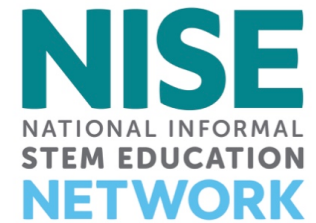


NISE Network Online Workshop

Stories & STEM:

Explore the power of narrative to engage audiences and enliven hands-on science programs

April 30, 2019



Welcome!

Today's presenters are:

- **Ali Jackson**, Sciencenter
- **Keliann LaConte**, Space Science Institute
- **Tara Cox**, Franklin Institute
- **Anna Hurst**, Astronomical Society for the Pacific

As we wait to get started with today's discussion, please:

Introduce yourself! Type your name, institution, and location into the Chat Box

Questions? Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we'll unmute your microphone.

Today's discussion will be recorded and shared online at nisenet.org/events/online-workshop



Close your eyes:
What's an early memory you have of the
Moon?

Raise your hand to share or share in the chat.

Online Workshop Overview



5 min

- **Ali Jackson** - NISE Network & Introductions



45 min

- **Keliann LaConte** - Universe of Stories & NASA @ My Library



- **Tara Cox** - LEAP Core Strategies & Partnerships



- **Anna Hurst** - ASP My Sky Tonight & Breakfast Moon



10 min

- Discussion and Questions

NISE

NATIONAL INFORMAL
STEM EDUCATION
NETWORK

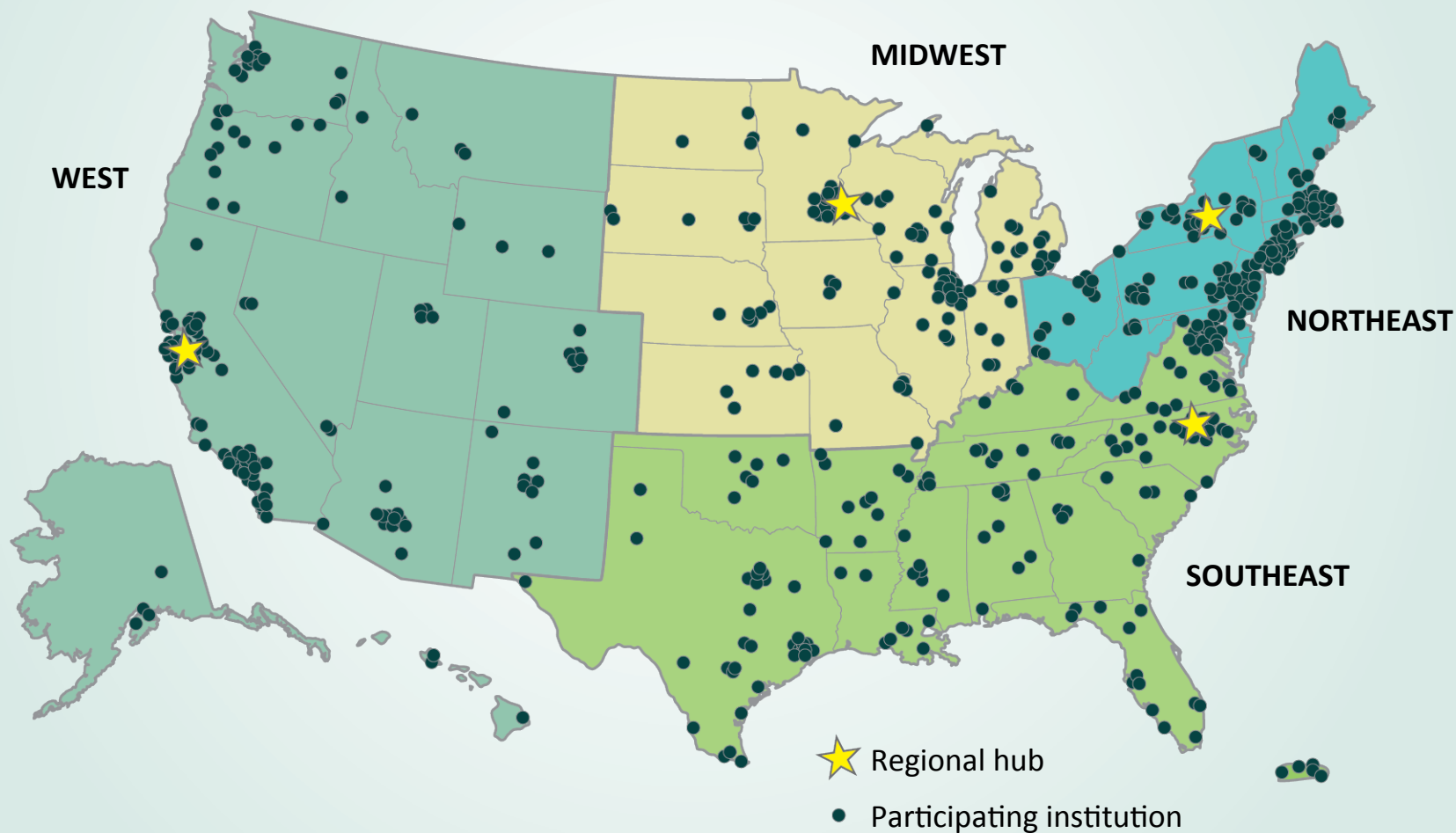
www.nisenet.org



nisenet.org

HUNDREDS OF ORGANIZATIONS

participate in NISE Network activities across the United States.



