NISE Net Online Workshop

From small steps to giant leaps – experiences adapting the Moon Adventure Game for use in camps, with young audiences, and for all humankind!

June 29, 2021

Today's presenters:

- **Sari Custer,** Arizona Science Center
- **Kristine Heinen,** South Dakota Discovery Center
- **Peg LeGendre & Tom Gravius,** Cape Cod Museum of Natural History
- **Rachel Smith,** McDowell Nature Center
- **Jill Kary,** Arkansas State University Museum
- **Amanda Wilkening,** Hands-on Children's Museum
- **Lee Furuseth,** Headwaters Science Center

Welcome!

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 on nisenet.org at: nisenet.org/events/online-workshop

Future Online Workshops

On summer break until late August!

When we return…

- **August:** Celebrating the launch of the James Webb Space Telescope
- **September:** Celebrating National Chemistry Week in October 2021
- **November:** Team Based Inquiry

Tuesdays
2pm-3pm Eastern
11am-12pm Pacific

NISE NETWORK
ONLINE WORKSHOPS

Learn more at nisenet.org/events

Earth & Space Project-Based Professional Learning Community Opportunity

- A funded opportunity to participate in a project-based professional learning community focused on making Earth & Space science relevant and inclusive for your community.
- Available to 100 eligible NISE Network partner organizations in the US.
- $2,000 to participate in the program's professional development activities and develop a project that aligns with your organization's mission and increases relevancy and inclusion for Earth & Space science.

EXPLORE SCIENCE
Earth & Space

Learn more at nisenet.org/earthspaceprojects2021

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NATIONAL INFORMAL STEM EDUCATION NETWORK

The Moon Adventure Game

Living in an outpost on the Moon is dangerous. Survival on the Moon will require teamwork!

- A collaborative game where players work together to solve a series of challenges grounded in real science about living and doing research on the Moon.

- Designed for 3–6 participants in a museum setting, with support from an educator or volunteer facilitator.

- Designed for families with children and students grades 4–8; includes an alternate script for younger audiences with suggestions for adapting content.

- Game takes about 25 minutes

Learn more at nisenet.org/moongame

NISE NATIONAL INFORMAL STEM EDUCATION NETWORK

Game Evaluation – You Can Help!

- **Are you/will you be running the Game with general public audiences this summer?**
- **Want to help the NISE Net and learn how your visitors respond to the Game?**

Electronic and paper survey options

Collect from ~10 groups (adult and child surveys)

- Fill out our interest form: https://bit.ly/35KuYEG

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ARIZONA SCIENCE CENTER

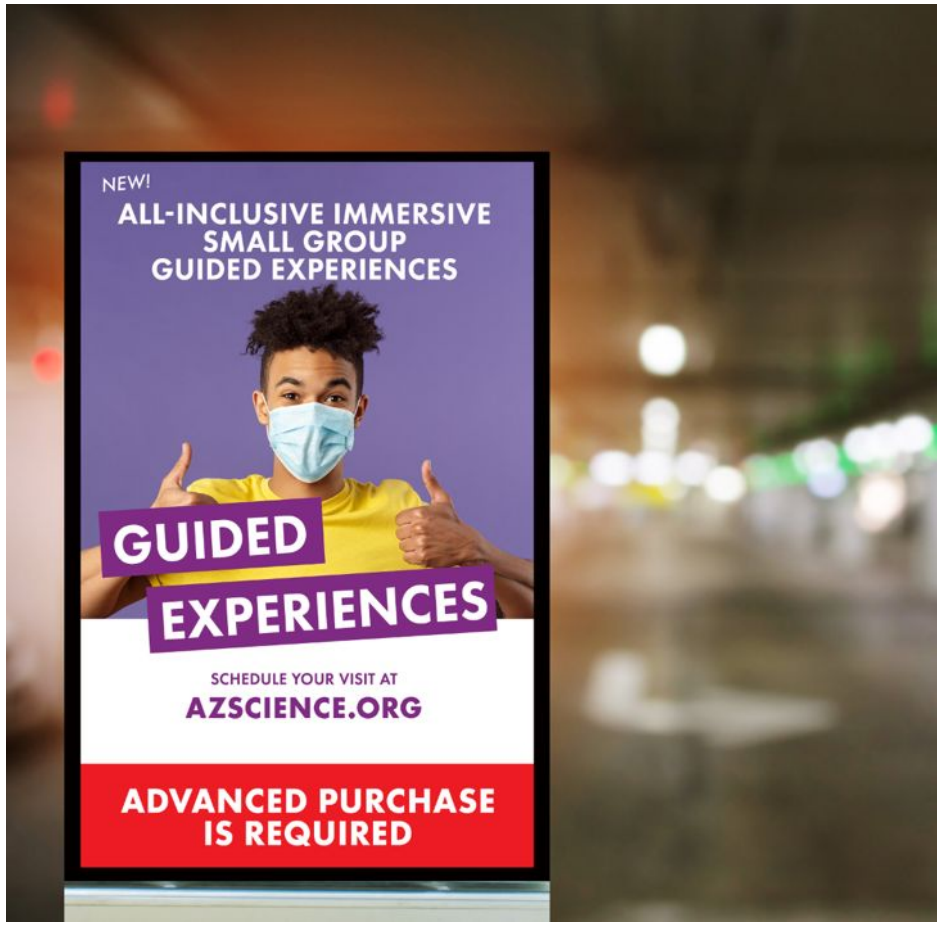
Never stop wondering.
Never stop imagining.™

Moon Adventure Game at Arizona Science Center

Sari Custer, M.S.
Chief of Science and Curiosity
custers@azscience.org
@SariOnScience

THE TEAM

GUIDED EXPERIENCES



- Multiple Content Themes
- Scheduled
- Small group
- Immersive
- COVID measures
  - Prepared materials
  - Groups never crossed paths

ASTRONAUT

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SPACE EXPLORERS GUIDED EXPERIENCE

Welcome

- Overview
- Expectations
- Stage-setting

Planetarium

- 15 Minute mini show

Astronaut Training

- Interactive activities

Exhibit Exploration

- Select permanent Exhibits
- Astronaut Exhibition

Culmination Activity

- Moon Adventure Game

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Thank you!

