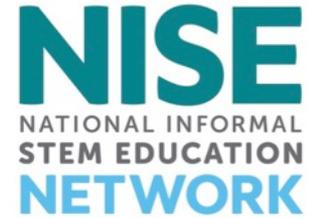


NISE Network Online Workshop

Earth & Space Science for Early Learners



June 4, 2019

Welcome!

Today's presenters are:

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



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



www.astrosociety.org

Anna Hurst: ahurst@astrosociety.org





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.



Overarching Goals of My Sky Tonight

Engage young children in
developmentally appropriate
astronomy activities



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

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

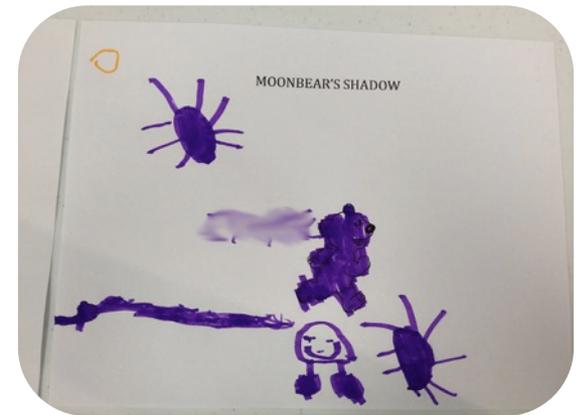
Constructing explanations

- 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



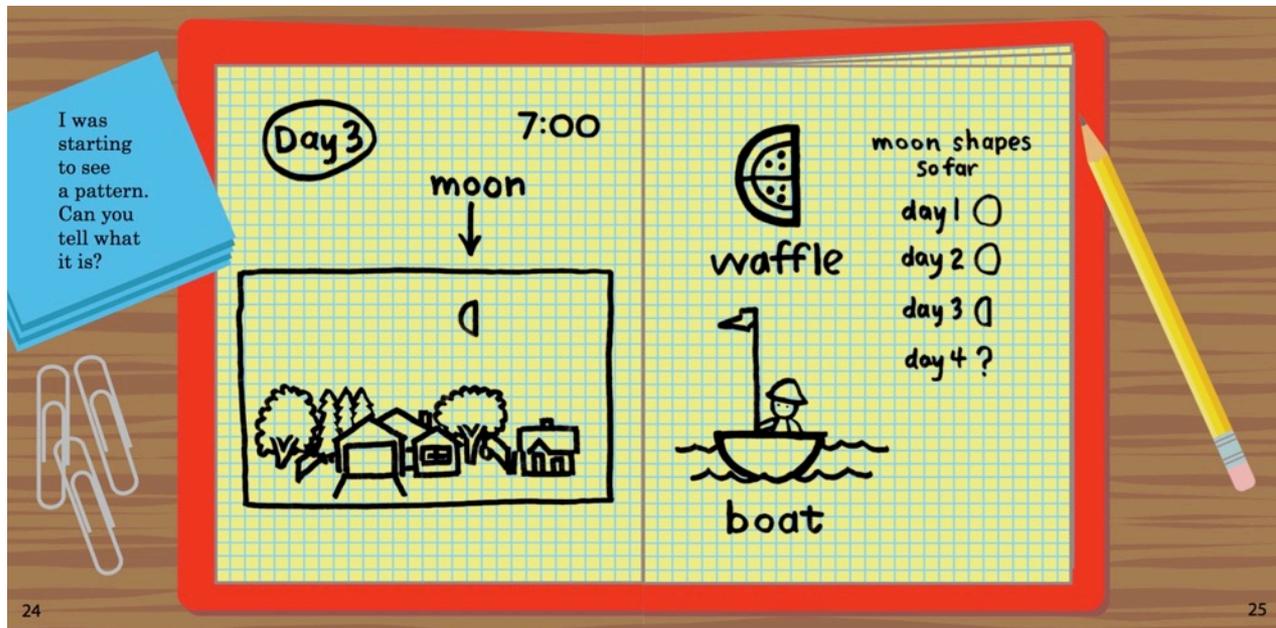
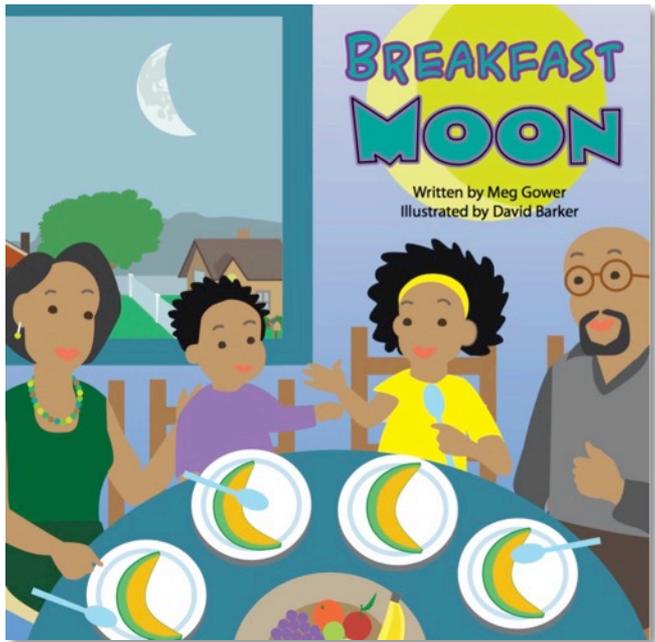