Stay Connected

NORTHEAST – Ali Jackson - Sciencenter, Ithaca, NY

Northeast: NY, VT, NH, ME, RI, CT, and MA

Mid-Atlantic: PA, NJ, MD, DC, DE, OH, and WV

SOUTHEAST – Brad Herring - Museum of Life and Science, Durham, NC

Southeast: VA, NC, SC, KY, TN, LA, MS, AL, GA, FL, and Puerto Rico

South: TX, AR, and OK

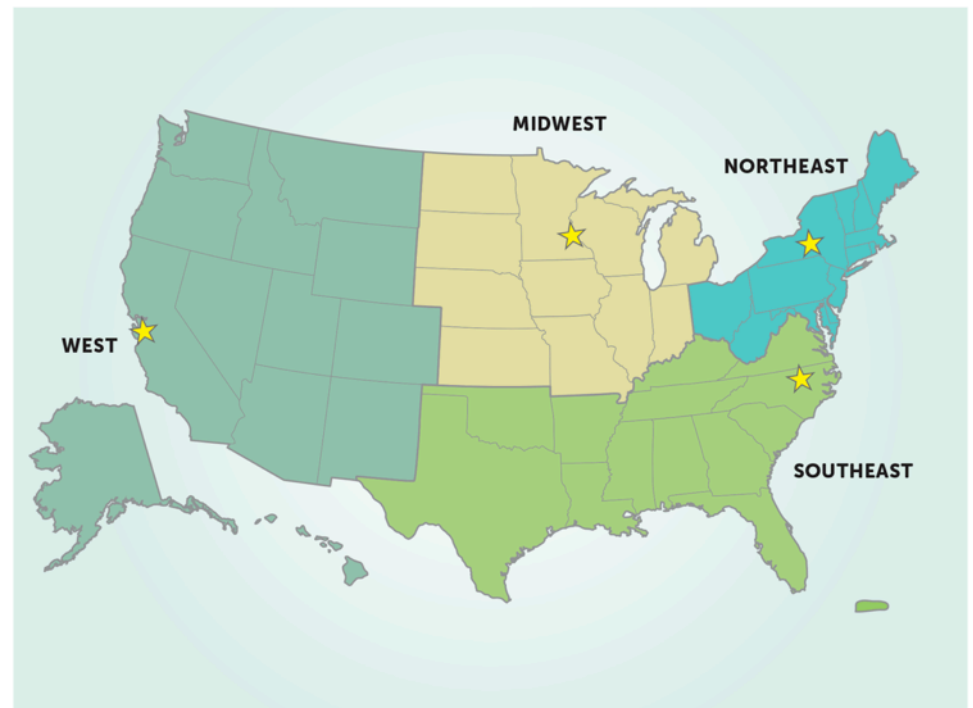
MIDWEST – Christina Leavell - Science Museum of Minnesota, St. Paul, MN

ND, SD, NE, KS, MN, IA, MO, WI, IL, MI, and IN

WEST – Frank Kusiak - UC Berkeley Lawrence Hall of Science, Berkeley, CA

Southwest: CA, NV, AZ, and HI

West AK, WA, OR, ID, MT, WY, CO, UT, and NM



Explore Science: Earth & Space



Bear's Shadow



Hide & Seek Moon



**NASA@
My Library**

A National Earth and Space Science Initiative that
Connects NASA, Public Libraries and their Communities



NCIL
National Center for
Interactive Learning

STAR★*net*

Science-Technology Activities &
Resources For Libraries

**NASA@
My Library**



NCIL

SPACE
SCIENCE
INSTITUTE

National Center for
Interactive Learning



Poll: Have you developed one or more ongoing partnerships with local libraries?

Activities



Credit: Carroll and Madison Library System



Kits

Training



Credit: ALA



Credit: Carroll and Madison Library System

Apps

A photograph of an astronaut in a white spacesuit standing on the lunar surface. The astronaut is facing left, and their shadow is cast on the ground. In the background, an American flag is planted in the soil. The lunar surface is covered in craters and rocks, and the sky is black. A large, semi-transparent white circle is overlaid on the left side of the image, containing text.

A Universe of Stories

Summer 2019

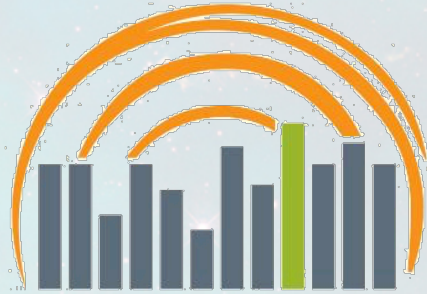
NASA@ My Library
and *STAR Net* are
partnering with the
Collaborative Summer
Library Program to
support 16,000
libraries.



www.cslpreads.org



collaborative
summer library program™



collaborative

summer library program™

CSLP Vision

We collaborate with libraries to create an inclusive literacy based program that is enjoyable for all ages, provide a reproducible program with a unified theme, share resources and offer professional support.



Planets



Exploration

Credit: ALA



NASA astronauts describe the importance of strong bones and muscle endurance for human spaceflight, while astronaut trainer Yamil

