EDP AA-2 Background.pptx

Video (1)

Anne Weiss

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- Stephanie
- Sydney Mosley
- Tracyee Hogans Foster

Participants (0)

Chat (Everyone)

Kate Ewalt: Love that!

Sarah Baker: WOW!!!!

Sydney Mosley: nice

Rachelle Ruffner: so awesome!!

Karen Thomas: What a great hook!

Al Byers: Moon, Mars...and beyond! Commercial Crew Program (low Earth orbit efforts to commercial partners, SpaceX, Boeing), with NASA focused on exploration. Anne can come behind and elaborate.

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect


Meeting Layouts Pods Audio

Explore Moon to Mars EDP AA-2 Background.pptx

Draw Stop Sharing

## Original Challenge

Hurricane Dorian hit the Bahamas and eastern United States (Virginia) September 2019, resulting in catastrophic damage. There was little way of getting food and supplies to affected residents. In this activity, you are challenged to design, build and test a propulsion system and Food Transportation Device (FTD) that can safely deliver food to affected areas during future natural disasters. The food needs to arrive intact and fresh.



Attendees (25)

- Nick Cipolla
- Nikisha Charity
- Rachelle Ruffner
- Rhonda Kass
- Sarah Baker
- Shirlean Harris
- Shirlean Harris 2
- Stephanie
- Sydney Mosley
- Tracyee Hogans Foster

Participants (0)

Chat (Everyone)

the different atmospheric pressures? For example, Mars has a high amount of CO2 which is bad for us humans.

Michael Jokodola: But once NASA shifts their focus, will there be a safety not just profit by these companies

Al Byers: Debbie's Question: So are we colonizing the moon?

Tracyee Hogans Foster: to help the health of the astronauts artificial gravity through magnetic spacesuits. Have that improved the load bearing strength of the astronauts. They are so weak when then come home

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect


Meeting Layouts Pods Audio

Explore Moon to Mars EDP AA-2 Background.pptx

Draw Stop Sharing

## Alternate Challenge

The entire community of New Rochelle, New York, was shut down in early March 2020 in an attempt to contain the spread of Covid-19. Within a one-mile radius, no one could leave their home during a two week-span for food or supplies. In this activity, you are challenged to design, build and test a propulsion system and Food Transportation Device (FTD) that can safely deliver food to affected areas during future public health crises. The food needs to arrive intact and fresh.



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Chat (Everyone)

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Meeting Layouts Pods Audio

Explore Moon to Mars EDP AA-2 Background.pptx

### Materials

- Each team will receive:
  - » 2 sheets of 8 1/2 x 11 cardstock
  - » 3 sheets of paper
  - » 10 rubber bands
  - » 1 plastic grocery bag
  - » 3 feet of string
  - » 4 cotton balls
  - » 1 rubber cork
  - » 4 straws
  - » 2 pipe cleaners
  - » 1 sheet of gift tissue paper
  - » 1 box of raisins



Video (1)

Anne Weiss

Attendees (25)

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Chat (Everyone)

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Tracyee Hogans Foster: Sorry about the error hard to see

Michael Jokodola: Yes

Meeting Layouts Pods Audio

Explore Moon to Mars EDP AA-2 Background.pptx



### Alternate Activity: Straw Rockets

<https://www.jpl.nasa.gov/edu/learn/project/make-a-straw-rocket/>

- Uses paper cutout, tape, scissors, straw, pencil and tape measure
- Rocket is launched by blowing on straw
- Students are challenged to change one variable at a time (e.g., type of paper used, tail fin size, etc.) and observe what that does to the rocket's flight path and length



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Anne Weiss

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Chat (Everyone)

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Michael Jokodola: Yes

Joanna L Minott: Hi cat!

Al Byers: Nice application Anne

Joanna L Minott: Great connection and relevancy.