Hide & Seek Moon



Bear's Shadow





Tips for Interacting with Young Children

Create experiences with real phenomena

Connect at their level

New experiences & skills

Ask questions

Sportscasting

Non-verbal communication

Resources:

- My Sky Tonight: www.astrosociety.org/MySkyTonight
- Breakfast Moon: www.astrosociety.org/breakfastmoon
- National Association for the Education of Young Children:
www.naeyc.org
- Preschool Pathways to Science: Facilitating Scientific Ways of Thinking, Talking, Doing, and Understanding by Rochel Gelman Ph.D., Kimberly Brenneman Ph.D., Gay Macdonald M.A., and Moises Roman

Anna Hurst: ahurst@astrosociety.org

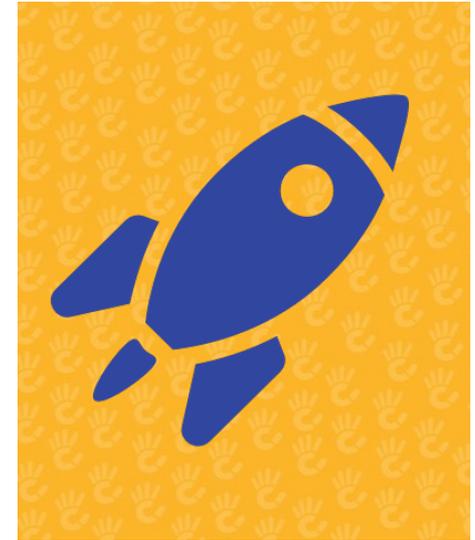


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Space Quest!

Katie Julsrud –
Director of Education
+ Outreach



Fast Facts:

Located in Eau Claire, Wisconsin, the Children's Museum of Eau Claire serves children (and their grown-ups!) in West Central Wisconsin.

Our target demographic is children aged birth – 10 years old.