Astronauts and Health in Space

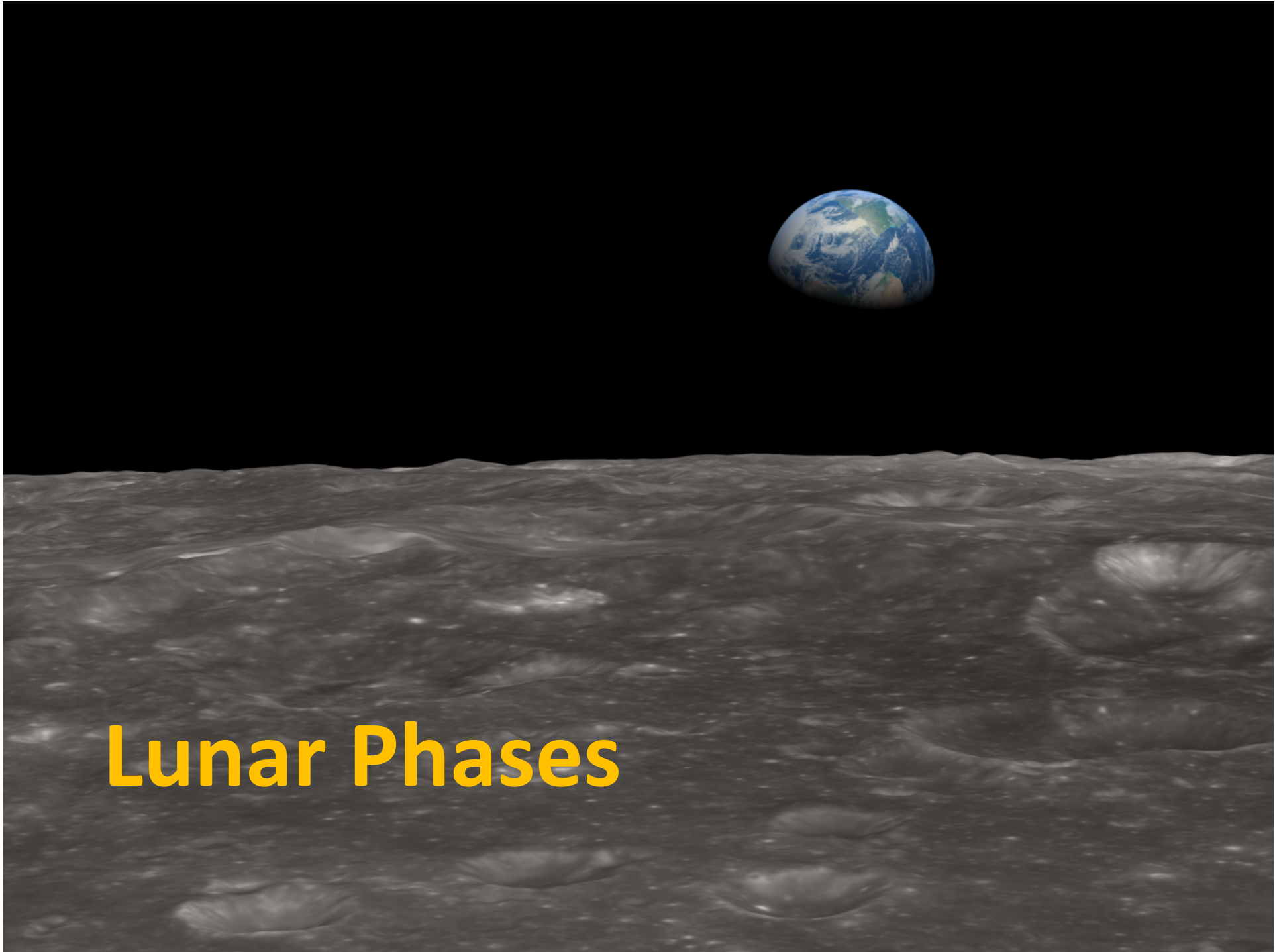


Engineering



Our Sky



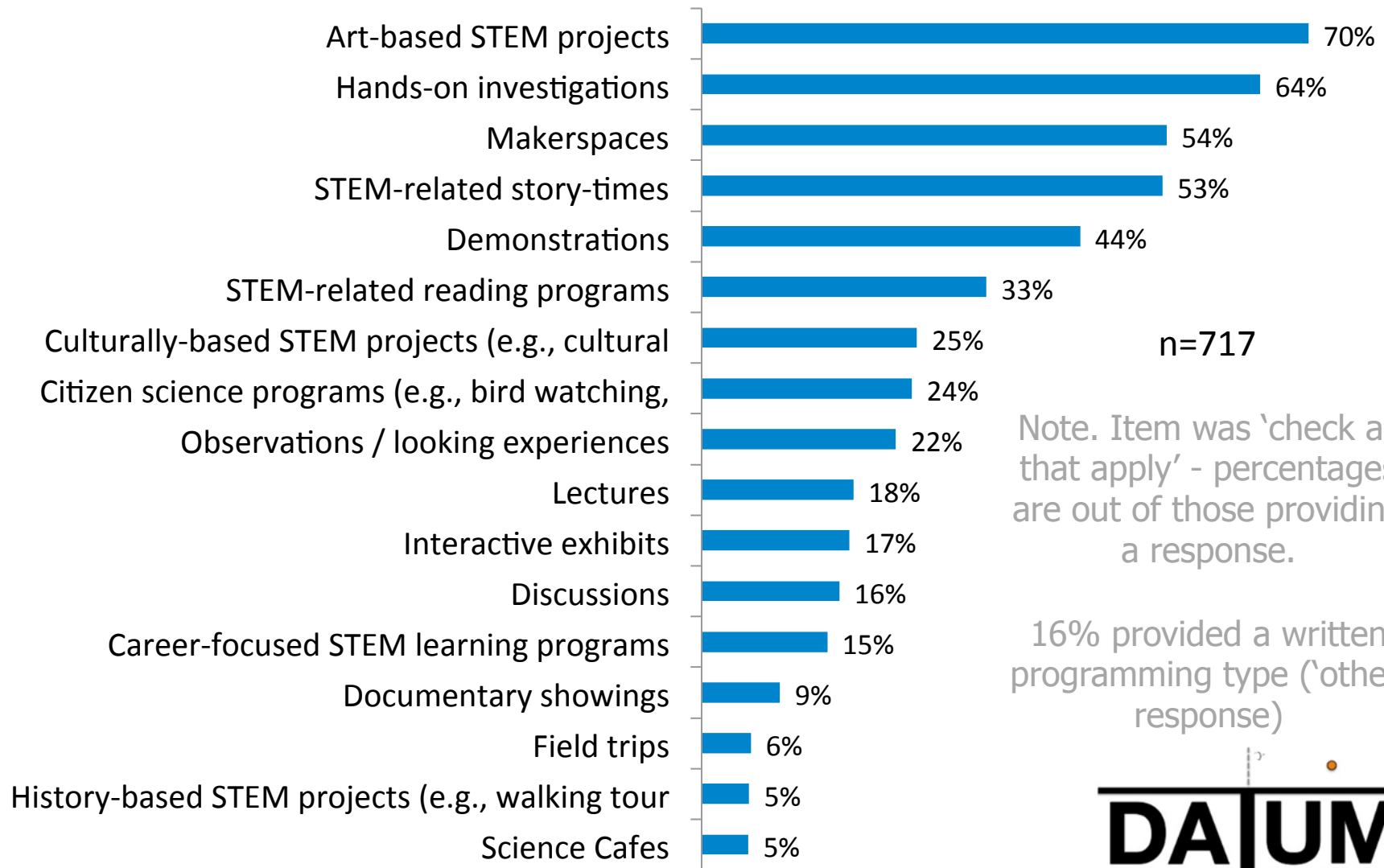


Lunar Phases

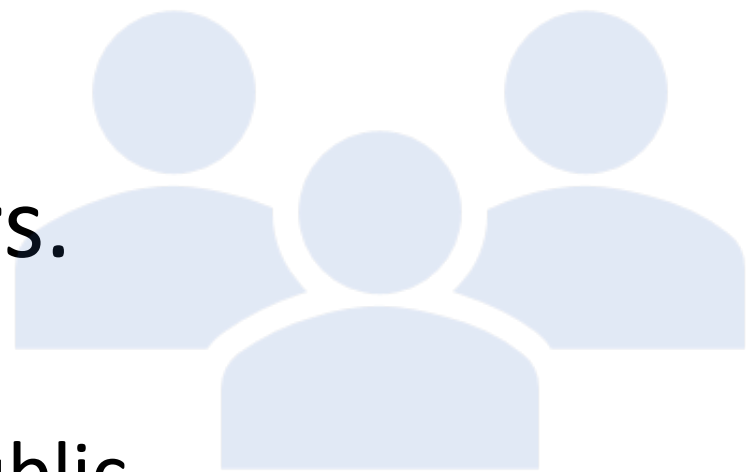
Constellations

A deep space photograph of a starry night sky. The background is a dense field of stars of various colors and magnitudes. The word "Constellations" is written in a bright yellow, sans-serif font in the upper right quadrant of the image. The stars are scattered across the frame, with some appearing as bright, multi-pointed diffraction patterns.

Type of STEM Programming (2017)



Our Vision is an
educated, connected
community of
readers, learners,
doers, and dreamers.



—Pima County Public
Library (AZ)

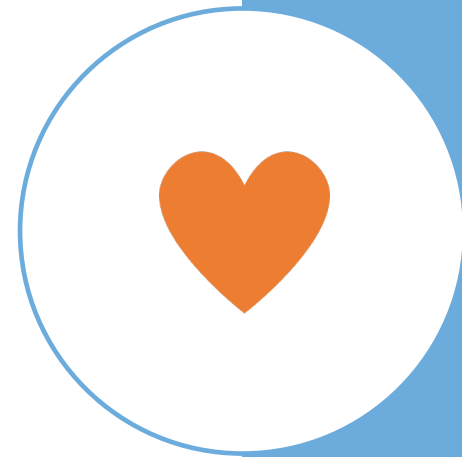


We are the People's University,
the center of learning for a
diverse and inclusive community.

—Cleveland Public Library (OH)

We connect the people
in Saint Paul with the
imperative and joy of
learning through a
lifetime.