Sari Custer
Chief of Science and Curiosity
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@SariOnScience

azscience.org

Moon Murder Mystery

Kristine Heinen

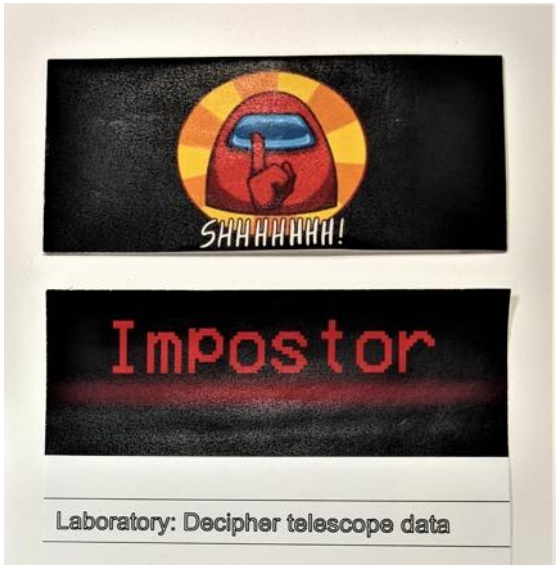
Educator

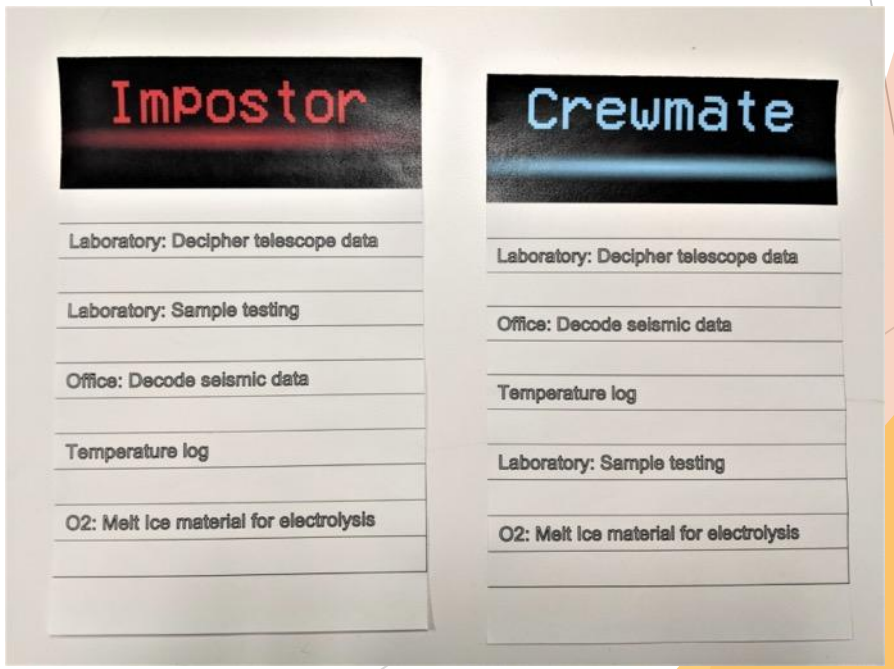
South Dakota Discovery Center

Introduction to the game

- Social deduction game
- Crewmates must complete tasks to win
- Imposters must secretly kill crewmates before tasks are finished

Imposter and Crewmate Task Cards

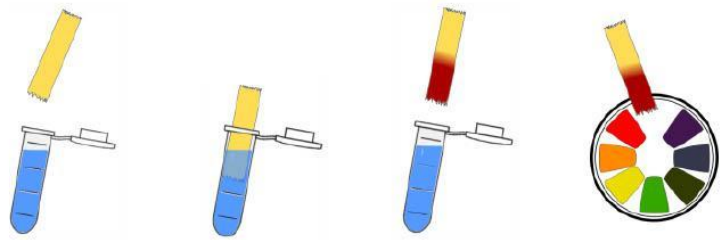




Tasks – Laboratory

Sample Testing

Samples have been gathered from different locations on the base. The pH of all the samples must be measured. We need to determine what samples are acidic.



1. To test the pH use about 1" of test paper and dip it into the sample about half way up the paper strip.
2. Take the paper strip out of the sample and wait a moment for the color to change.
3. Match the color on the color key to determine the pH level of the sample.

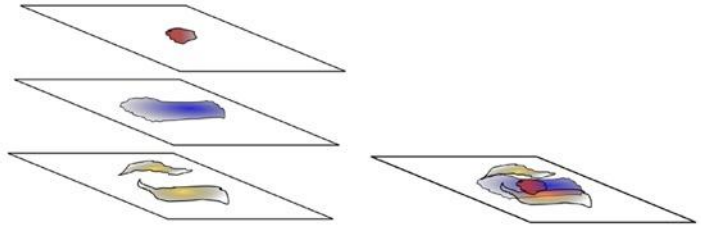
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Acidic					Neutral				Alkaline				

Objective: Find the most acidic samples.

Tasks - Laboratory

Telescope data

The telescopes on the base have taken imaging data of the far-off super nova remnant Cassiopeia A. Images were taken at different wavelengths of the electromagnetic spectrum. Data was collected in Infra-red, visible light, radio wave, and Xray wavelengths. All the images must be combined to make a complete picture of the supernova so the data can be sent to HQ.