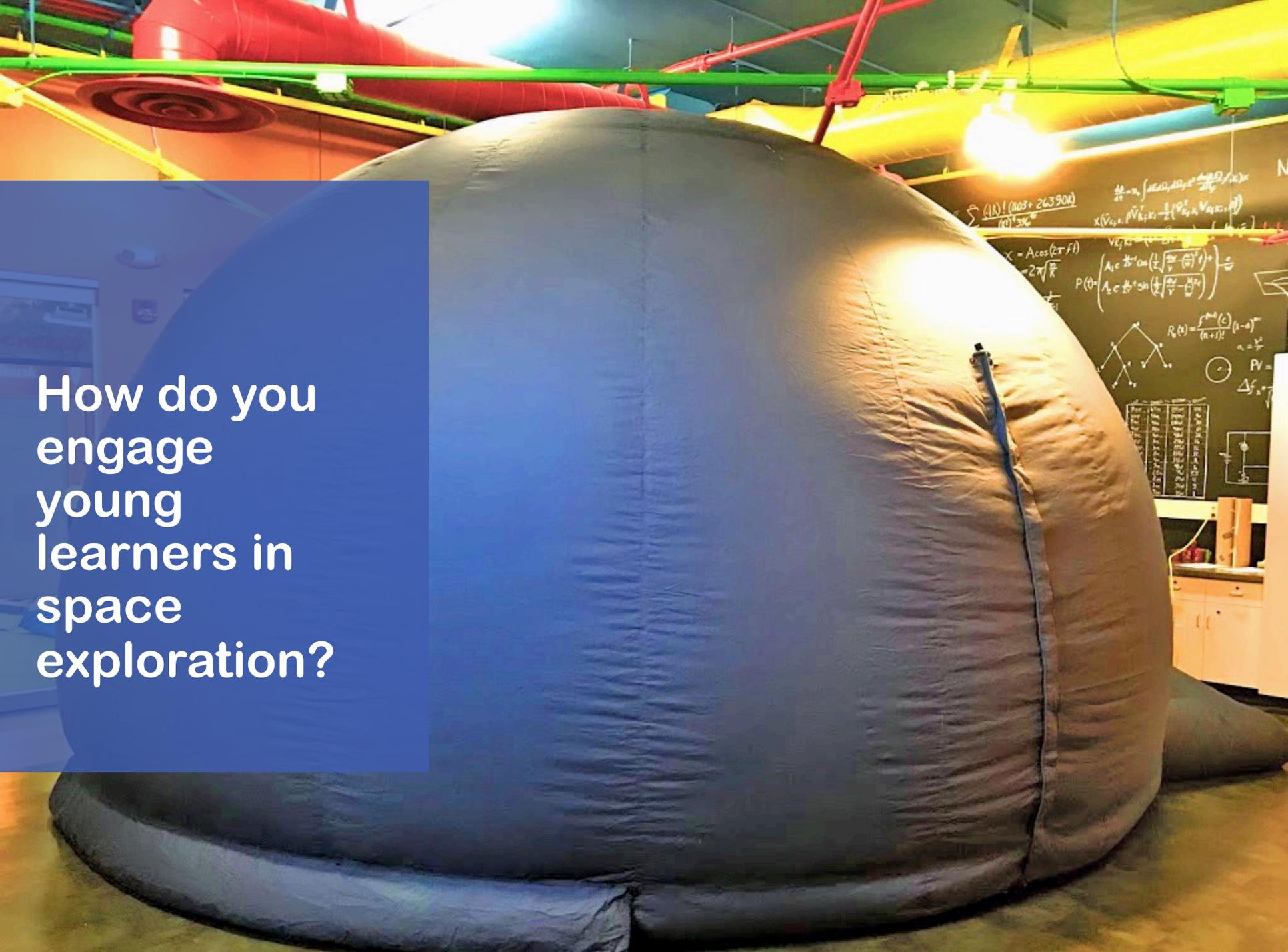
We will celebrate our 15th year of operation this December!

In 2018 we had an attendance rate of 78,222 total visitors.

Did you **PLAY** today?



A place to SEE,
TOUCH,
LEARN, and
GROW!

A large, dark, inflatable space station model is the central focus of the image. It is situated in a classroom or science lab, with a chalkboard in the background filled with mathematical equations and diagrams. The room is lit with bright, colorful lights, creating a vibrant atmosphere. The inflatable model has a textured surface and a visible zipper on the right side. The chalkboard contains various mathematical formulas, including a summation formula, a cosine function, a probability function, and a binomial expansion formula. There are also some diagrams and a table on the board.

How do you
engage
young
learners in
space
exploration?

$$\sum_{k=0}^n \binom{n}{k} (0.03 + 26390k)$$
$$x(V_{k+1} - V_k) = \frac{1}{2} (V_{k+1}^2 - V_k^2)$$
$$x = A \cos(2\pi f t)$$
$$= 2\sqrt{\frac{P}{R}}$$
$$P(t) = \left(A_1 e^{\frac{t}{\tau}} \cos\left(\frac{2\pi}{T} \sqrt{\frac{m}{k}} t\right) + A_2 e^{\frac{t}{\tau}} \sin\left(\frac{2\pi}{T} \sqrt{\frac{m}{k}} t\right) \right)^2$$
$$R_n(t) = \frac{f^{n+1}(t)}{(n+1)!} (t-a)^n$$
$$a = \frac{t}{2}$$
$$PV =$$
$$\Delta S_n =$$



Camps for 4 year olds:

- Station activities
- Costumes
- Pretend Play
- Free explore time (approx. 20 min)



Snacks!
(Including Freeze Dried
Ice Cream bars)







Details
matter



ASTRONAUT
Emmeline

Thanks!



Katie Julsrud
DIRECTOR OF EDUCATION & OUTREACH





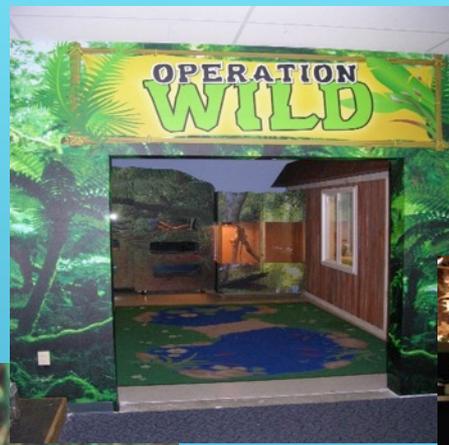
THE CHILDREN'S
MUSEUM
of Science and Technology



“To instill a sense of wonder and discovery in young minds, inspiring a lifelong exploration of science and technology”.