—Saint Paul Public Library
(MN)



Library Program Strengths

- FUN!
- Creative
- Connect to everyday experiences
- Can be technology-rich
- Age-appropriate
- Socially engaging

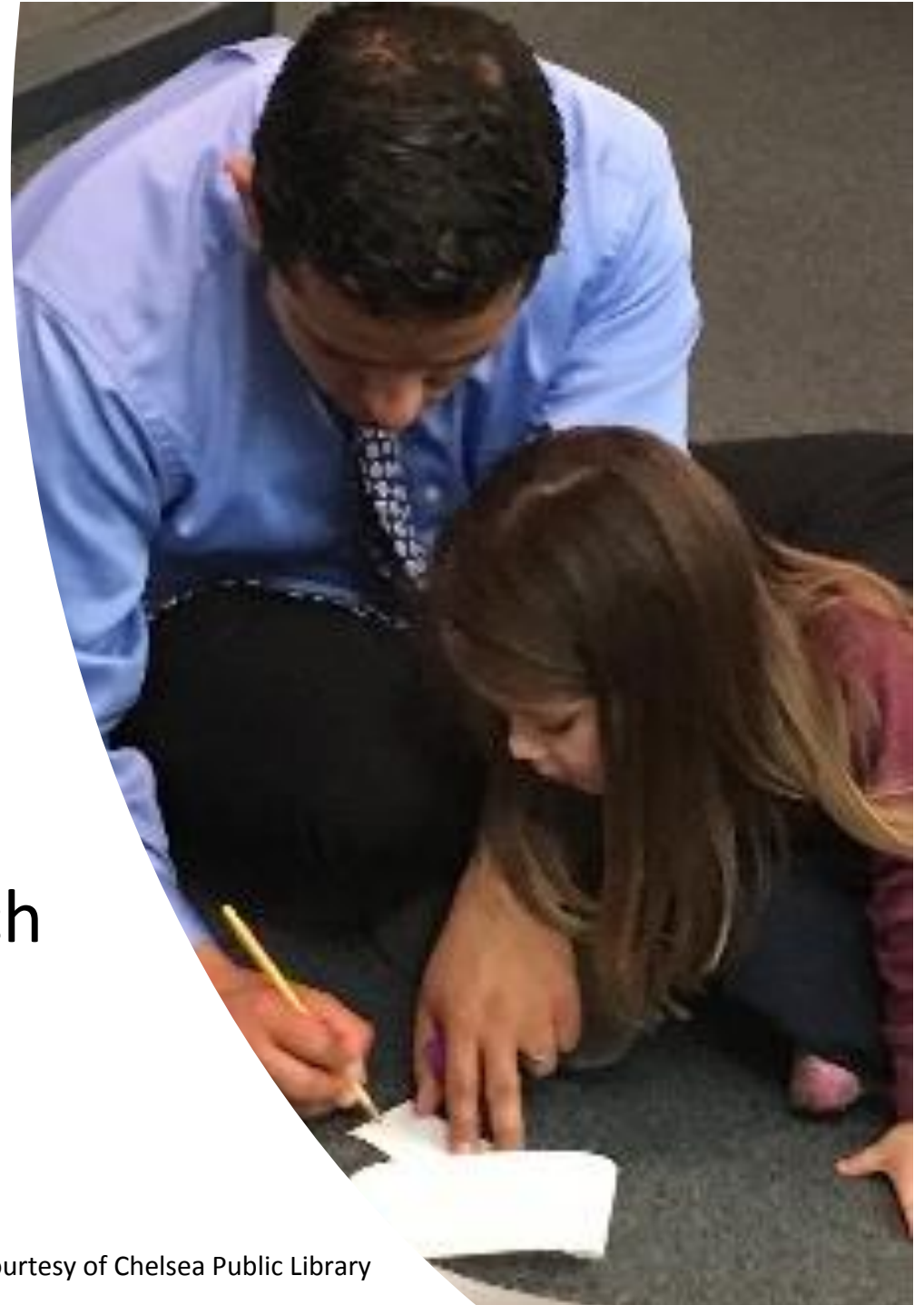


Image courtesy of Chelsea Public Library

STEM ACTIVITY Clearinghouse

<http://clearinghouse.starnetlibraries.org>



Credit: T.L.L. Temple Memorial Library



Searchable
Hands-on
Free
Curated
Trusted

Apps



Seeing the Unseen

We can also "see" magnetic fields on the sun. This image from NASA's Solar Dynamics Observatory shows several sunspots - darker regions that absorb light by contrast. A magnetogram shows regions with strong magnetic fields: yellow is used for fields pointing into the sun, blue are green for fields pointing out of the sun.

Can you find strong magnetic regions on the sun?

Drag the lens over the image to see the filtered image.

Home < Back Tap here when you find it

Find Eclipse Features

Touch and drag the moon to create an eclipse!

Home

Find the feature on the right in the area above. Touch and hold to see if you're correct.

Back to Examining

Brightness

(pay attention to the location of the light sensor)

0 1 2 3 4 5 6 7 8 9 10

“Make your own workshop” resources

www.starnetlibraries.org/resources/stem-workshops

- Agenda templates
- Activities
- How-to videos



Participants trying the NASA activity, *Strange New Planet*.
Credit: Arizona State Library