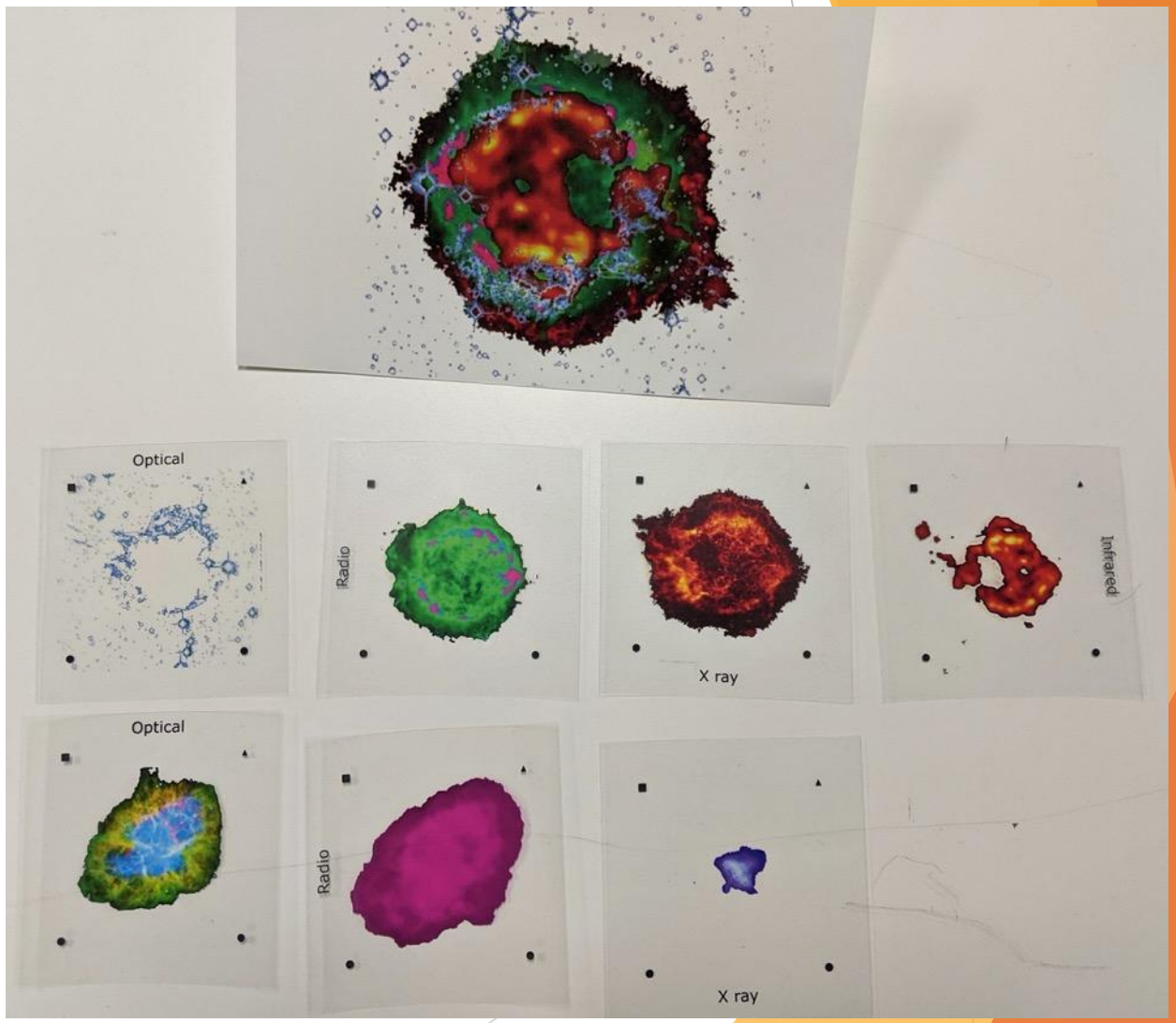


Layer the images on top of each other to complete a composite of the 4 data types collected for Cassiopeia A. Be careful there is data from the Crab nebula mixed in with the data points.

It is easier if you put the larger images at the bottom and the smallest on top.

Objective: Layer the data images to complete the composite image of Cassiopeia A.

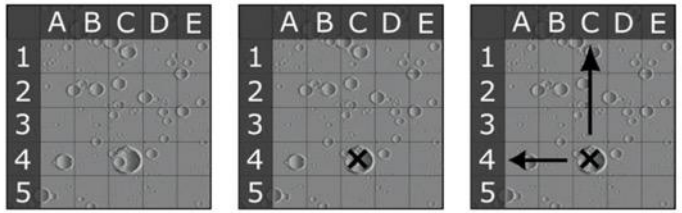
You must have 1 of each wavelength. Optical, Infrared, Xray, and Radio.



Tasks

Temperature log

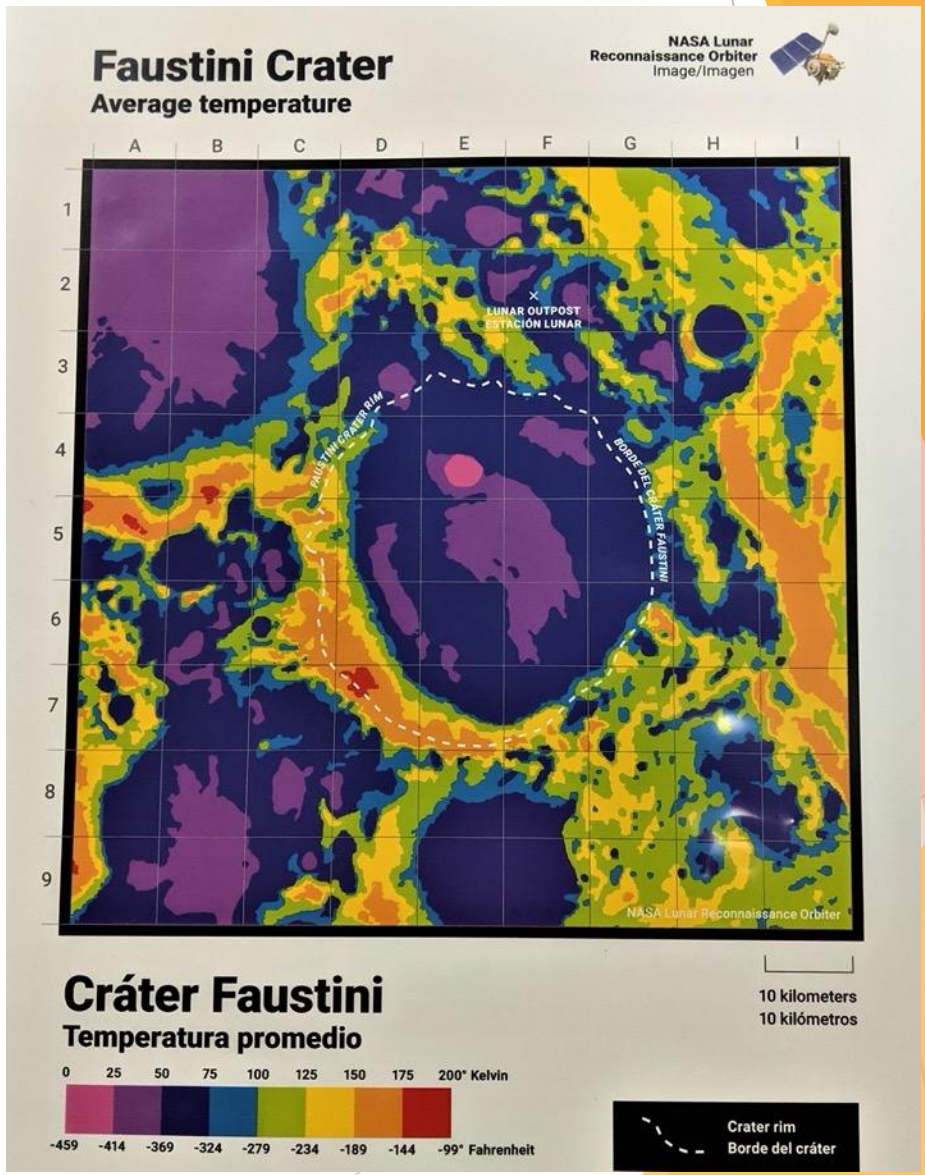
A satellite has taken multiple data readings of the surface of the moon. The target is Faustini crater close to the lunar south pole. The crater is of interest because it has a permanently shadowed area that has a possibility to hold lunar water ice material.