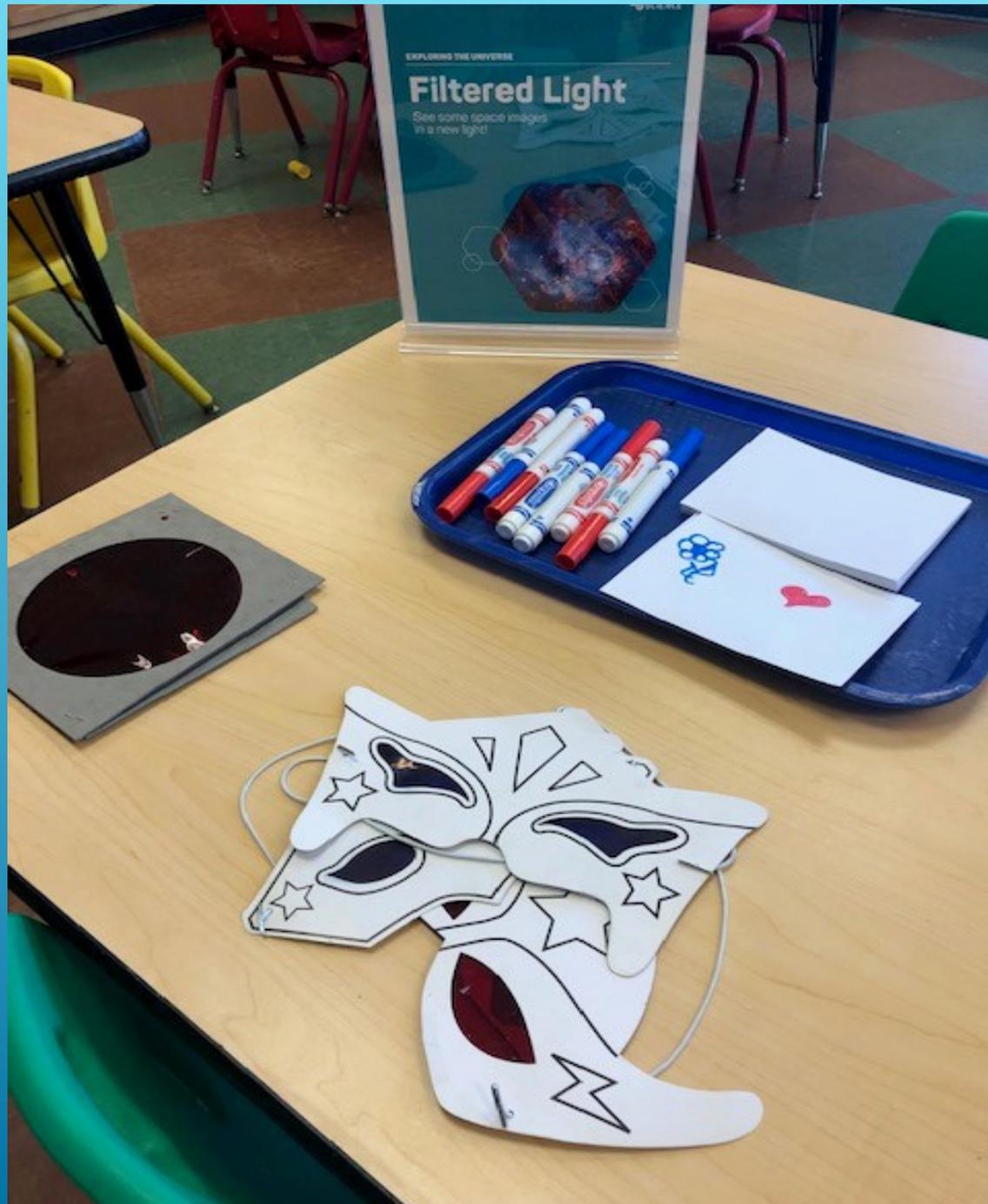
CMOST was founded in 1954 by the Junior League of Troy and was the first of it's kind, in our area, “you can touch” museum to encourage active involvement of it's visitors. True to our beginnings, all of our exhibit experiences continue to be designed with science discovery and play in mind. Our discovery environment provides children with the opportunity to investigate, observe, analyze, and build in a pressure-free setting.