STEM Kits

www.starnetlibraries.org/resources/stem-kits

#SummerOfSpace

www.starnetlibraries.org/summer-of-space

STAR★*net*
Summer
Space of 

Celebrating 60 Years
of Space Exploration



Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

A National Network for Informal Science and Literacy

Tara Cox
Manager of Professional Development
The Franklin Institute



Pairing Science & Literacy

Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

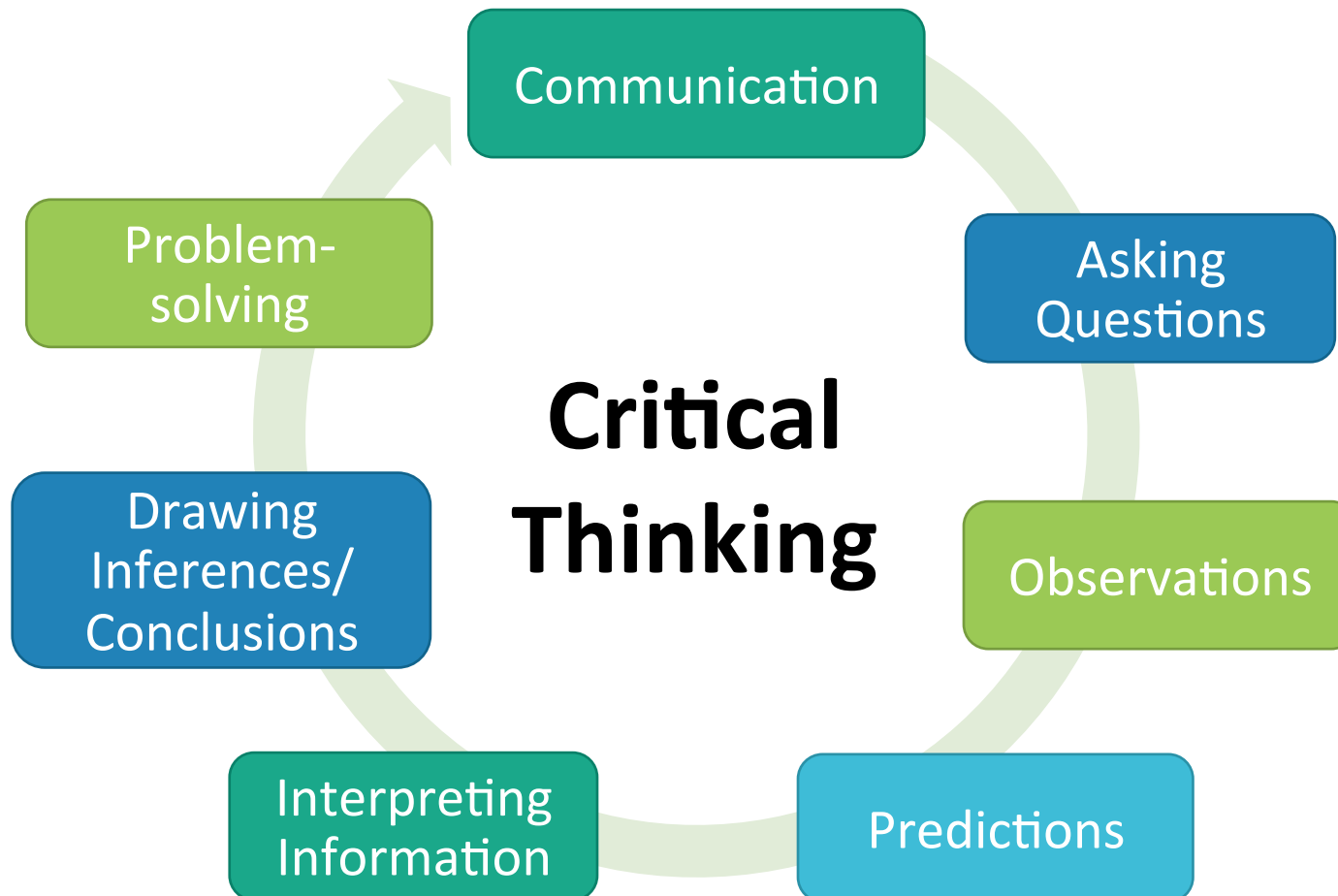


Children's books



Hands-on
science

Common Skills



Goals for Children and Caregivers

Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

Have fun
learning
together

Think
critically

Build
positive
attitudes
towards
science

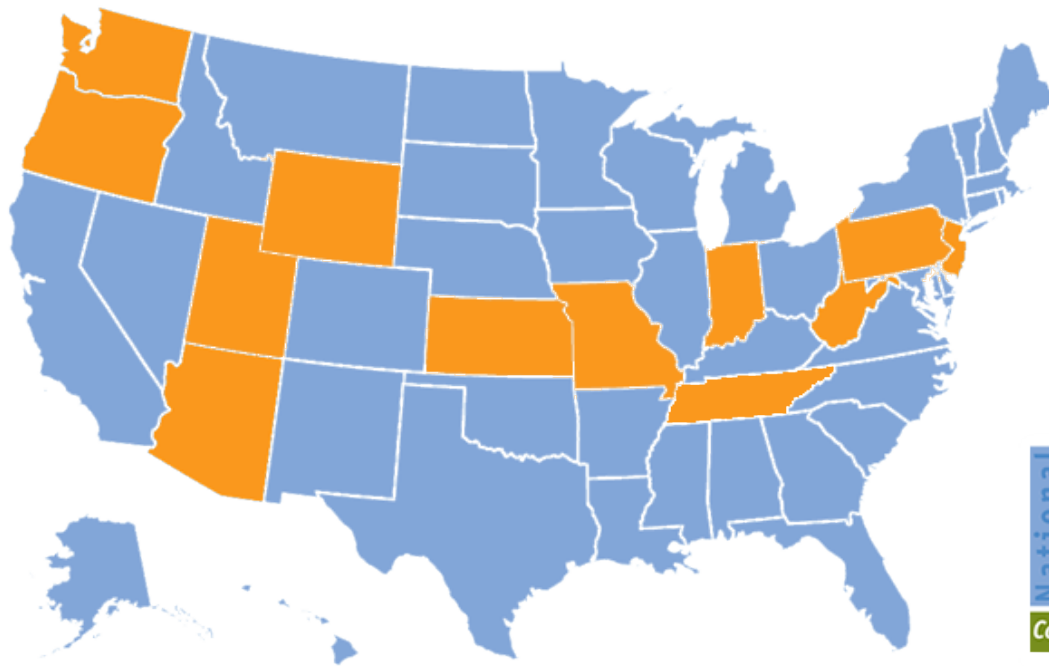
- Not content mastery
- Caregivers are both learners and facilitators



