From Thin Mints to Thin Films: Museum Partnerships Engaging Girl Scouts in STEM Education

ASTC Conference, October 2018, Hartford, CT
Presenters

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Reaching For The Stars: NASA Science for Girl Scouts
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Overview

- Girl Scout badges, STEM outcomes
- NISE Network’s Explore Science: Earth & Space Toolkits Overview and Badge Connections
- Museums partnering with local Girl Scouts
  - Ongoing programming, Skill building workshops
  - Overnights, special events
  - Collaboration tips
- Discussion, Q/A
Pamela Harman
SETI Institute

Reaching For The Stars: NASA Science for Girl Scouts

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Reaching for the Stars: NASA Science for Girl Scouts (Girl Scout Stars, GS Stars)
Girl Scouts’ STEM Initiative
National Program Outcomes

SENSE OF SELF

POSITIVE VALUES

CHALLENGE SEEKING

HEALTHY RELATIONSHIPS

COMMUNITY PROBLEM SOLVING

Take Action to Change the World

Girl Scout Leadership Experience

STEM

Outdoor

Life Skills

Entrepreneurship
STEM Vision and Strategy

❖ Offer all girls high-quality, multi-year and progressive STEM program

❖ Increase girls’ interest, confidence, competency in STEM, as well as their understanding of STEM’s value to people and society

❖ Reach more underserved girls with STEM program

❖ Support Girl Scout councils to implement program, build local partnerships and share best practices in STEM
Opportunity for Impact

2nd - 3rd grade

75%

1.4 million
STEM Outcomes

- STEM Interest
- STEM Confidence
- Value of STEM to People & Society
- STEM Competence (Knowledge)
Strategic Program Focus

Engineering

Computer Science

Outdoor STEM
Strategic Partners

- Councils & Volunteers
- STEM Organizations
- Funders
Partnering with Girl Scouts

Local Partnerships

• Contact the Girl Scout council in your area (ask for the program lead or the STEM program lead)
  • Go to http://www.girlscouts.org/.
  • Click on “find a council.”
  • See graphic on next slide.
• Possibilities to explore: workshops/events that align with national and/or council programs, career exploration, etc.
• Share your certificate of compliance
• Check with local council about Girl Scouts’ Safety Activity Checkpoints
Use the Girl Scout Council Finder to connect with your local Girl Scout council.

Find Councils

**By Zip Code**
Find the Girl Scout Council Serving Your Area

**By State**
Find a Girl Scout Council by State

**By Council Name**
Find a Girl Scout Council by Council Name
Girl Scout STEM Pledge: Let's add millions of girls to the STEM pipeline by 2025! Go »

Girl Scout STEM PLEDGE

Help us put millions of girls through our STEM programs by 2025.

MORE
NEW STEM Journeys and Badges

Journeys: STEM + Leadership

- Hands-on challenges — how to solve problems like engineers, programmers and scientists.
- Take Action project — girls use what they’ve learned to address a problem.
- This connects STEM to helping people in the real world.

Badges: STEM + Skills

- Hands-on activities teach girls specific STEM skills.
- Building STEM skills builds STEM confidence
STEM for Girl Scout Brownies

**Space Science**
- Space Science Adventurer

**Cybersecurity**
- Cybersecurity Basics
- Cybersecurity Safeguards
- Cybersecurity Investigator

**Robotics**
- Programming Robots
- Designing Robots
- Showcasing Robots

**Mechanical Engineering**
- Fling Flyer Design Challenge
- Leap Bot Design Challenge
- Race Car Design Challenge

**Engineering Journey**
- Think Like an Engineer
- Take Action

**Computer Science Journey**
- Think Like a Programmer
- Take Action

**Outdoor STEM Journey**
- Think Like a Citizen Scientist
- Take Action

2018
STEM for Girl Scout Juniors

BADGES

Space Science
- Space Science Investigator

Cybersecurity
- Cybersecurity Basics
- Cybersecurity Safeguards
- Cybersecurity Investigator

Robotics
- Programming Robots
- Designing Robots
- Showcasing Robots

Mechanical Engineering
- Balloon Car Design Challenge
- Crane Design Challenge
- Paddle Boat Design Challenge

