

Hands-on Fun with STAR Net!

November 8, 2017

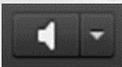
Presenters: Brooks Mitchell and Keliann LaConte

The webinar will begin at 1:00 p.m. (MT) and will be recorded.

While you're waiting:

- 1) Introduce yourself in the chat box (Library and City/State)
- 2) Answer our poll question
- 3) Test your audio by clicking on "Meeting" and then "Audio Setup Wizard". You will not need a mic for this webinar.



Audio problems? Click and highlight the  button at the top of your screen. You can also click "Meeting" > "Audio Setup Wizard". You will not need microphone capabilities.

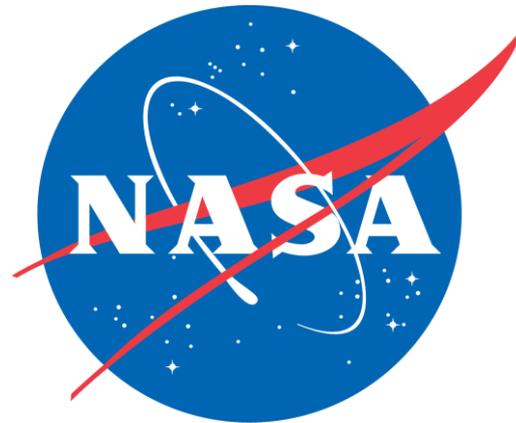
Today's Agenda

- STAR Net Resources
- Activity: Team Machine
- Activity: Rocket Car Distance Challenge
- Activity: Who Dirtied the Water?
- Activity: Low Tech Water Filter
- Activity: Wind Turbine Tech Challenge
- Q&A

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HOME ABOUT EVENTS PROJECTS RESOURCES STEM IN LIBRARIES SEARCH STEM ACTIVITIES

Resources

:: Conferences, Webinars and More

Curated Resources For Professional Development

Building the capacity of public libraries and library staff to deliver engaging, inspirational, and educational STEM programs has the potential to transform the STEM education landscape across the country. What started in libraries some years ago as independent experiments in STEM programming has become a national STEM movement.

Across the country, libraries are redefining their roles. They're becoming primary centers of informal learning, especially STEM learning. And this critical transition is being carried out by many dedicated librarians. To help them, the STAR Library Education Network (STAR_Net) is providing resources to support their efforts to develop new skills and provide quality STEM programming.

Collaboration is the key to transforming libraries into STEM learning centers.

Recent Blogs

- Watercraft Design
- The Dirt on Soil
- Do You Have Your Solar Eclipse Glasses? Great - Now Try Them Out!

Upcoming Events

- Discover NASA Exhibition (AZ) May 3 - July 28
- Summer Learning - Build a Better World May 15 - August 31
- Discover Tech Exhibition (CO) May 31 - August 25

View All Events

- Conferences
- Webinars
- Newsletters
- Online Forums
- STAR_Net Blog
- 2017 Solar Eclipse
- Exhibition Posters
- Books, Videos & More!
- Guides, Facts & Tips

Professional development resources, including webinars, newsletters, blogs, forums, videos, and much more!

Upcoming Webinars

- Webinars are announced and archived at:
<http://www.starnetlibraries.org/resources/webinars/>
- November 15th at 1:00 p.m. (MT) – [Social Media Tips from NASA](#)
- December 13th at 1:00 p.m. (MT) – [STEM Events for Your Library's 2018 Programming](#)

STEM ACTIVITY Clearinghouse

For example:
[DIY Sun Cookies](#)

STEM Activity Clearinghouse

STARnet Science-Technology Activities & Resources For Libraries

CS Cornerstones of Science awakening curiosity, enriching lives

Search

Collections > 2017 Total Solar Eclipse

ATTRIBUTES 2017 TOTAL SOLAR ECLIPSE There are 7 items.

