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.

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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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Upcoming Webinars

• Webinars are announced and archived at: http://www.starnetlibraries.org/resources/webinars/

• November 15\textsuperscript{th} at 1:00 p.m. (MT) – Social Media Tips from NASA

• December 13\textsuperscript{th} at 1:00 p.m. (MT) – STEM Events for Your Library’s 2018 Programming
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

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, considering doing this activity with just straws, balloons and toy cars before making this a “Maker” activity.

Content Area
Astronomy and Space
Engineering

Age Group
Early Elementary
Upper Elementary
Tweens (0-12)
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

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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

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.

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

Mass Level
Medium

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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

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

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!

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