1. Find the square that you want to note the location of and put your finger on it.
2. Move your finger strait up to determine the letter (Ex C).
3. Then put your finger back on the square and move to the left to find the number (Ex 4).
4. Combine the letter and the number to make a complete location. (Ex C4)

Moon base must take note of the locations of the highest and lowest temperature points along the rim of the crater (the white dotted line).

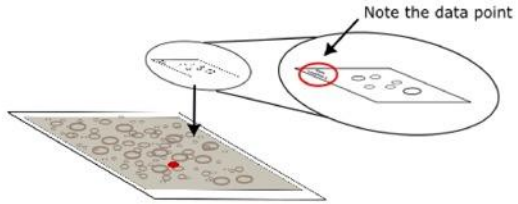
Objective: Find the location of the hottest and the coldest points at the rim of the crater.



Tasks - Office

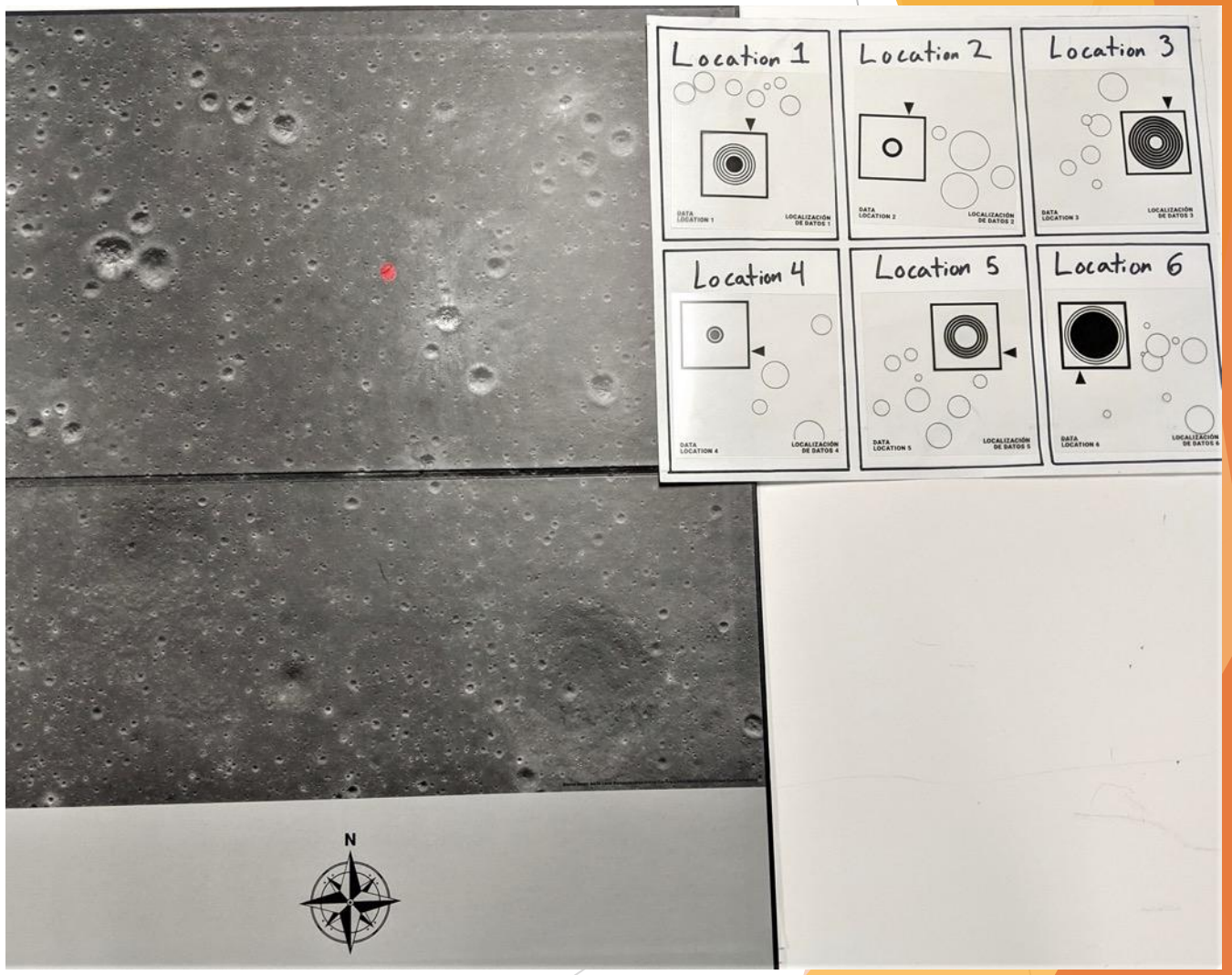
Seismic Data

Moon quakes have been detected in the vicinity of a future mining operation. A seismic stabilizer must be placed near the mining sight to prevent quakes from damaging equipment. We have record of 6 recent moon quakes. Scientists plan to place a seismic stabilizer at the location that is closest to the mining sight. You must find what data point that overlaps the mining sight to report to HQ that that is the location where the stabilizer must be placed.