Building a National Network

Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

Museums, Libraries, OST Networks/Organizations & Universities

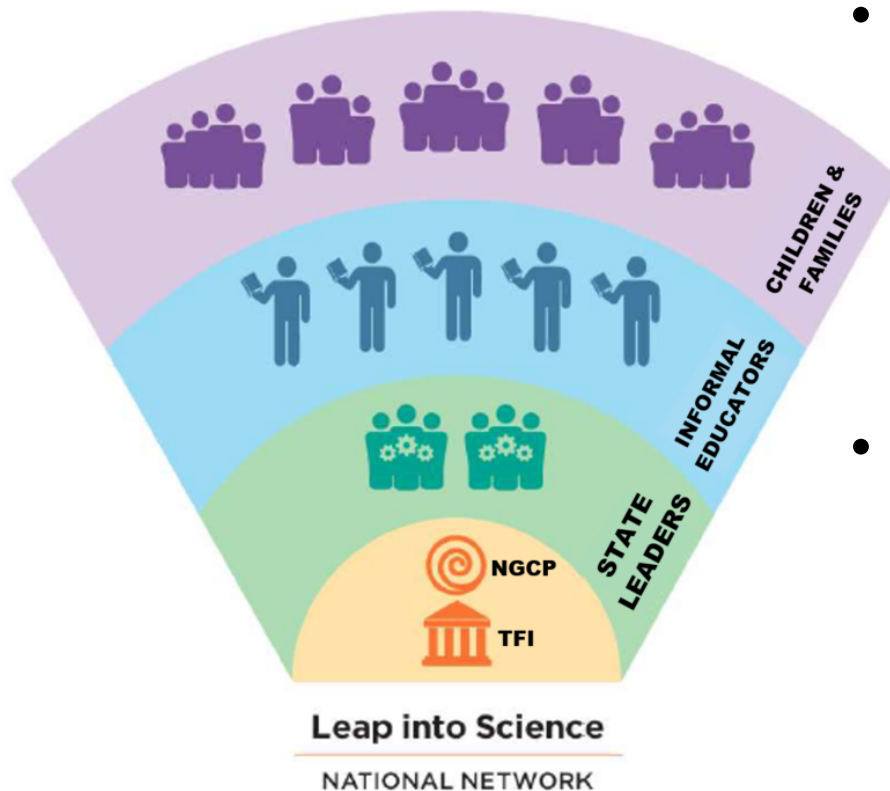


2018: Six states
2019: Five states
2020: Four states
Total = 15 states



National Vision

Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

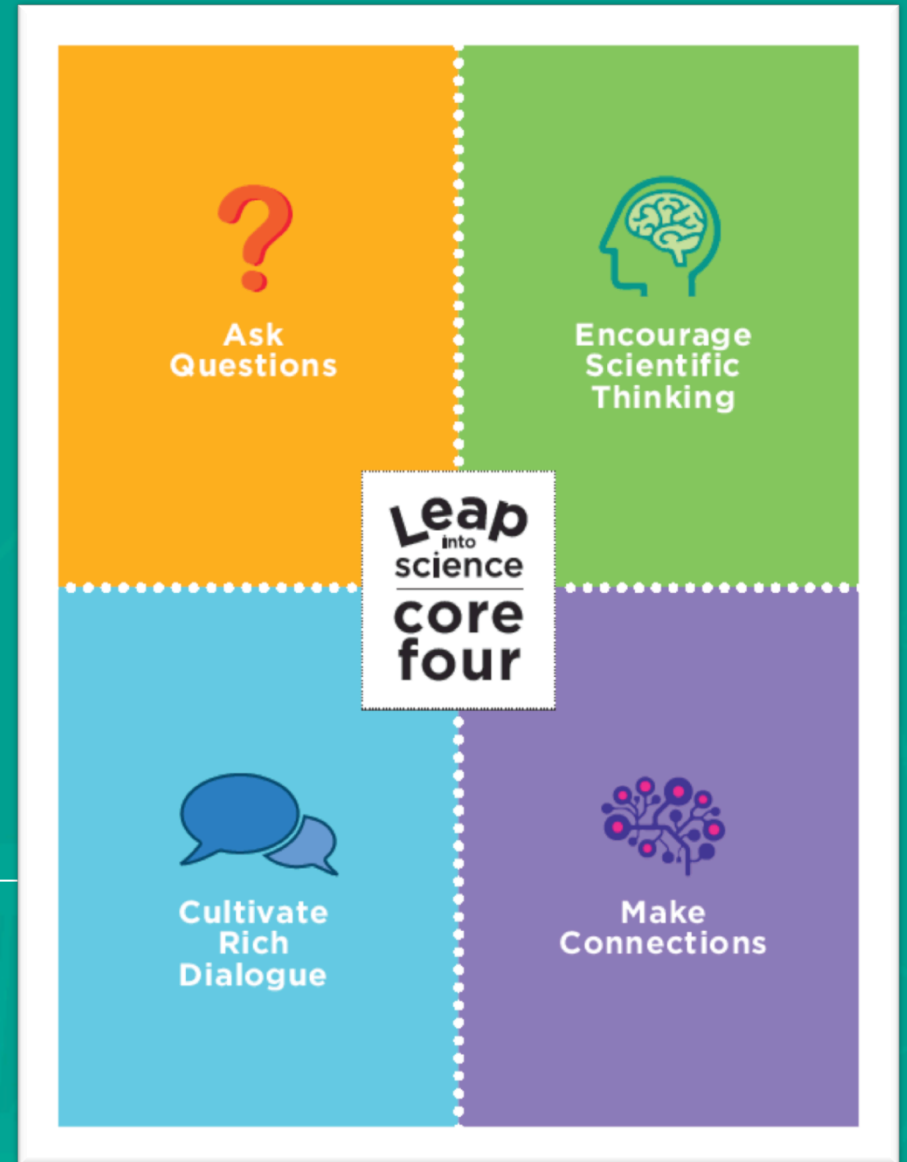


- Empower **state leader teams** to effectively train and support educators to lead Leap into Science programs
- Train educators in both **rural and urban communities** to lead engaging programs for children and families

Core Four Strategies

For Building Science and Literacy Skills

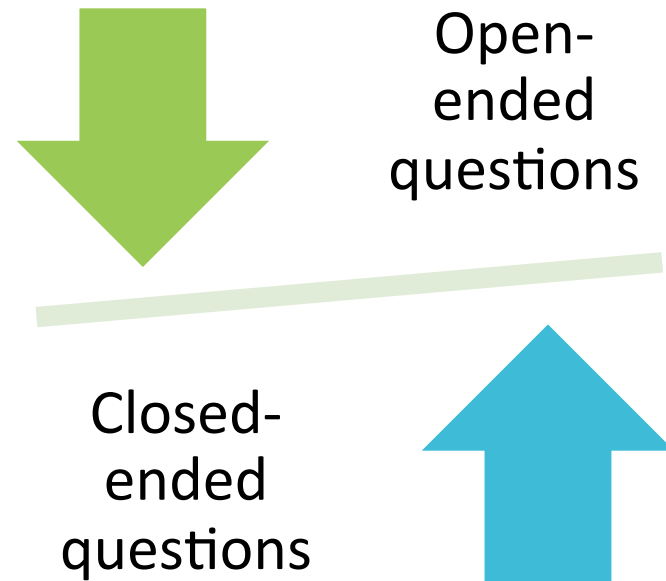
Watch the video at leap.fi.edu



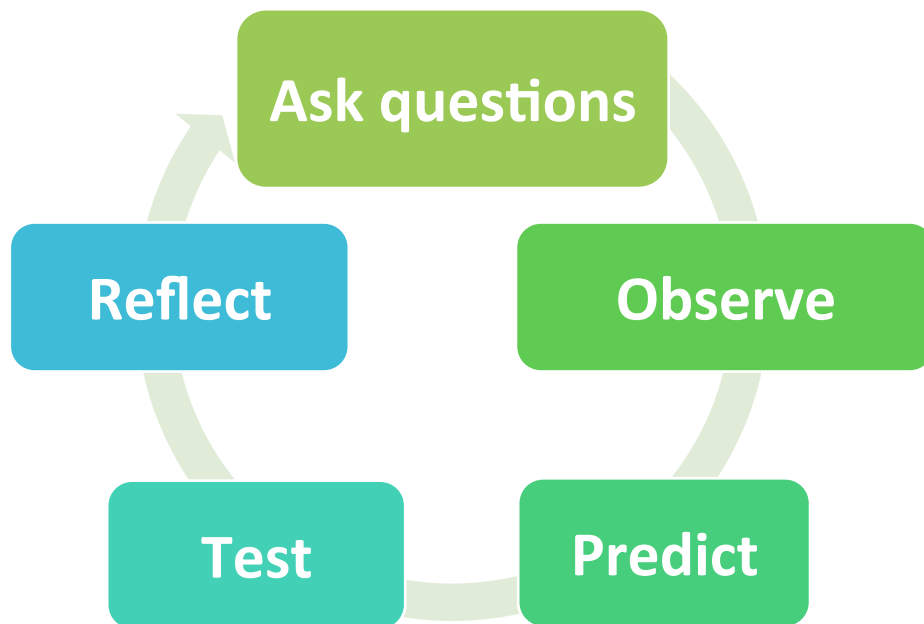
Asking Questions



- Spark curiosity
- Motivate learning
- Learner-driven



Encourage Scientific Thinking



- Process over product
- Critical thinking
- Taking risks
- Learning from failure