Showing 1 - 7 of 7 items

Content Area

- Earth Science (0)
- Astronomy and Space (0)
- Chemistry (0)
- Physics (0)
- Engineering (0)
- Mathematics (0)
- Technology and Computing (0)
- Health Science (0)

Age Group

- Family (0)
- Infant (0-2) (0)
- Pre-K (0)
- Early Elementary (0)
- Upper Elementary (0)
- Tweens (9-12) (0)
- Teens (0)
- Adults (0)

Time to Complete Activity

- Under 10 minutes (0)
- 10-20 minutes (0)
- 20-40 minutes (0)
- 40 minutes to 1 hour (0)
- 1-2 hours (0)
- 2-4 hours (0)
- Long Duration (days to months) (0)

How Big, How Far, How Hot, How Old?

This is an activity about scale. Participants will arrange imagery of Earth and many other space objects in order of their size from smallest to largest, their distance from Earth's surface, their temperature from coolest to hottest, and/or their age from youngest to oldest.

[Open Activity](#) Report broken link

Content Area
Earth Science
Astronomy and Space

Age Group
Family
Upper Elementary
Tweens (9-12)

Time to Complete Activity
10-20 minutes

Difficulty Level (by content)
Medium

[View Details](#)

How Can the Little Moon Hide the Giant Sun?

This is an activity exploring the concept that distance affects how we perceive an object's size, specifically pertaining to the size of the Sun and the Moon as seen from Earth.

[Open Activity](#) Report broken link

Content Area
Earth Science
Astronomy and Space

Age Group
Early Elementary
Upper Elementary

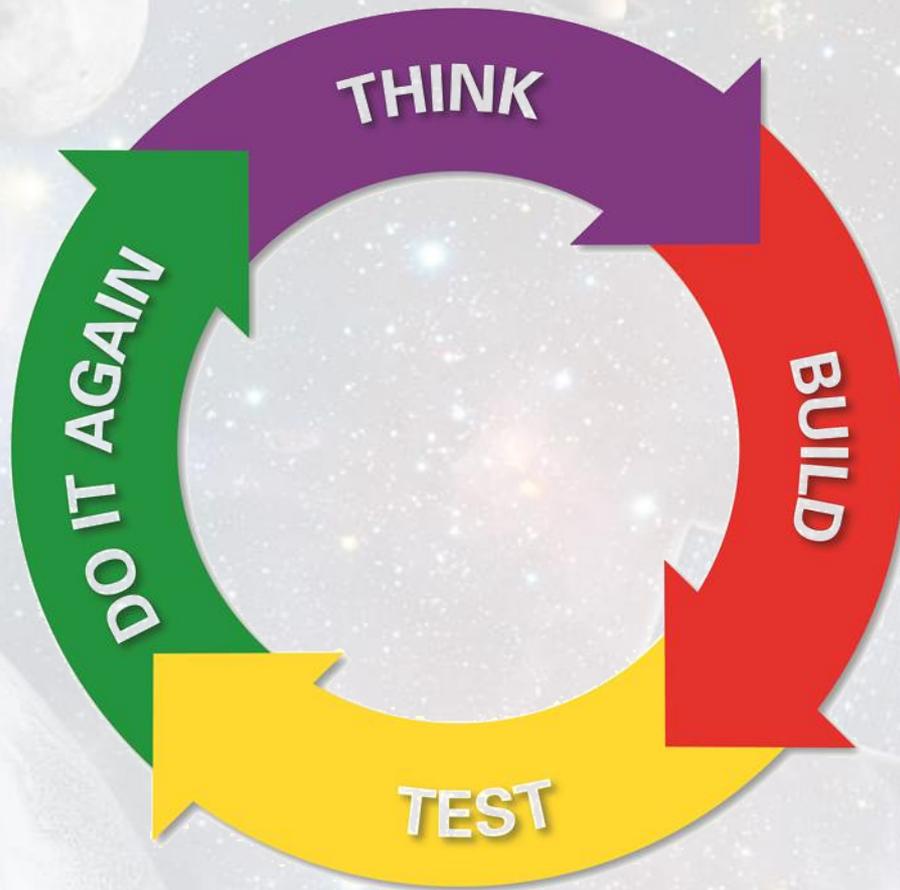
Time to Complete Activity
40 minutes to 1 hour

Difficulty Level (by content)
Easy



Like an activity and think other library staff should know how great it is? Didn't like an activity or have modifications to make it better? **Make sure to leave a review!**

Be Creative...Be an Engineer!