Al Byers: Appreciate this idea. Even in

# NASA Langley: Student Teacher Engagement Opportunities: Anne Weiss

NASA Langley EPDC Specialist (Rescheduled Webinar) - Adobe Connect

NASA Langley Resources Presentation.pptx

## NASA Langley Centennial Digital Badge Mission

**Earth Science**

**EARTH RIGHT NOW**  
Your climate is changing. We're on it.

Role of cloud types in the Earth's Energy Budget

**Engineering**

**NASA'S JOURNEY TO MARS**

Design a capsule that uses the force of drag to land on Mars

**Aeronautics**

Test different materials as you gather data from paper airplane models

100th Anniversary of the National Aeronautics and Space Administration

Attendees (23): Michael Jokodola, Nick Cipolla, Nikisha Charity, Rachelle Ruffner, Rhonda Kass, Sarah Baker, shirlean harris, Stephanie, Sydney Mosley, Tracee Hogans Foster

Chat (Everyone): Rachelle Ruffner: hahaa, Al Byers: <https://microgravityuniversity.jsc.nasa.gov/nasawear.cfm>, Rachelle Ruffner: Such a cool opportunity!, Rhonda Kass: just looked up pangolins - cool!, Al Byers: <https://tinyurl.com/NASASpotWebinar>

NASA Langley EPDC Specialist (Rescheduled Webinar) - Adobe Connect

NASA Langley Resources Presentation.pptx

## NASA STEM EPDC Digital Badges

**CCP Educator: Dawn of a New Space Age**

Learn about NASA's Commercial Crew Program (CCP), its partners, and related activities!

[Let's go!](#)

**Earth & Space - Ames Aeronautics Exploration Encounter**

Using NASA Smart Skies in your Grades 3-6 math classes.

[Let's go!](#)

**Earth & Space - Blue Marble Matches: Earth Processes**

The Blue Marble Matches activity introduces students to geologic processes on Earth and Mars!

[Let's go!](#)

Found online @ <https://nasatxstate-epdc.net>;  
create login with email, Facebook, or Google account

NASA's badging system allows individuals to select from an ever-growing pool of exciting learning opportunities, to demonstrate mastery of various STEM topics, and to earn a badge for their personal accomplishments.

Graphic Credit: NASA STEM EPDC/Texas State University

Attendees (23): Michael Jokodola, Nick Cipolla, Nikisha Charity, Rachelle Ruffner, Rhonda Kass, Sarah Baker, shirlean harris, Stephanie, Sydney Mosley, Tracee Hogans Foster

Chat (Everyone): Rachelle Ruffner: hahaa, Al Byers: <https://microgravityuniversity.jsc.nasa.gov/nasawear.cfm>, Rachelle Ruffner: Such a cool opportunity!, Rhonda Kass: just looked up pangolins - cool!, Al Byers: <https://tinyurl.com/NASASpotWebinar>

NASA Langley EPD Specialist (Rescheduled Webinar) - Adobe Connect

Meeting Layouts Pods Audio

NASA Langley Resources Presentation.pptx

Draw Stop Sharing

Video (1)

Anne Weiss

Attendees (22)

- Michael Jokodola
- Nick Cipolla
- Nikisha Charity
- Rachelle Ruffner
- Rhonda Kass
- Sarah Baker
- shirlean harris
- Stephanie
- Sydney Mosley
- Tracye Hogans Foster

Chat (Everyone)

Isaac Presley: beck  
Sarah Baker: HERE  
Michael Jokodola: Yes  
Rachelle Ruffner: here  
Ann Astrove: ready  
Stephanie: ready  
Rhonda Kass: ready!  
Debbie: here  
Nikisha Charity: sorry computer cut off

**NASA EPDC** STEM ENGAGEMENT & EDUCATION PROFESSIONAL DEVELOPMENT COLLABORATIVE

# Working @ NASA...

NASA STEM Engagement

National Aeronautics and Space Administration

Apply For An Internship Today! Fall 2020 Application Deadline: July 6

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Please contact: NASAInternships Help Desk

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- Virtual Career Fair
- Learn more about Air Force

#NASAINTERNS

Weblink at:  
<https://intern.nasa.gov/>

"EVERY DAY YOU ARE A PART OF A BIGGER MISSION, A BIGGER PLAN, SOMETHING THAT YOU NEVER THOUGHT YOU WOULD BE CAPABLE OF ACHIEVING." - ISABELLA (INTERN), AMES RESEARCH CENTER

## NASA Langley: STEM Resources: Anne Weiss

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Mars 2020 STEM Toolkit.jpg

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Video (1)

Anne Weiss

Attendees (25)

Presenters (20)

- Ann Astrove
- Anne
- David Tuck
- Debbie
- Eric
- Isaac Presley
- Joanna Minott
- Karen Thomas
- Kate Ewalt

Chat (Everyone)

Stephanie: Hi Karen! Looking forward to working with you later!  
Anne: same Joanna! 20 years!  
Debbie: Colonial Heights 6th science  
Debbie: I'll try to reboot.  
Al Byers: Welcome Debbie!  
Joanna Minott: Awesome Anne! 20 years!!  
Eric Willis: I've already gone  
Isaac Presley: Yes I need!  
Kate Ewalt: yes  
Al Byers: We get it...if we move the boxes, they are moving them for everyone!  
Al Byers: The power :)  
Al Byers: Go Anne, what a career. Thank you for sharing with us!