The museum is designed specifically to engage children ages 18 months through the tween years and their caretakers. We provide prompts to foster creativity and invention, along with materials that encourage creative play. Our discovery environment provides children with the opportunity to investigate, observe, analyze, and build in a pressure-free setting.



CMOST is located in Troy, NY, just a short drive from the state capital. Our building is located in a technology park, and consists of 10,000 square feet of exhibit space and a small outdoor classroom. We also have access to a short trail and a small stream located on the property. We serve approximately 80,000 people a year, including visitation to the facility, group programs and outreach events.







- **In order to engage our youngest visitors, we find we must engage the adults and older siblings.**
 - **Activities for younger visitors need to be facilitated.**
 - **Don't be afraid to do what you do best. It will add to each experience.**
 - **Substitutions and additions are OK and sometimes necessary based on your visitors.**
 - **Make things so much fun that they forget they are learning!**
 - **Silly is a good thing.**
- 
- A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, set against the blue background.

Stepping Stones Museum for Children

Children's museum in Norwalk, CT

Children 10 years and younger and their families

The content of our exhibits and programs focuses on literacy, health (including social and emotional), culture, arts and STEM



A vibrant blue starry night sky with a grid pattern. A planet is visible on the left side. The text is overlaid on the sky.

MAY THE FOURTH BE WITH YOU

Four days of stellar activities!

Bear's Shadow



Shadows on Tatooine

Does a droid's shadow look different on Tatooine than it would on Earth? Explore the phenomena of shadows on Tatooine in a two star system versus a one star system.





Four days of stellar activities!

Shadows on Tatooine



Orbiting Objects

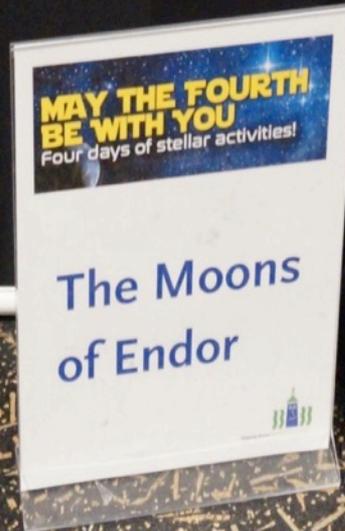


**Gravity keeps the Moon in orbit around Earth,
and Earth in orbit around the Sun.**



The Moons of Endor

Ewoks live on a forest moon that orbits Endor, a giant gaseous planet. Learn how the forest moon and the eight other moons are affected by Endor's gravity and what keeps them circling the planet.