Team Machine

Establish a pattern

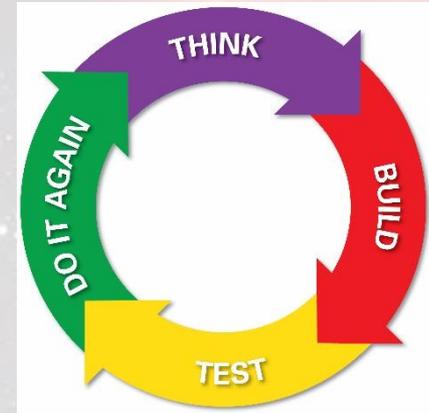
1. Form a circle.
2. Say your name.
3. Toss the beanbag to someone *across* from you (not next to you). Remember that person's name.
4. Keep going until each person has caught the beanbag.

Keep the same order as you try to go even faster!

The faster, the better!

THINK

- How can you decrease your time?



BUILD, TEST, and DO IT AGAIN!

1. Pass the beanbag around the circle again — as quickly as possible!
2. Say the name of the person who will catch the beanbag each time you pass it.
3. Try to “beat” your shortest recorded time

Hints:

You may move around. You may stand or sit.

Rocket Car Distance Challenge

[Home](#) >
 [Activities](#) >
 [Astronomy and Space](#) >
 [Rocket Car Distance Challenge](#)

[Back to Search results for "rocket car" \(2 other results\)](#)



[View larger](#)

Rocket Car Distance Challenge

Using new and recycled materials, patrons construct rocket cars that use a balloon and straw "rocket" to move. Students will "race" the cars to see which can go the farthest before revising their design and "racing" again.

[Open Activity](#)

[How-to Video](#)

Hints for use in your library: While this activity was developed with libraries in mind, if the suggested "ingredient" list is too daunting, consider doing this activity with just straws, balloons and toy cars before making this a "Maker" activity.

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Content Area

Astronomy and Space
Engineering

Age Group

Early Elementary
Upper Elementary
Tweens (9-12)
Teens

Time to Complete Activity

1-2 hours

Time needed to prep Activity

40 minutes to 1 hour

Cost associated with Activity Materials

\$1-\$5

Difficulty Level (by content)

Medium

Mess Level

Medium

[Report a broken link](#)

[Categorized Incorrectly? Let us know!](#)

Rocket Car Distance Challenge

- Cars can take almost any shape! BUT, they will need:
 - A Chassis/Body
 - Axles
 - Wheels
 - An “Engine” (Balloon attached to straw)

- How far can your car travel?

Wheels

Plastic bottle caps, various sizes

Circular packing foam

CDs or DVDs

Jar lids, various sizes

Plastic container lids (like those for oatmeal,
baking powder, yogurt etc.)

Large wooden beads

Axles:

Round plastic stir sticks (sip stirrers)

Wooden skewers

Wooden dowels (pre-cut)

Pencils

Body/Chassis

Styrofoam plates (heavy duty)

Rectangular scraps of cardboard

Shoe boxes

Small boxes

Paper towel tubes

Foam core board

Stiff paperboard

Plastic food storage containers

Berry baskets

Egg cartons

Empty plastic bottles, various sizes

Foam packing material

Who Dirtied the Water?



Who Dirtied the Water: A Role Playing Activity

Participants take turns adding pollutants to a gallon jar of water (which symbolizes a local body of water) as the facilitator reads a story about water pollution.

[Open Activity](#)

[Report broken link](#)

Hints for use in your library: The story within this activity guide focuses on the Metro Boston Region and the Boston Harbor; however, the story can be easily modified to focus on a body of water near you.