1. Place the transparency data points on the map and line up the circles on the transparency to the craters on the surface of the moon.
2. Note the data point in the bottom left corner on the transparency that is covering the mining sight.

Objective: Identify the data point that overlaps with the mining sight.



Tasks - O2

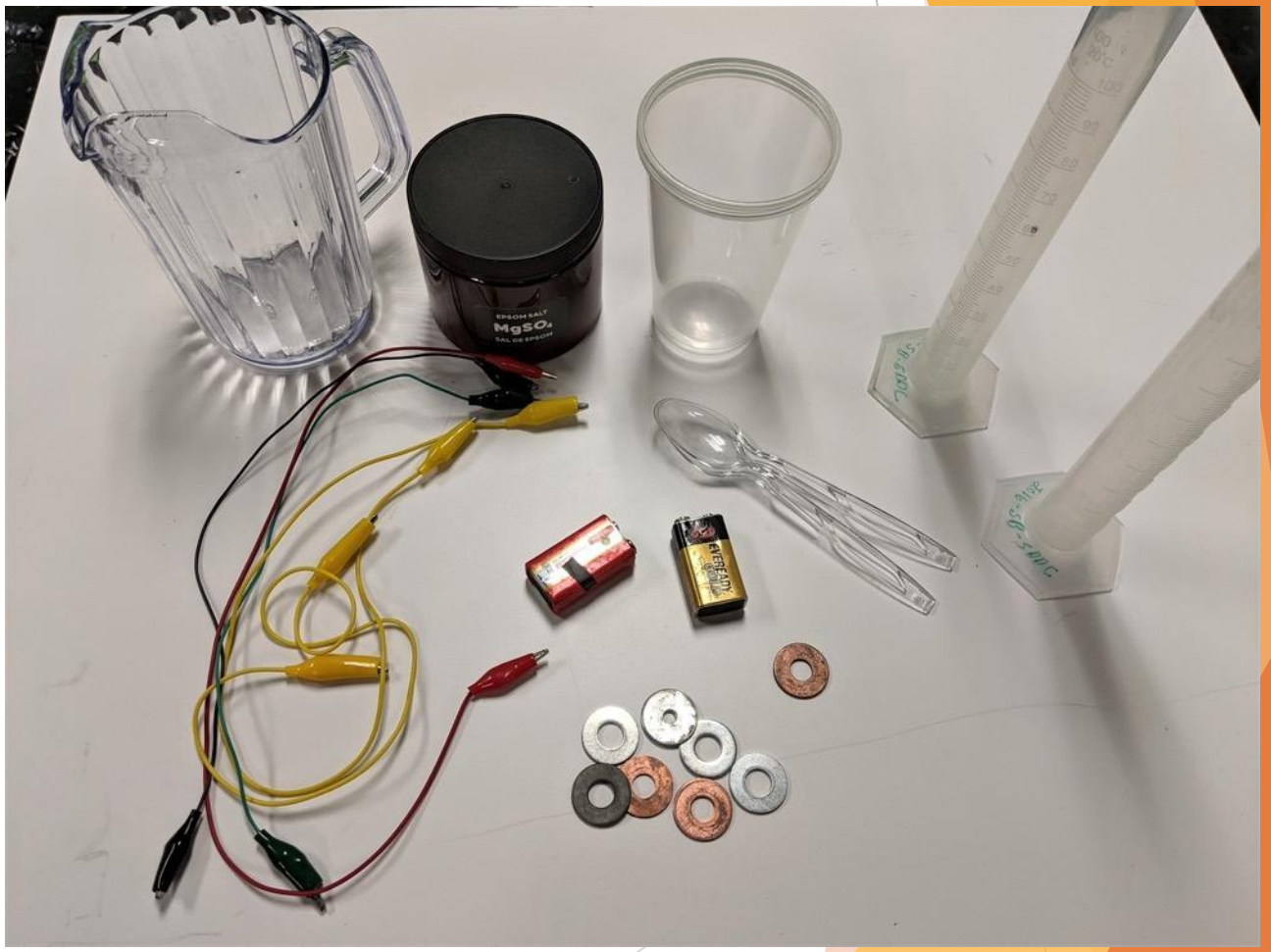
Produce O_2 from ice

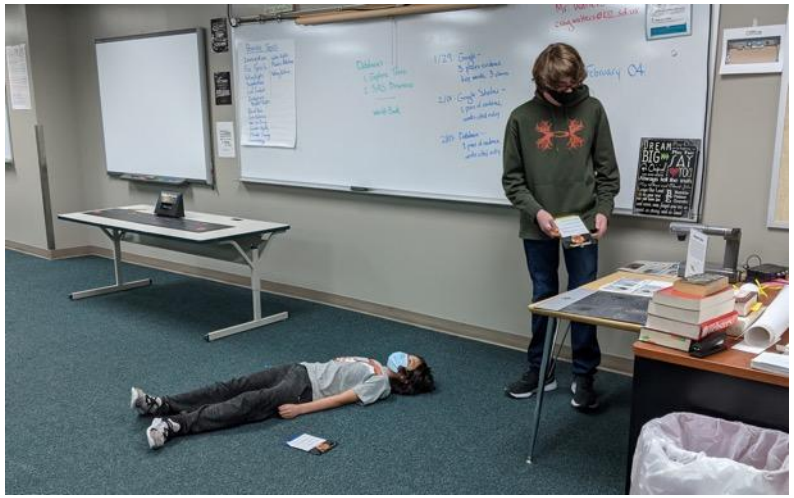
Water ice has been harvested from a crater at the south pole of the moon. The ice material must be melted to use in a process called electrolysis to produce oxygen for the base.