JOURNEY AWARDS

Engineering Journey
- Think Like an Engineer
- Take Action

Computer Science Journey
- Think Like a Programmer
- Take Action

Outdoor STEM Journey
- Think Like a Citizen Scientist
- Take Action

2018
STEM for Girl Scout Cadettes

**BADGES**

**Robotics**
- Programming Robots
- Designing Robots
- Showcasing Robots

**JOURNEY AWARDS**

**Engineering Journey**
- Think Like an Engineer
- Take Action
- Leader in Action

**Computer Science Journey**
- Think Like a Programmer
- Take Action
- Leader in Action

2018
STEM for Girl Scout Seniors

**BADGES**

- Robotics
  - Programming Robots
  - Designing Robots
  - Showcasing Robots

**JOURNEY AWARDS**

- **Engineering Journey**
  - Think Like an Engineer
  - Take Action

- **Computer Science Journey**
  - Think Like a Programmer
  - Take Action

2018
WHAT’S NEW

STEM for Girl Scout Ambassadors

BADGES

Robotics

Engineering Journey

Think Like an Engineer
Take Action

Programming Robots
Designing Robots
Showcasing Robots

Computer Science Journey

Think Like a Programmer
Take Action

2018
Space scientists are people who study outer space—what’s in the sky. In this badge, you can be a space scientist as you look at the sky and talk about what you see!

Steps
1. Explore the Sun
2. Observe the Moon
3. Meet the stars

Purpose
When I’ve earned this badge, I will have explored and observed the Sun, Moon, and stars.
“Some of the most fun people I know are scientists.”
—Mae Jemison, NASA astronaut and physician

Space Science Adventurer

Whether you’ve searched for shooting stars or found shapes in the clouds, you’ve probably already spent some time looking at the sky. Now’s your chance to see the sky in a new way—like a space scientist does!

Steps
1. Meet the neighbors
2. See more than before
3. Investigate the Moon
4. Be a stargazer
5. Celebrate and share

Purpose
When I’ve earned this badge, I will know how to investigate and learn about the Sun, Moon, planets, and stars.

Brownie

5 steps
3 choices
Space Science Investigator

Our Solar System spreads out across space. It's much larger than you might think and the stars are even farther away than you can imagine. Venture through the Solar System and beyond, and discover that space is even bigger than you thought.

Steps
1. Model the Solar System
2. Circle the Sun
3. Discover the stars
4. Use tools to explore
5. Share your sky

Purpose
When I've earned this badge I will understand that the Earth orbits the Sun and how far away the Sun, Moon, planets, and stars are from our home planet, Earth.
Catherine McCarthy
NISE Network
Science Museum of Minnesota, Saint Paul, MN
cmccarthy@smm.org
WHAT IS THE NISE NETWORK?
The National Informal STEM Education Network is dedicated to supporting learning about science, technology, engineering, and math (STEM).

NISE Net includes informal educators and scientists.
NISE Net supports **informal learning about STEM** in communities across the United States.

Our activities are **fun and accessible** for everyone.
Together we reach **millions of people** each year!

**NISE Net**
brings together diverse people to share and learn from each other.
WHAT WE CREATE

Educational products
• kits of hands-on activities for use in museums (and similar settings)
• exhibits for museums

Professional development tools
• training videos
• online workshops
• written guides
• planning resources
Each kit includes:

- hands-on activities
- posters, media, and graphics
- event planning materials
- training videos

All resources are available for free download at nisenet.org
Each activity includes:

• all necessary materials
• step-by-step instructions
• facilitator guide & background info
• activity sign

All resources are available for free download at nisenet.org
Explore Science: Earth and Space Toolkits

Description

- **STEM educational resources**, including hands-on activities, videos, and media
- **Professional resources** for planning, implementation, and staff training
- **All necessary materials** to build partnerships, provide professional development, and engage the public

2019 Toolkit Application

- **350 copies** distributed in early 2019
- Applications due November 1, 2018
  - [http://www.nisenet.org/earthspace kit-apply](http://www.nisenet.org/earthspace kit-apply)
The physical toolkit is designed for informal science education public events and outreach. To be eligible to receive a physical toolkit, organizations must be:

- Located in the United States
- Public informal science outreach and education institutions such as:
  - science museums and science centers,
  - children’s museums,
  - natural history museums,
  - public planetariums and observatories, and
  - NASA visitor centers

Please note that K-12 schools, afterschool programs, libraries, parks, and astronomy clubs are not eligible to receive physical toolkits. Consider downloading a digital toolkit if your organization does not meet eligibility criteria. Digital toolkits will be available for download in February 2019 at nisenet.org/earthspacekit
Partner Expectations

Recipients must:

• Use the toolkit for at least one event between March and May
• Meet data reporting requirements – due June 2018

Recipients may:

• Attend professional development online workshops
• Collaborate with local experts
• Collaborate locally to reach underserved audiences
Using Your Toolkit All Year Long

- **Celestial events**: Meteor showers, lunar eclipses, full moons, planetary events, and more