Everyone

**MARS 2020 STEM TOOLKIT**

[www.nasa.gov/stem/nextgenstem/moon\\_to\\_mars/mars2020stemtoolkit](http://www.nasa.gov/stem/nextgenstem/moon_to_mars/mars2020stemtoolkit)

Available June 29, 2020

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Video (1)

**NASA EPDC** STEM ENGAGEMENT & EDUCATOR PROFESSIONAL DEVELOPMENT COLLABORATIVE

## Instructional Resource...Next Gen STEM

Commercial Crew Program    Moon to Mars    Small Steps to Giant Leaps

Next Gen STEM Home Page: <https://www.nasa.gov/stem/nextgenstem/index.html>  
 Commercial Crew Program (CCP): [https://www.nasa.gov/stem/nextgenstem/commercial\\_crew/index.html](https://www.nasa.gov/stem/nextgenstem/commercial_crew/index.html)  
 Moon to Mars (M2M): [https://www.nasa.gov/stem/nextgenstem/moon\\_to\\_mars/index.html](https://www.nasa.gov/stem/nextgenstem/moon_to_mars/index.html)  
 Small Steps to Giant Leaps (SSGL; Aeronaut-X): <https://www.nasa.gov/stem/nextgenstem/ssgl/index.html>

Attendees (22)

- Michael Jokodola
- Nick Cipolla
- Nikisha Charity
- Rachelle Ruffner
- Rhonda Kass
- Sarah Baker
- shirlean harris
- Stephanie
- Sydney Mosley
- Tracyee Hogans Foster

Participants (0)

Chat (Everyone)

Isaac Presley: back  
 Sarah Baker: HERE  
 Michael Jokodola: Yes  
 Rachelle Ruffner: here  
 Ann Astrove: ready  
 Stephanie: ready  
 Rhonda Kass: ready!  
 Debbie: here  
 Nikisha Charity: sorry computer cut off

### Virtual Hands-On Engineering Design Activity with Teachers: Anne Weiss

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Explore Moon to Mars EDP AA-2 Background.pptx

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Video (1)

**NASA**

## The Engineering Design Process (content)

Attendees (24)

Hosts (3)

- Al Byers
- Anne Weiss
- Anne Weiss 2

Presenters (21)

- Ann Astrove
- Anne
- David Tuck
- Debbie
- Decadra Jackson
- Erin Willis

Chat (Everyone)

Debbie: Different point of view can help solve a complex problem  
 Rachelle Ruffner: Different students will have different background knowledge or experiences that will change their way of understanding the material  
 Tracyee Foster 2: Also by having different sizes I would make sure to show that you cannot always contain everything you are given  
 Al Byers: IF context matters, then no single way to teach, relevance for different audiences  
 Debbie: maybe even have a crazy shaped container to show an "off the wall"  
 Nikisha Charity: Context: considering the student's life experiences, culture, and the things that are relevant to them, or maybe things that they have not thought about  
 Isaac Presley is typing...

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**STEM EDUCATOR PROFESSIONAL DEVELOPMENT COLLABORATIVE**

## Can you balance the Orion AA-2 Launch Abort Vehicle (LAV) mass properties?

**STEP 1**  
Collect your flight hardware pieces to make your AA-2 Launch Abort Vehicle (LAV)!

(Quantity) Item  
 (1) pipe cleaner = AA-2 Crew Module (CM) Boilerplate  
 (1) popsicle stick = Launch Abort System (LAS)  
 (4) paper clips = ballast blocks

**STEP 2**  
Integrate the CM to the LAS  
Place the stick towards the center of the pipe cleaner and wrap around the stick.

**STEP 3**  
Complete your LAV assembly  
Twist the ends of the pipe cleaner and shape to form your Crew Module (CM) to complete the LAV.

Launch Abort Vehicle (LAV)

**STEP 4**  
Conduct a mass properties test of your LAV  
Try to balance your LAV payload on your finger or a post. Talk with a friend about what you observe! Can you balance your LAV?

Place post or finger here to try to balance!