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[Write a review](#)

Content Area
Earth Science

Age Group
Family
Pre-K
Early Elementary
Upper Elementary

Time to Complete Activity
20-40 minutes

Time needed to prep Activity
5-10 minutes

Cost associated with Activity Materials
\$5-\$10

Difficulty Level (by content)
Easy

Mess Level
Medium

Who Dirtied the Water?

OVERVIEW:

This interactive story asks students to take on the roles of different historical and modern characters who have had a role in the pollution of Boston Harbor. As a story is read, each character in turn adds a film container full of pollutants to a jar of clean water representing the Harbor. The story may be modified to fit any local, polluted body of water.

- This activity is meant to engage and set a stage!
- “Storytime” Activity = Literacy Connection
- Local Connection

Who Dirtied the Water?

Section 1: Pre-History

(Chorus)

Section 2: First Settlers

(Chorus)

Section 3: European Settlers

(Chorus)

Section 4: Town Grows to a City

(Chorus)

Section 5: Modern Day

(Chorus)

Chorus:

Would you want to
swim in this bay?

Would you eat fish
caught in this water?

Would you like to go
boating on this bay?

“Pollutant” Ideas

RIVERS = Sand

SALT MARSHES = Dry Grass

SHELLFISH = Crushed sea
shells

SETTLERS = Organic
garbage

FARMERS = Potting soil

HOUSES = Toilet paper

FISHERMEN = Nylon line

BOATERS = Plastic pieces

LAUNDROMATS = Dish detergent

CLEANING = Baking soda

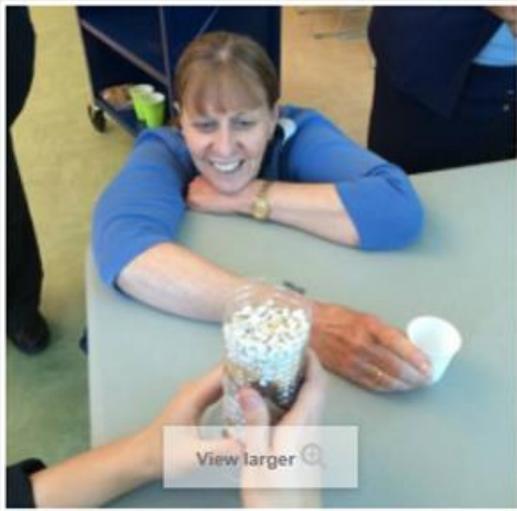
SUN BATHERS = Paper & plastic &
popped balloons

FACTORIES = Vinegar

PORT = Vegetable oil (mix vegetable
oil with powdered black tempura
paint)

Low-Tech Water Filter for High-impact Clean

Home > Activities > Earth Science > Low-Tech Water Filter for High-Impact Clean



View larger

Low-Tech Water Filter for High-Impact Clean

Participants consider the water features they might enjoy at a community park — a pond, brook, water playground (or “sprayground”), or pool, — and what happens to the water over time.

[Open Activity](#)

Report broken link

[How-to Video](#)

[Implementation Guide](#)

[Teacher's Guide](#)

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Content Area

Earth Science
Engineering
Health Science

Age Group

Family
Upper Elementary
Tweens (9-12)
Teens

Time to Complete Activity

20-40 minutes

Time needed to prep Activity

20-40 minutes

Difficulty Level (by content)

Easy

Mess Level

Medium

Some people in Bangladesh use cloth to clean their water...



Credit: National
Science Foundation

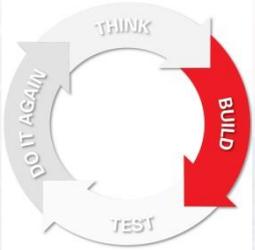
...to take out small creatures in the water
that help spread disease



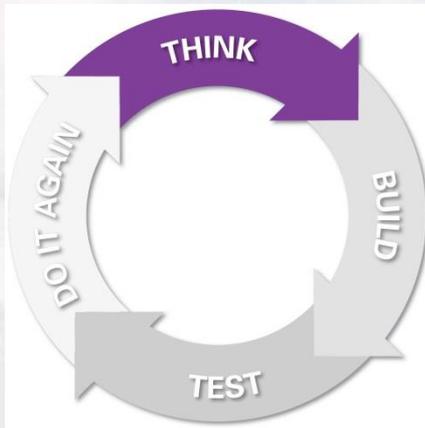
Low Tech Water Filter

• Activity:

- Use common materials to design a water filtration device to supply the park / water feature with clean water
- 15 to 30 minutes; longer for children who like to experiment
- Plastic water/soda bottles, variety of filtration materials, access to water
- Can get a little messy!
- Don't drink the water!