The ice material is on average -260°f, too cold to touch with hands. Grabbers need to be used to handle the ice. Electrolysis is the process of passing electricity through water (H_2O) separating the Hydrogen (H) and Oxygen (O) molecules.

1. Use the grabbers to pick up the blue ice material from the chest and melt into water.
2. Mix in one scoop of salt into the water.
3. Clip one washer to one end of each wire. Place the washers into the salt water.
4. Connect the other end of the wires to the positive and negative ends of the battery.
5. Observe the washers for oxygen and hydrogen bubbles to form.

Objective: Gather ice material to melt and use in electrolysis to produce O_2 for the base.





Cape Cod Museum of Natural History

"Cape Cod's Nature Place"

www.ccmnh.org

NISE
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EXPLORE SCIENCE
Earth & Space


Classroom
MOON
LUNA
Welcome the Lun Southie
Bienvenido al Pabur lun


MOON


Sounding
Rockets

Cape Cod's Nature Place

The Cape Cod Museum of Natural History

Today's Hours: 10:00 AM - 4:00 PM

DONATE NOW

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Home » Calendar » Moon Adventure

Moon Adventure

Special Program

Explore craters by making your own. Learn why would we want to land near a Moon crater. Then take on the Moon Adventure Game. Can your crew solve a series of challenges based on real NASA science to save your Moonbase?

CCMNH is proud to offer these NASA-developed activities thanks to a materials grant and partnership with the National Informal STEM Education Network.

Free with Museum Admission

- Sign up your small group (up to 8 people)
- This hands-on interactive program lasts 40 minutes.
- Age appropriate 8 years and up; Adults welcome

Reservations Recomended. To sign up for open slots please call 508.896.3867 x133

Interstellar Explorations

Special Program

Simulate your own exploding star with Nebula Spin Art. Then, see how nature recycles this interstellar dust as you build gas giant planets or stars. To explore the moon and the rest of our solar system, including Mars, we'll need rockets and rovers. You'll design, build, and test just like a NASA scientist. Finally, discover how a meter of paper tape can help you understand scale by making your own Pocket Solar System.

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2
Match rover data to locations on the map


DATA
DATOS


Ice Melting Map
Mapa de mineral de hielo


POWER ENERGÍA
5
Reconnect the power supply
Restablece el suministro de energía


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FROM SMALL STEPS TO GIANT LEAPS -

Perceptions from partners on adapting the Moon Adventure Game for use in camps, with young audiences, and for all mankind!

Photo by: Rachel Smith

Rachel Smith - Environmental Educator

B.S. Geography- Natural Hazard Mitigation and Meteorlogy

Informal Educator- 8 years

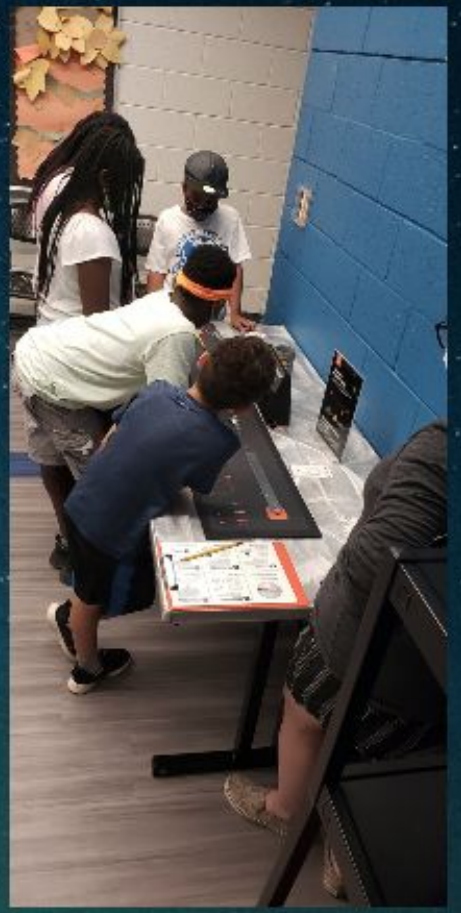
McDowell Nature Center

Mecklenburg County Parks and Recreation

Charlotte, NC

Moon Game Set-up in McDowell's classroom

Moon Adventure Game at UOC Camps



UOC = Urban Outdoor Connection Camp

THANK YOU!

Please feel free to contact me at
rachel.smith@mecknc.gov
if you have any questions or comments.