- **Earth and space science events**:
  - World Water Day, March 22, 2019
  - Earth Hour, March 30, 2019
  - Global Astronomy Month, April
  - Yuri’s Night, April 12, 2019
  - Earth Day, April 22, 2019
  - National Environmental Education Week, week of Earth Day
  - Astronomy Day (Spring), May 11, 2019
  - Astronomy Week (Spring), May 6-12, 2019
  - World Oceans Day, June 8, 2019
  - Asteroid Day, June 30, 2017
  - International Observe the Moon Night, October 20, 2018; TBD 2019
  - Astronomy Day (Fall), October 5, 2019
  - Astronomy Week (Fall), September 30-October 6, 2019
  - World Space Week, October 4-10, 2019
  - Earth Science Week, October 14-20, 2019
Activities from the NISE Network’s Explore Science: Earth and Space toolkits can supplement, and in some cases satisfy some of the requirements for a Girl Scout to earn a Space Science badge.

Digital versions of the 2017 & 2018 Earth & Space toolkits are available for download

<table>
<thead>
<tr>
<th>Badge Step</th>
<th>NISE Network Earth &amp; Space toolkit activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Daisy</strong> Space Science Explorer Badge (grades K-1)</td>
<td></td>
</tr>
<tr>
<td>• Explore the Sun</td>
<td>Exploring Earth: Bear’s Shadow</td>
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<tr>
<td>• Observe the Moon</td>
<td>Exploring the Solar System: Hide and Seek Moon</td>
</tr>
<tr>
<td>• Meet the Stars</td>
<td>Exploring the Universe: Filtered Light</td>
</tr>
<tr>
<td><strong>Brownie</strong> Space Science Adventurer Badge (grades 2-3)</td>
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<tr>
<td>• Meet the Neighbors</td>
<td>Exploring the Solar System: Pocket Solar System</td>
</tr>
<tr>
<td>• Investigate the Moon</td>
<td>Exploring the Solar System: Solar Eclipse &amp; Exploring the Solar System: Craters</td>
</tr>
<tr>
<td><strong>Junior</strong> Space Science Investigator Badge (grades 4-5)</td>
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<tr>
<td>• Model the Solar System</td>
<td>Exploring the Universe: Objects in Motion</td>
</tr>
<tr>
<td>• Circle the Sun</td>
<td>Exploring the Universe: Orbiting Objects</td>
</tr>
<tr>
<td>• Use Tools to Explore</td>
<td>Exploring the Solar System: Mars Rovers</td>
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</tbody>
</table>
Applications Now Open!
Explore Science: Earth & Space 2019 toolkit applications are due November 1, 2018

http://www.nisenet.org/earthspacekit-apply
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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the view of the National Aeronautics and Space Administration (NASA).
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Girl Scouting at the Rochester Museum and Science Center

What we offer…

• At the RMSC we offer a variety of Girl Scout badges for Brownies through Seniors.
• Our programs are on “demand” now
• As well as customized overnights.

<table>
<thead>
<tr>
<th>Girl Scouts: Brownies</th>
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</thead>
<tbody>
<tr>
<td>Home Scientist</td>
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<tr>
<td>Hiker</td>
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<tr>
<td>Inventor</td>
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<tr>
<td>Outdoor Art Creator</td>
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<tr>
<td>Bugs</td>
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<tr>
<th>Girl Scouts: Juniors</th>
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<tbody>
<tr>
<td>Geocacher</td>
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<tr>
<td>Detective</td>
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<td>Flowers</td>
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<tr>
<th>Girl Scouts: Cadettes</th>
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<tbody>
<tr>
<td>Special Agent</td>
</tr>
<tr>
<td>Trees</td>
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</tbody>
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<tr>
<th>Girl Scouts: Seniors</th>
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<tbody>
<tr>
<td>Sky</td>
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RMSC
Rochester Museum & Science Center
Reward your curiosity.

Science Museum
+ Strasenburgh Planetarium
+ Cumming Nature Center
Girl Scouts at RMSC

Brownie Home Scientist with Nano Kits
New GSA badges and NISEnet kits

**Space Science Badge** -
- **Daisy**: Space Science Explorer
- **Brownie**: Space Science Adventurer
- **Junior**: Space Science Investigator

**Robotics** -
- **Daisy**: All three badges in one class
- **Brownie**: Programming badge and Design badge
- **Junior**: Programming badge and Design badge

* All have the opportunity to use what they learned from the program toward their Showcasing badge.
Tips and Challenges

**Tips!**
- Fun- should not seem like school!
- Unique experience-only at the RMSC.
- Hands on, project based- they are learning through doing.
- Inquiry based learning- asking questions, not giving answers.
- Completing badge requirements within a 3 hour class.
- Cost effective- Admission to the RMSC included with Scout Program.
- Class is in the Instructor’s hands.
- Organized bin of materials are ready for instructors.