Cultivate Rich Dialogue



- Using key vocabulary in relevant contexts
- Communicating thoughts and ideas
- Collaboratively investigating



Make Connections



- Making personal meaning
- Feeling like scientists
- Connecting to careers in STEM

Fidelity & Flexibility

Leap
into
science
— Engineered by —
THE FRANKLIN INSTITUTE

Fidelity



Flexibility



**High-Quality
Ownership
Sustainability
Scale**

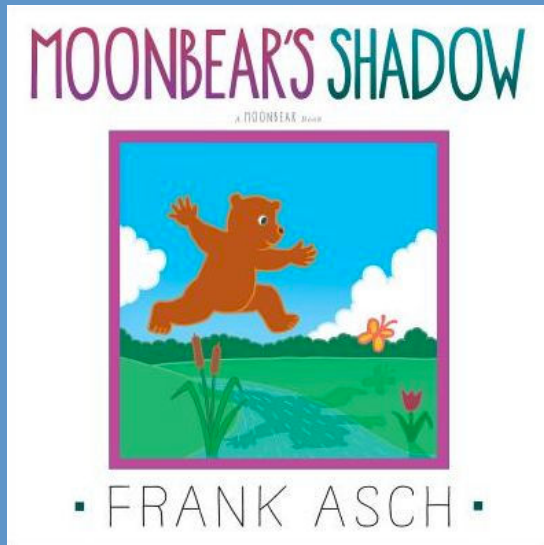
Maintaining
essential
elements across
network

Adapting
components
that reflect their
audience

Effective network
at all levels and
over time

EDC Learning
transforms
lives.

ASP's Pre-K Astronomy Resources: My Sky Tonight & Breakfast Moon



Anna Hurst, ahurst@astrosociety.org
Astronomical Society of the Pacific





A Program from the Astronomical Society of the Pacific

www.astrosociety.org/MySkyTonight



My Sky Tonight is based upon work supported by the Division of Research On Learning (DRL) of the National Science Foundation under Grant no. AISL #1217441. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.



My Sky Tonight



My Sky Tonight Goals

Create
*developmentally
appropriate*
astronomy
activities for
young children

Engage young
children in
*science
practices* as
they investigate
astronomy

What Are Science Practices?

Process in which children & scientists investigate science phenomena

Science phenomenon: An event in the natural world that can be observed, described, and explained; these lead us to question, wonder, and try to explain



NRC (2010). Surrounded by Science; Gelman et al. (2010). Preschool Pathways to Science.

Science Practices in Early Childhood Astronomy

How do we help children answer
**questions about scientific
phenomena?**

Through appropriately sequenced
and supported science practices.

Science Practices in Early Childhood Astronomy

Observation

- Noticing is more than just looking!
- Help children focusing on important features

Analyzing data

- “Making sense” of observations
- Support in **comparing/contrasting** observations, look for patterns

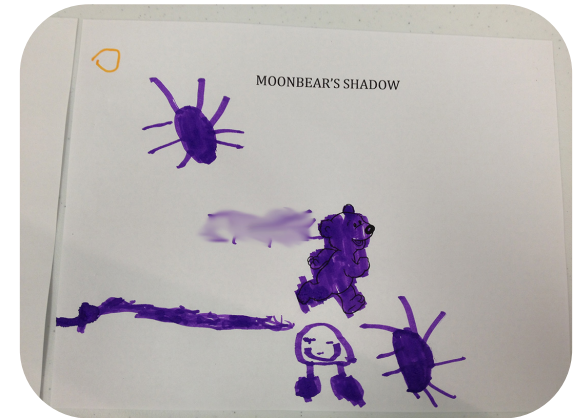
Constructing explanations

- Answers science questions using evidence (observations)
- Explanations co-constructed with adults

Science Practices in Early Childhood Astronomy

Modeling & representing

- Can help children construct explanations
- Should be based on, or connected to, experiences or observations of phenomena
- Can help children communicate their thinking and/or test their ideas



Science Practices in Early Childhood Astronomy

Tool use

- Astronomers rely on tools – telescopes and cameras
- Children can learn to use tools to extend their senses, gather more information



Activities successful in **engaging children in science practices** included some or all of the following elements:

Developmentally appropriate, multi-modal engagement

Investigation of the science phenomenon as central driving characteristic

Parents engage in open-ended activities with their child

Stories integrated into the activity

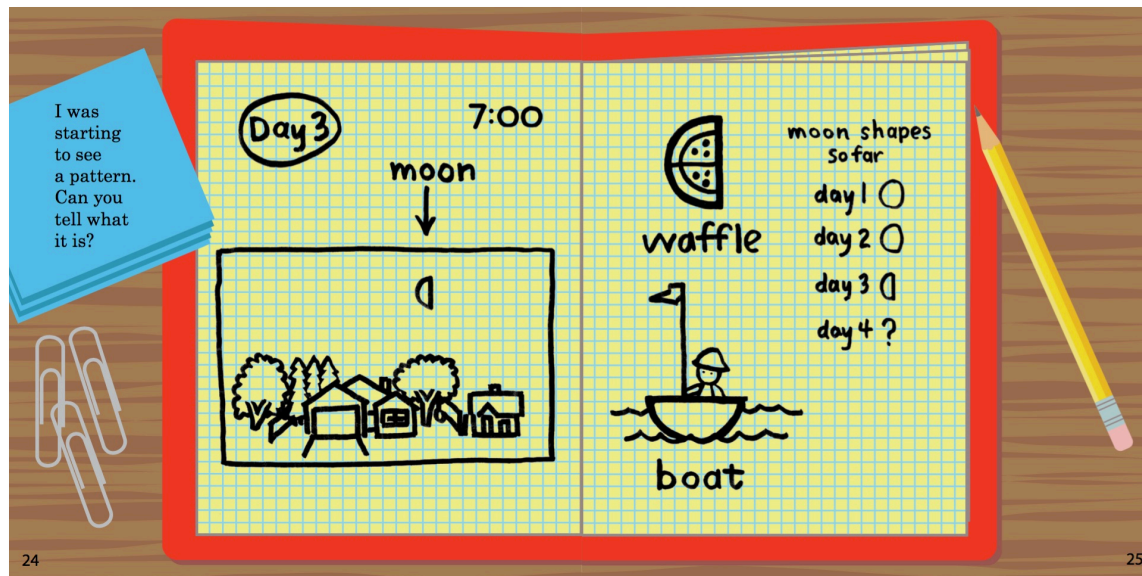
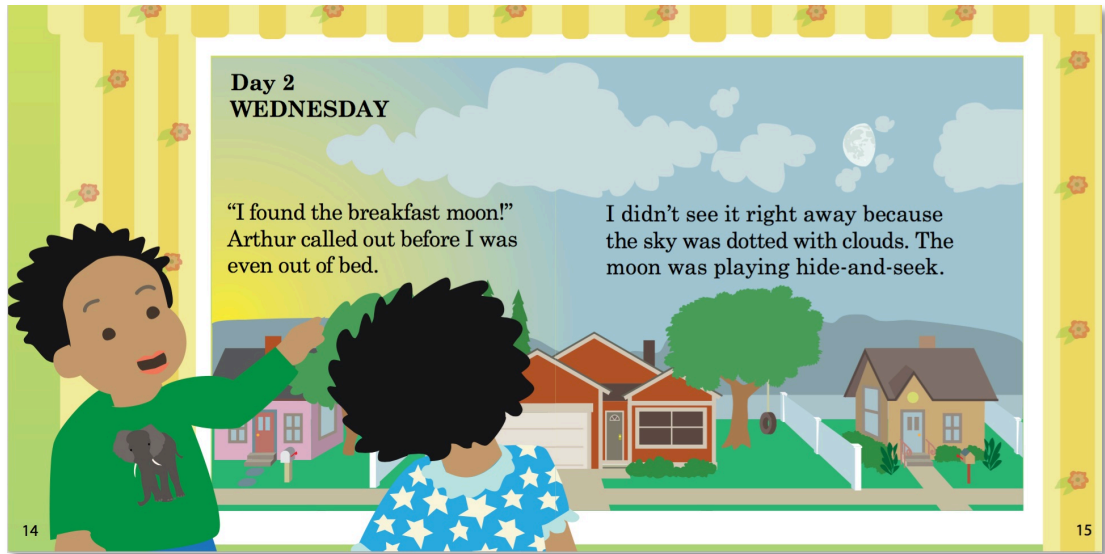
Bear's Shadow