Photo by: Rachel Smith

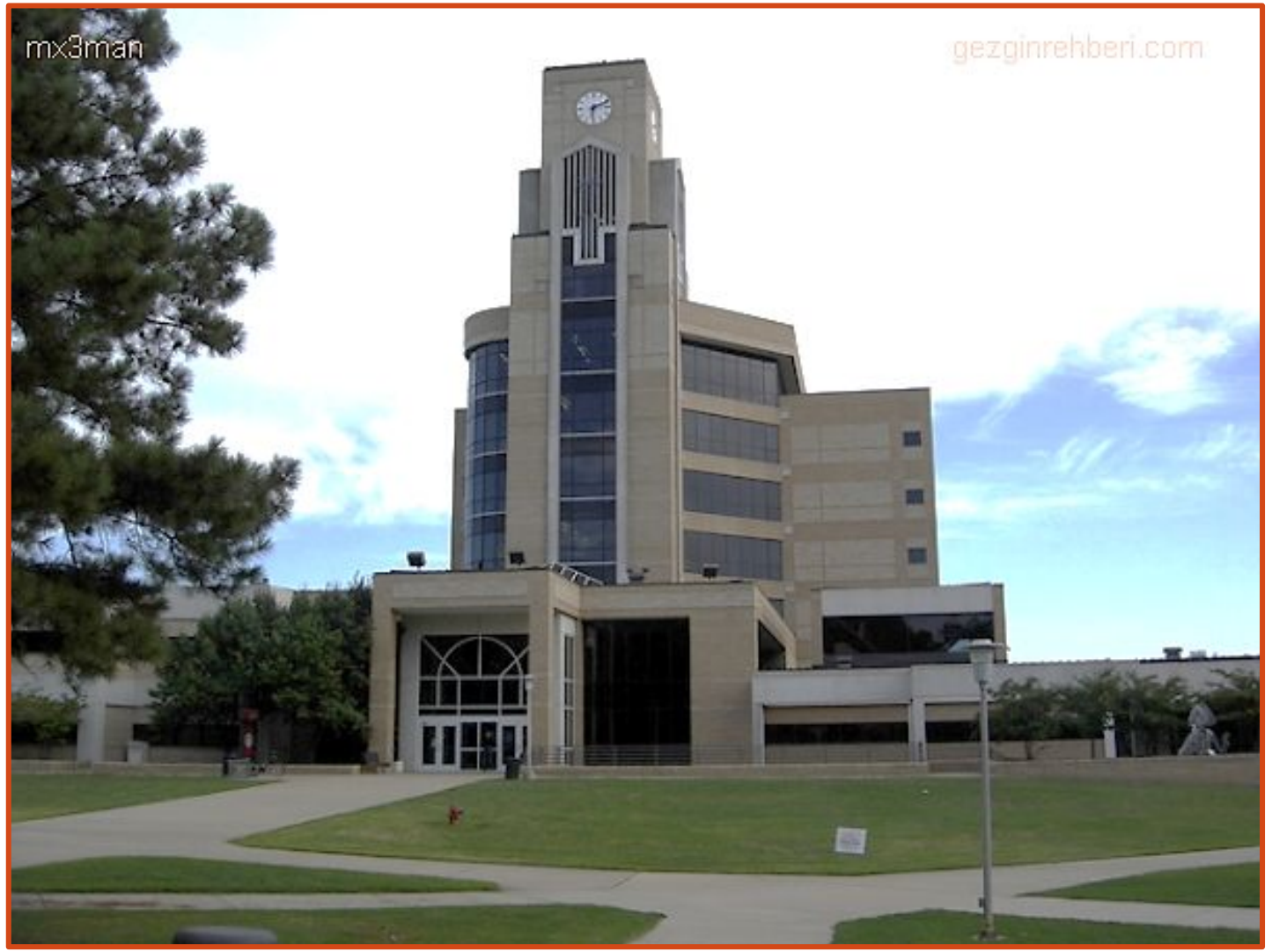
Hosting The “Moon Adventure Game” During Covid-19 Pandemic

JILL KARY, ARKANSAS STATE UNIVERSITY MUSEUM

Back to Work

After a quarantine period, ASU Museum reopened August 19, 2020 with the following restrictions.

- Fewer hours
- Limited capacity
- Masks properly worn at all times (ages 10 and up)
- Social distancing enforced
- Hand sanitizing stations
- Covid-19 safe programs scattered throughout Museum, though other hands-on activities were removed
- One floor opened to the public
- One entrance for the public



Happy New Year

The “Moon Adventure Game” arrived in early January, 2021.

We gleefully…

- Set the game up in a staff workroom to allow staff members to play.
- Made copies of and passed around the script for all Ed. Staff to learn.
- Decided where to place the Moon Game

Then We…

- Thought of Covid-19 restrictions…bah humbug!

Covid-19 Safe Moon Game Play

After a great deal of thought and discussion, we decided upon the following game pandemic restrictions:

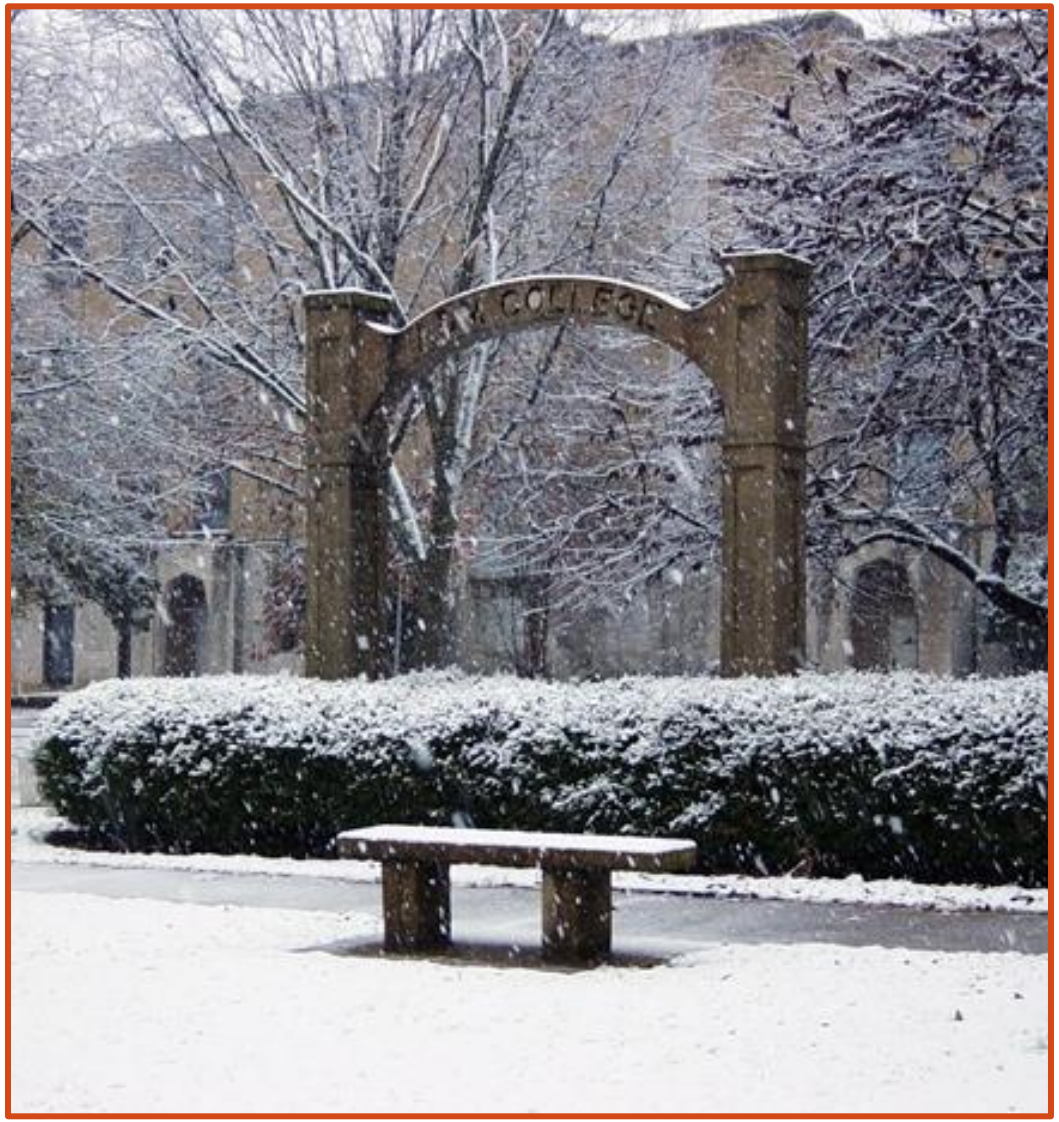
- Game held in an open air gallery
- Long tables for optimum social distancing
- Strangers playing together must number 2 or 3 maximum
- Families or co-mingling groups may play freely. No social distancing from each other. Must social distance from other guests.
- Guides must stand 6 ft. away from players at all times.
- Second staff member attend to sanitizing and re-setting game tables after each use.