Low Tech Water Filter

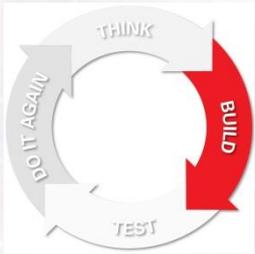


- Think:
 - What materials will work best to clean the water?
 - Which will work best for twigs and leaves?
 - Finer sediment?
 - Pesticides?

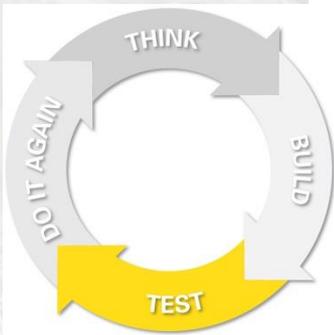
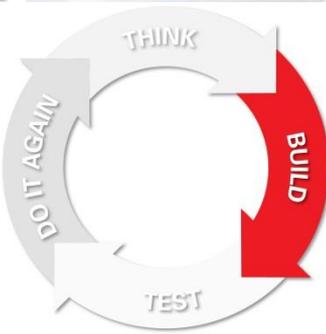
Low Tech Water Filter

• Procedure:

- Build a water filter
- Test:
 - 1 material at a time
 - What happened?
- Do It Again: Think about what you observed, test another material and repeat the process



Low Tech Water Filter



- Next, think about what *combination of materials* – in *what order* – will provide the best filter
- Build
- Test

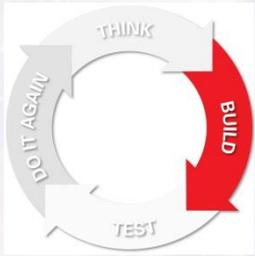
Low Tech Water Filter



- Compare!
- Which combination and in what order worked best?
- Can you get the water cleaner?
- Can you filter the water faster?
- Do It Again!

Wind Turbine Tech Challenge

Playful Building: Wind Turbine



- **Activity:**

- Use common materials to design a wind turbine to supply the park with electricity
- 15 to 30 minutes; longer for children who like to experiment
- Soda straws, Post-It note pads, play-doh, toothpicks

BUILD and TEST



1. Push the four toothpicks into the putty so that they stand upright. Keep them close together.
2. Put a small scrap of paper at the bottom of the toothpicks. This will keep the straw from sticking!



3. Stick the Post-it notes to one end of the straw. Make sure they don't cover each other!
4. Slide the straw over the toothpicks.
5. Use a second straw to gently blow across the blades.

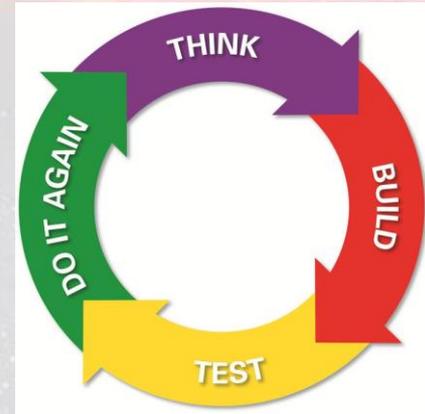
Make it even better!

DO IT AGAIN!

Modify your design — but change only one thing at a time!

THINK, BUILD, and TEST

- Which different material could you try using?
- What else can you try changing?
 - The angle of the blades?
 - The size of the blades?
 - The shape of the blades?
 - Could the blades be more curved (cupped)? Less curved?





Discussion

Which one of these activities are you most likely to facilitate in your library?

Thank you!

STAR_Net

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