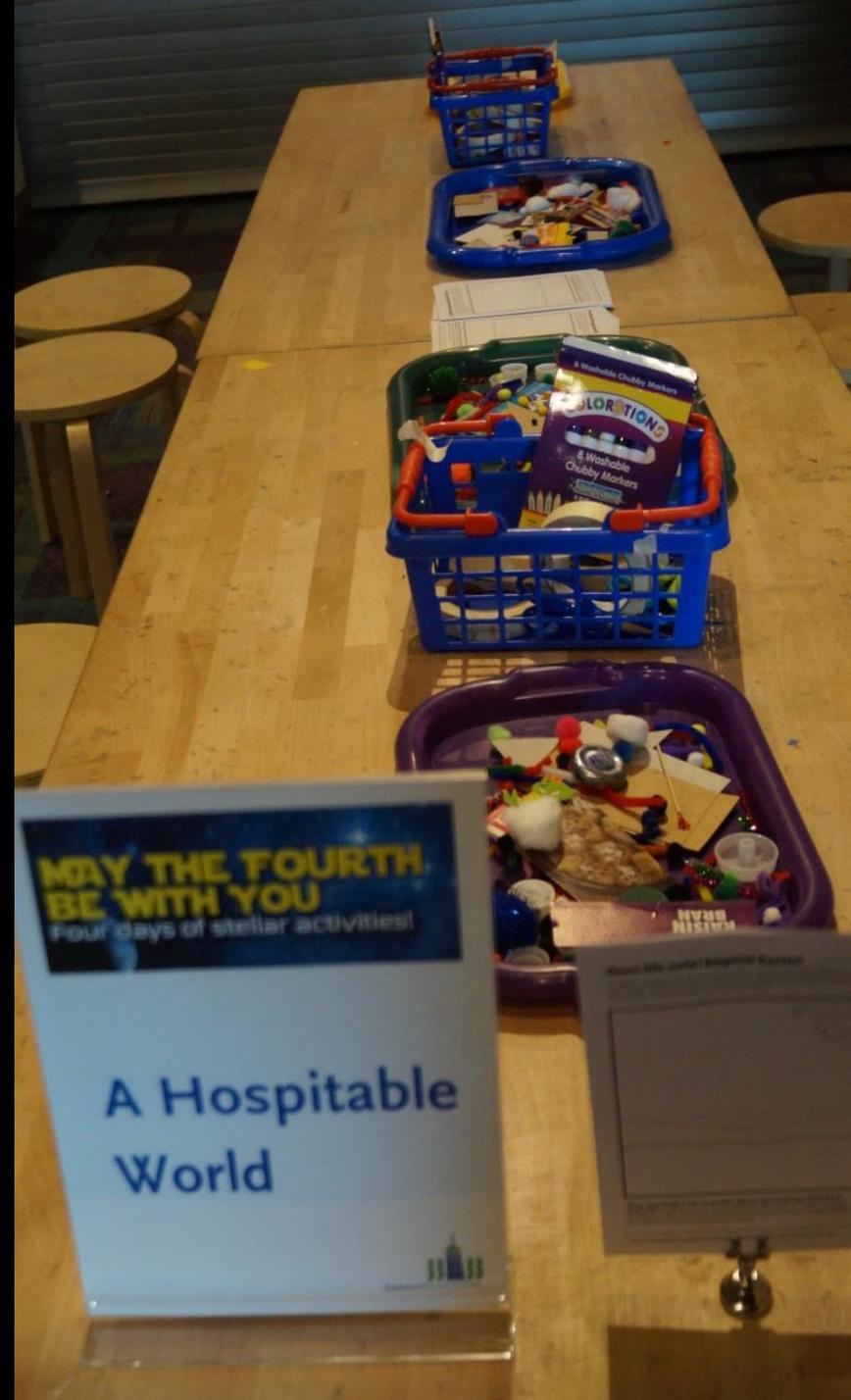


Imagining Life



A Hospitable World

In the Star Wars world, all the characters are able to coexist in the atmospheres of the planets and the ships. Can you imagine a creature that would live on a planet that is very different from earth?



Pocket Solar System



Engage the Hyperdrive

Just how far away is Saturn?
How long would it take to get there?
Find out why Han Solo relies on his hyperdrive.



How long does it take to get to other planets?

The table below shows the time it takes light to travel from the sun to the different planets (and Pluto). Without faster-than-light travel, the Millennium Falcon would not be able to travel from planet to planet in Han Solo's lifetime.

Planet	Distance (AU)	Travel time
Mercury	0.387	3.2 min
Venus	0.723	6 min
Earth	1.000	8.3 min
Mars	1.523	12.6 min
Jupiter	5.203	43.2 min
Saturn	9.538	79.3 min
Uranus	19.819	159.6 min
Neptune	30.058	4.1 hrs
Pluto	39.440	5.5 hrs



* times may vary depending on the orbit of the planet



Stepping Stones Museum for Children

Other Adaptations

Big Sun, Small Moon and Solar Eclipses → Death Star Eclipses

Did the Empire choose a good location to build ultimate weapon, the Death Star? Find out why orbiting the planet Geonosis may thwart their evil plans.



Other Adaptations

Lunar Landscape → In a Galaxy Far, Far Away...

Create and gather equipment that you would need to use while visiting a planet in a galaxy far, far away.



Other Adaptations

Rising Sea → Swamps of Naboo

The Gungan inhabitants of Naboo may not mind if water levels were rising, but the Naboo might! Learn how rising sea levels are affecting our world and how scientists keep track of the water levels.