**Challenges**
- Getting the word out!
- Creating quality programming that we can excel at.
- Finding quality instructors.
- Classroom space, technology, supplies and materials!
- Weekend programming
- Scheduled programs vs. Program that ran
- Knowing Girl Scout Council Boundaries
- Who to contact at Girl Scouts
Partnering with Girl Scouts of Western New York

Partnering up for Science Events

STEM-A-Palooza, a Girl Scouts of Western New York event

Troop Facilitation

Using resources from the RMSC to help facilitate troop activities.
Partnership history

● Originated 2009-2010 with two Junior programs:
  ○ Math Whiz
  ○ Make it Matter

● Big changes for 2012
  ○ GS badging program changed
  ○ Switched Junior programs:
    ■ Detective
    ■ Entertainment Technology
  ○ Greater demand - offering 15-20 sessions

● Present day
  ○ Programs for Daisies through Seniors
  ○ 48 session dates FY19
# 2018-2019 Program Offerings

<table>
<thead>
<tr>
<th>Program</th>
<th>Age/Level</th>
<th>GSUSA Badge</th>
<th>Cost</th>
<th>Includes</th>
<th># Sessions offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robo-Designer</td>
<td>Daisy K-1st</td>
<td>What Robots Do</td>
<td>$40</td>
<td>Both robotics badges + Tech fun patch</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design a Robot</td>
<td></td>
<td>Museum Admission; IMAX film</td>
<td></td>
</tr>
<tr>
<td>Home Scientist</td>
<td>Brownie 2nd-3rd</td>
<td>Home Scientist</td>
<td>$35</td>
<td>Program badge + Tech fun patch</td>
<td>19</td>
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<td></td>
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<td></td>
<td>Museum Admission</td>
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<tr>
<td>Robo-Designer</td>
<td>2nd-3rd</td>
<td>Designing Robots</td>
<td>$40</td>
<td>Program badge + Tech fun patch</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Museum Admission; IMAX film</td>
<td></td>
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<tr>
<td>Amusement Innovator</td>
<td>Junior 4-5th</td>
<td>Entertainment Technology</td>
<td>$30</td>
<td>Tech fun patch; Museum Admission</td>
<td>6</td>
</tr>
<tr>
<td>Tech Detective</td>
<td></td>
<td>Detective</td>
<td>$30</td>
<td>Tech fun patch; Museum Admission</td>
<td>6</td>
</tr>
<tr>
<td>Robo-Designer</td>
<td></td>
<td>Designing Robots</td>
<td>$40</td>
<td>Program badge + Tech fun patch</td>
<td>3</td>
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<td>Museum Admission; IMAX film</td>
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<tr>
<td>Special Agent</td>
<td>Cadette 6-8th</td>
<td>Special Agent</td>
<td>$30</td>
<td>Tech fun patch; Museum Admission</td>
<td>4</td>
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<tr>
<td>Change Makers</td>
<td>Senior 9-10th</td>
<td>Social Innovator</td>
<td>$65</td>
<td>Program badge + Tech fun patch</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Museum Admission; lunch</td>
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</tbody>
</table>
Benefits of VIP Partnership

- Programs featured in council’s annual Program Guide
- Marketing through multiple channels: Facebook features, direct e-news to members, lobby flyers, lobby monitor ads, cross promotion to other STEM program attendees
- Invitations to table at special council events (Bridging, STEM Career events)
Challenges

- Some programming is difficult to fill (age-level related)
- Competing events and programs (no programs during cookie sales)
- Meeting demand
- Negotiating what success looks like (Tech vs. GSNorCal - primarily regarding attendance)

Successes

- Huge program growth
  - from 2 to 8 programs
  - from 6 to 48 sessions
- Girls in STEM initiative
  - Served roughly 4,000 girls in GS programs over the last 8 years
- Advertising partnership
- Revenue
Tips for Other Museums

- Make it fun!
- Match badge programs to existing experiences/activities or adopt badge programming that match your center’s programming themes
- Start small and grow with demand
- Work with your local council to determine needs
Discussion and Questions
How can I learn more about the new badges?
Discussion

Practical suggestions for making overnights successful?
Discussion

Suggestions for connecting with local troops?
Discussion

Other Questions?
Discussion

Other Questions?