Practice Makes Perfect…Unless

We decided to set Feb. 2-13 to sharpen our skills in both game leadership and mask/social distancing encouragement. Up to this point, due to the pandemic, very few folks had visited the Museum.

I contacted several professors, asking them to send students for “Moon Adventure Game” practice and they did. 185 showed up to play, and more would have come, but before the second week started, Mother Nature sent freezing rain, snow, sleet, more freezing rain, then more sleet/snow mix.

The view was beautiful but deadly. No more practice.



It’s Show Time! (…encore time as well)

Throughout March and April, 2021, ASU Museum staff presented the Moon Adventure Game with Covid-19 restrictions.

During this period, we were happy to experience a significant increase in visitor numbers. Saturday guests stood in long lines for their chance to play the Moon Game.

Today, the “Moon Adventure Game” joins our large group tour rotation. We also present it to small, older-student groups upon request.

Furthermore, we are so inspired by the “Moon Adventure Game” that we have created our own escape room game, “Keyed-Up.” The “room” is encompassed by the galleries on our main floor. This game is still undergoing formative testing.

Hands On Children's Museum

- Olympia population 51,534 (2019); Thurston County 290,536 (2019)
- 319,000 visitors annually pre-COVID
- 28,000 square feet indoors, half acre outdoors

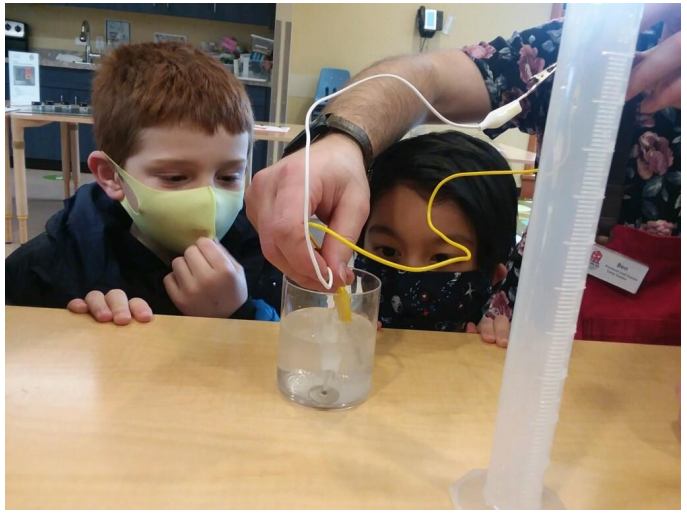
Olympia WA

Hands On Children's Museum
Olympia, WA

Covid Adjustments

- Closed March 16, 2020.
- Open for limited visitation Aug 2020-Nov 2020, permanently reopened Feb 16, 2021 (150 max during summer, reduced to 100 max during rainy season; timed entry)
- STEAM Camps & Preschool Fall 2020-Spring 2021 max class of 12

Hands On Children's Museum
Olympia, WA



STEAM Camp

“Can we do it again tomorrow?”

In Fall 2020, we ran an afternoon STEAM camp for students aged 5-9 to supplement the online learning happening in our district. Our camp teacher, Ben, ran through many of our standard activities over the months. He frequently had repeat campers from week-to-week and was stretched to find new, exciting programming. The 2021 kit came just in time! Ben was lit up with enthusiasm to have fresh activities that were so complete and well thought out. He declared the next camp Space Week. The kids absolutely loved the Moon Adventure! In fact, several asked to do it a second day in a row! Ben was particularly impressed that the kids got to make actual circuits and actual oxygen as part of the game.

Hands On Children’s Museum
Olympia, WA

Best Features

- Easy set-up and clear instructions
- Engaging narrative got the kids really excited
- Multiple kids could engage around one station
- The kids were participating in actual science related to the story and could visibly see the results
- Quality parts that looked cool –”After using it several times, nothing broke. And that stands out.”

Challenges

- Logistics would be harder with larger groups/some of the reactions are small and hard to see from distance
- Requires focus to follow through
- Takes time to finish whole story

Hands On Children's Museum
Olympia, WA

Thoughts on Future Uses

- Integrated into all future space camps
- Some experiments/stations can be used individually for demos
- Some activities (like the “water sorting”) can be used with our preschool space theme
- First Friday (free night) guided activity – a time when we have lots of volunteers and want to do something special

Hands On Children's Museum
Olympia, WA


MOON
LUNA
Welcome to the Lunar South Pole
Bienvenido al Polo Sur lunar
HEADWATERS
SCIENCE CENTER

Q & A

Common themes from questions submitted:

- Can the game be adapted to use with larger groups?
- Best ways to adapt the game for use in camps?
- How are organizations adapting the game for younger students?

Future Online Workshops

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