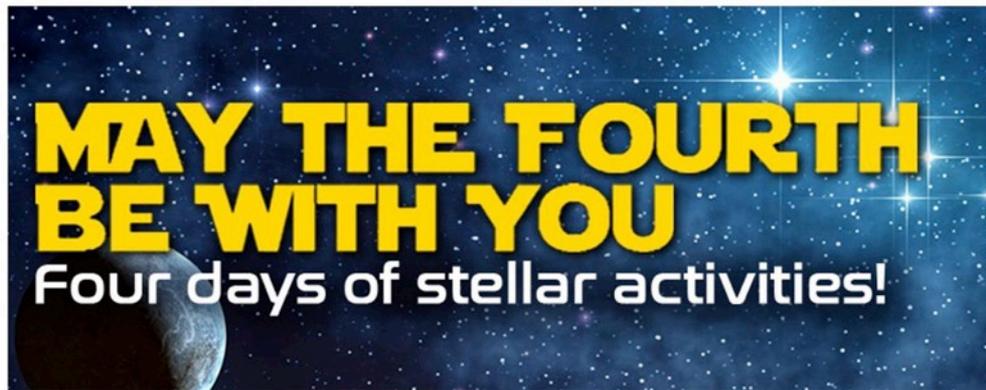
Other Adaptations



Creating Craters → Crater Field

The How are craters formed? Make a field of craters to find out! Your crater field will not be big enough to hold a podrace like the Boonta Eve Classic, but it will help you learn about these features found on Earth, the moon and other planets.

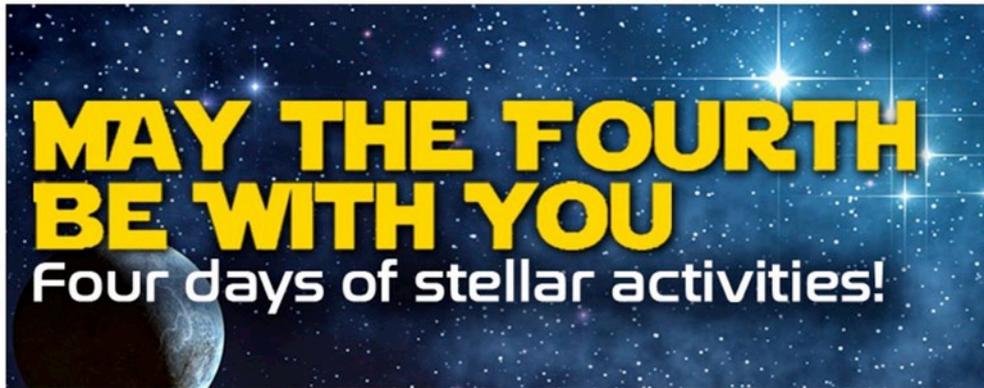




Paper U.F.O.

Make a UFO using everyday household items that will rival the Millennium Falcon!

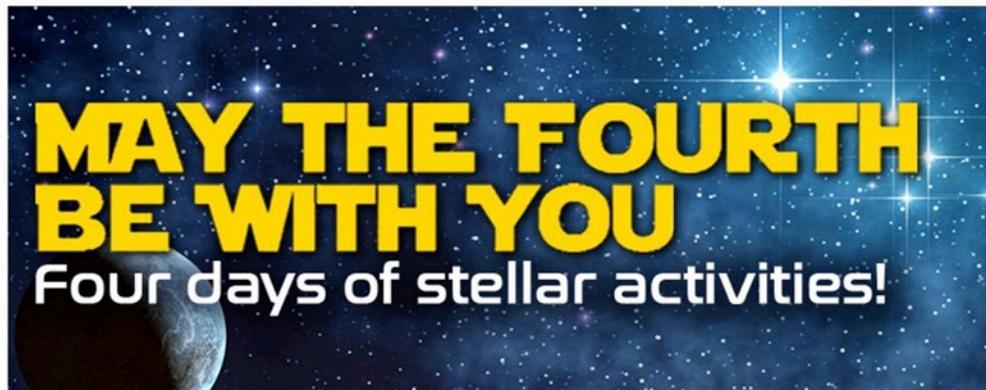




Martian Slime

Create your own slime inspired by Jabba the Hutt.

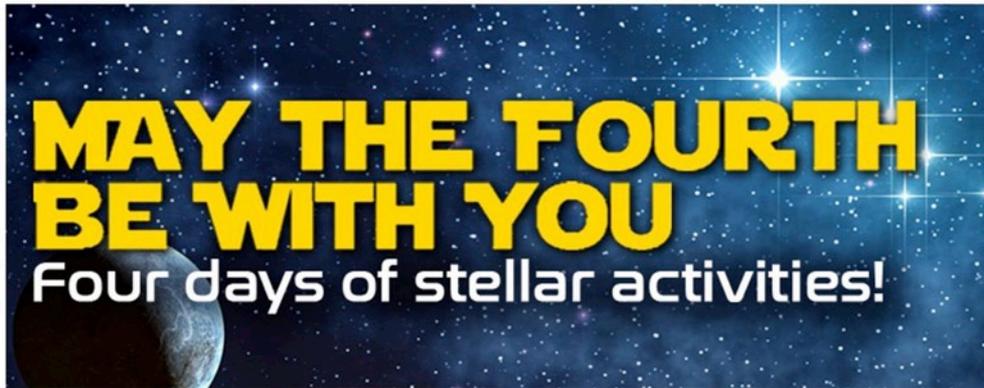




Rocket Science

Build and launch your own rocket
with a Chewbacca sized stomp!