**STEP 5**  
Assemble 2 ballast blocks and test the LAV again  
Add your 4 ballast blocks (paper clips) somewhere on your LAV (the pipe cleaner and stick assembly) and try again to balance your LAV payload on a finger or a post. Talk with a friend about what you observe!

Place post or finger here to try to balance!

**STEP 6**  
Move ballast blocks to adjust the alignment of the LAV  
Is the LAV balancing straight up-and-down? If not, move the ballast blocks to a different location to get the LAV pointed straight up-and-down. Try different ballast configurations to observe what moving the ballast does to the LAV!  
*This balancing will help control where the rocket will go when it launches!*

**SOLUTION EXPLANATION**  
Mass properties are mass, center of gravity (or location of mass), and inertia. The Center of Gravity (CG) of the LAV with just the CM and LAS is harder to balance because the CG is up higher. When you add the ballast blocks, the mass and location of mass of the system changes, moving the CG to a point that is easier to balance!

**IMPORTANCE OF MASS PROPERTIES**  
In this example, when the ballast blocks are added in the right location, the LAV rocket will be balanced, stable, controllable, and fly in the where you want it to go when it launches!

www.nasa.gov

Orion Ascent Abort-2 (AA-2) Instructional Activity

deo (1)

Anne Weiss

Attendees (25)

Hosts (3)

- Al Byers
- Anne Weiss
- Anne Weiss 2

Presenters (22)

- Ann Astrove
- Anne
- David Tuck
- Debbie
- Decarda Jackson
- Erin Willis

Chat (Everyone)

having trouble

Anne: are links to these videos somewhere

Anne Weiss:  
<https://www.youtube.com/watch?v=wSuITzAIAWU>

Ann Astrove: Love the moments shown, especially the little boy hearing for the first time

Al Byers: Sounds OK to me, maybe unique to different computers

Anne: ok great!

Debbie: The videos show how art and creativity can inspire humans to do extraordinary things

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Video (3)    Start

Rachelle Ruffner

Anne Weiss

# NASA Wallops Science Content: High Altitude Balloon Investigations: Sarah Roth

VA NASA EPD Workshop (VA PD) - Adobe Connect

Meeting Layouts Pods Audio

LSD Design Challenge.pptx

## Typical Campaign Schedule

Nov-Feb  
Antarctic Campaign

March -May  
New Zealand

June -July  
Sweden or Palestine, TX

Aug-Oct  
Ft Summer, NM

Video (1)

Attendees (28)

Active Speakers

Hosts (5)

- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

- Sarah Roth

Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

Chat (Everyone)

Al Byers: thanks!

Joanna L. Minott: Are there any conditions that prevent you from

VA NASA EPD Workshop (VA PD) - Adobe Connect

Meeting Layouts Pods Audio

LSD Design Challenge.pptx

## Alice Springs and Tibooburra, Australia

Video (1)

Attendees (28)

Hosts (5)

- Sarah Roth
- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

- Sarah Roth

Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

Chat (Everyone)

Rhonda Kass: why so long and skinny?

Joanna L. Minott: WOW!!! Saran wrap.

Rhonda Kass: oh - cool!

Nick Cipolla: Can the materials be reused?



VA NASA EPD Workshop (VA PD) - Adobe Connect

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LDSD 2014 COSPAR Video.mp4 Draw Stop Sharing



Video (1) Start

Sarah Roth

Attendees (28)

Active Speakers

Hosts (5)

- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

- Sarah Roth


Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

VA NASA EPD Workshop (VA PD) - Adobe Connect

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Video (1) Start

Sarah Roth

Attendees (28)

Sarah Roth

Hosts (5)

- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

- Sarah Roth

Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

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Video (1)



Attendees (28)

Sarah Roth

Hosts (5)

- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

Sarah Roth

Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

0:06:44 / 0:08:30

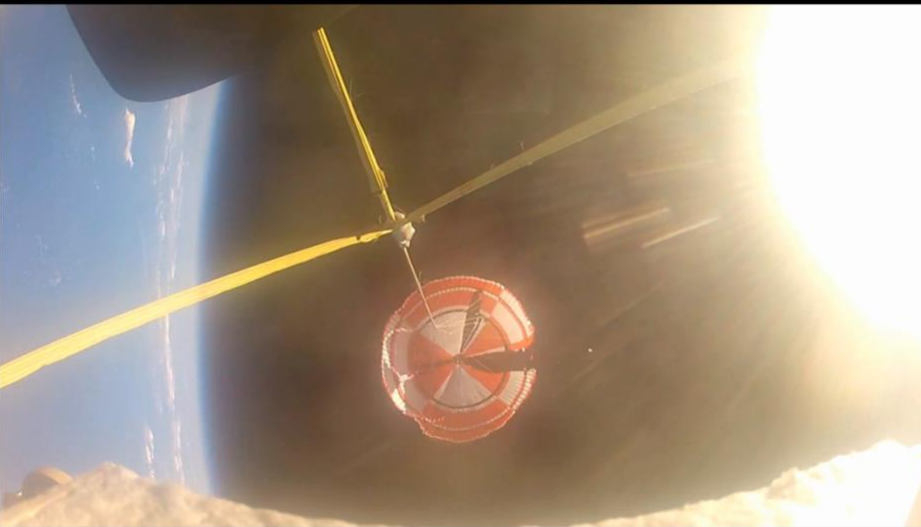
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Meeting Layouts Pods Audio

LDSD 2014 COSPAR Video.mp4

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Video (1)



Attendees (28)

Sarah Roth

Hosts (5)

- Al Byers
- Patricia Benner
- Shane Keating
- Victoria - test participant
- Victoria Danna

Presenters (1)

Sarah Roth

Participants (22)

- Ann Astrove
- Anne
- Anne Weiss
- Benner
- David Tuck

# NASA Wallops Discussion of Designing Lunar Bases using online tools: Victoria Danna

VA NASA EPD Workshop (VA PD) - Adobe Connect

Meeting Layouts Pods Audio

Lunar Base Challenge - RIC PD 7.29.20 version.pptx

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National Aeronautics and Space Administration

## Lunar Base Challenge

**Presented By: Victoria Danna**  
 Education Program Support Specialist  
 Suborbital and Special Orbital Projects Directorate  
 Wallops Flight Facility

Video (1) 1 person has raised hand  
 Rhonda Kass  
 Victoria Danna

Attendees (27)

- Victoria Danna
- Joanna L Minott
- Joyce Winterton
- Karen Thomas
- Kiara Thompson
- Michael Jokodola
- Nick Cipolla
- Nikisha Charity
- Rachelle Ruffner
- Rhonda Kass
- Sarah Baker
- Shirlean Harris
- Starr Gray
- Stephanie O'Neil
- Sydney Mosley

Chat (Everyone)

when mice were sent to the ISS.  
 Al Byers: Sure Joanna..Wallops is awesome...student and teacher opportunities exist on the beach at Wallops, Chincoteague (sp)?  
 Al Byers: THANK YOU Joyce!  
 Ann Astrove: Thank you!  
 Al Byers: Visitor Center is right there across the street from the center! Great viewing too

Web Links 3

- VA EPD Google Drive
- Engineering Task 1 - Padlet
- Geology Example Padlet
- Lunar Base Challenge Discussion - Padlet

Browse To: shorturlat/fnLU3

Sync

Everyone Benner Shane Keating

VA NASA EPD Workshop (VA PD) - Adobe Connect

Meeting Layouts Pods Audio

Lunar Base Challenge - RIC PD 7.29.20 version.pptx

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## Closing Discussion

- What other online tools could you utilize to make this activity work in a virtual environment?
- What additional tools and/or resources would you need to conduct this activity?
- How can you see yourself using this activity in your classroom?

<https://padlet.com/vdanna2003/lp3fjxu4mc05y3dj>

8 minutes

19

INSPIRE-ENGAGE-EDUCATE-EMPLOY  
 The Next Generation of Explorers

Video (1) Start Stop  
 Victoria Danna

Attendees (29)

- Victoria Danna
- Hosts (5)
  - Al Byers
  - Patricia Benner
  - Shane Keating
  - Victoria - Test participant
  - Victoria Danna
- Presenters (1)
  - Sarah Ruth
- Participants (23)
  - Ann Astrove
  - Anne
  - Anne Weiss
  - Benner
  - David Turk

Chat (Everyone)

Debbie: Is there a digital tool that students can use to run an investigation on the moon?  
 Patricia Benner: <https://moon.nasa.gov/> awesome interactive  
 Nick Cipolla: Could add resources we got in the other session about the Artemis project to talk about how ideas of working on the moon have changed since the Aris V plan  
 Nick Cipolla: as an extension  
 Al Byers: Great additions/suggestions (roles for students), and linkages Nick!

Everyone Benner Shane Keating