Supplemental Research

In what ways does a storybook narrative scaffold preschool-age children's engagement in evidence-based explanations across their participation in story-driven investigations?

Initial results show connections between story elements and children's evidence-based explanations.



www.astrosociety.org/breakfastmoon

Future work will include creating more **storybooks** and other forms of stories, along with **story-driven science activities for families** in both **museum** and **home** settings.

We will investigate what **elements of stories** support children's engagement in science, and how we can use science stories coupled with activities to **inspire and support families' explorations** of astronomical phenomena.

My Sky Tonight activities & resources:
www.astrosociety.org/MySkyTonight

Breakfast Moon storybook:
www.astrosociety.org/breakfastmoon



Anna Hurst
Astronomical Society of the Pacific
ahurst@astrosociety.org



**Discussion and
Questions?**

Our Next Workshops

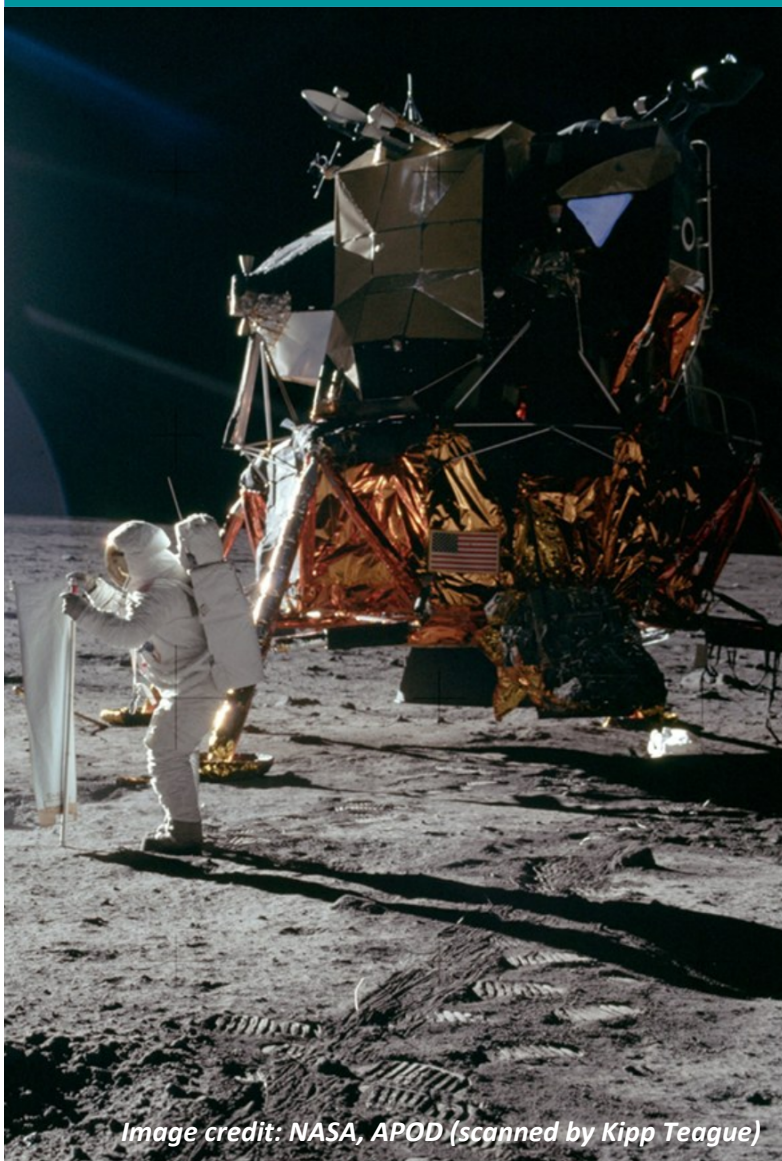


Image credit: NASA, APOD (scanned by Kipp Teague)

Tuesday, May 14, 2019
2-3pm ET / 11am-12pm PT

Big or Small, Make Your Apollo 50th Anniversary Celebration Events a Moonshot!

- **Brad Herring**, Museum of Life & Science
- **Amelia Chapman**, Museum Alliance
- **Andrew Shaner**, Lunar and Planetary Institute
- **Darrell Porcello**, Children's Creativity Museum
- **Rachel Quimby**, EcoTarium
- **Ruth Watt**, Saint Louis Science Center
- **Lucien Scott**, Creative Discovery Museum

Tuesday, June 4, 2019
2-3pm ET / 11am-12pm PT

Earth & Space Science for Early Learners

- **Dawn Baldwin**, Children's Museum of Science & Technology
- **Emily Belle**, Sciencenter
- **Anne Drake**, Great Lakes Children's Museum
- **Anna Hurst**, Astronomical Society of the Pacific
- **Katie Julsrud**, Children's Museum of Eau Claire
- **Stephanie Kadum**, Stepping Stones Museum for Children

Get Involved

Learn more and access the
NISE Network's online digital resources
nisenet.org

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Thank You