Nebula Space Jars

Make a galaxy that fits in a in a jar.



Recommended for ages 4 and older.



Jedi Forces

Channel your inner Yoda and master invisible forces like static electricity and gravity.



Recommended for ages 3 and older.







The Great Lakes Children's Museum



Play to Learn. Learn to play.

About Us:

Located in Traverse City, MI

Thirty Five Thousand Visitors per year.

Gallery Space: 3000 Sq. Feet

Funded by Admissions, Memberships, Grants and Donations.

Currently 495 Members.

Half of all visitors are subsidized



Educational Offerings:

Interactive Story Time
Discover With Me
Get Crafty
Maker Space Monday
Summer STEAM
Arts In Action
Partner Programs



Events:

- Members Nights
- Energy Bus
- Peace Day
- Daddy Daughter Dance
- Spring Break Science
- Earth Day Explorations
- Kids Free Fishing Day
- Cherry Festival Activities
- Kids T C Film Fest
- Activities
- Children's Art Fair
- Museum's Annual
- Birthday
- Celebration
- Children's Vision Day
- Holiday Break Specials
- Draw NoMI
- Countdown to Noon

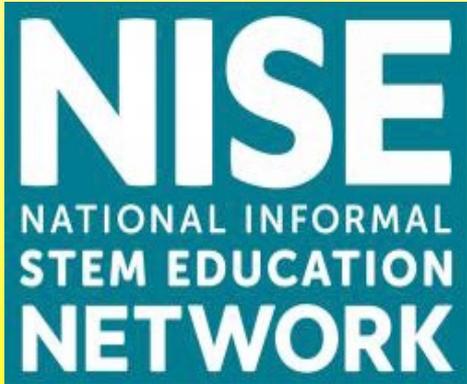


Goal:

Encourage and support families learning together.

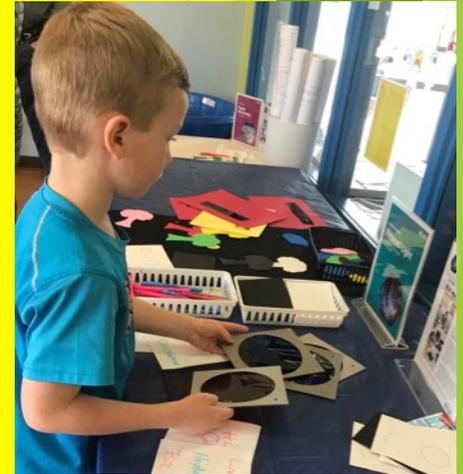
Provide play based STEM opportunities





Question:

How do you
meaningfully
engage
any age?



My Answer:

Multiple
Points of
Entry into
an activity

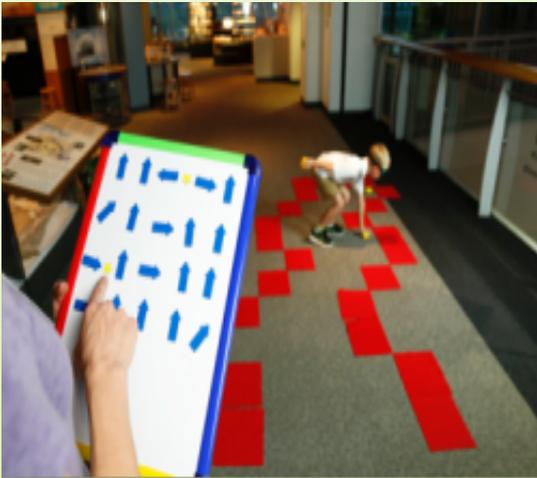


Created with PLAY, PLAY,



E

Example: Mars Rover



Original Activity



Activity Adapted

Example: Rising Seas



Original + Extras



Giant Earth Ball
Hanging From the Ceiling



Here We Are!



The “Wow” Factor!



Discussion & Questions?



Our Next Workshop



Tuesday, September 10, 2019
2 - 3pm ET / 11am - 12pm PT

**Learn More About the
2020 Explore Science:
Earth & Space Toolkit**



EXPLORE SCIENCE Earth & Space

Applications Open Late Summer 2019!
Explore Science: Earth & Space 2020 toolkit applications
due November 1, 2019



<http://www.nisenet.org/earthspacekit-apply>

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Thank You

