

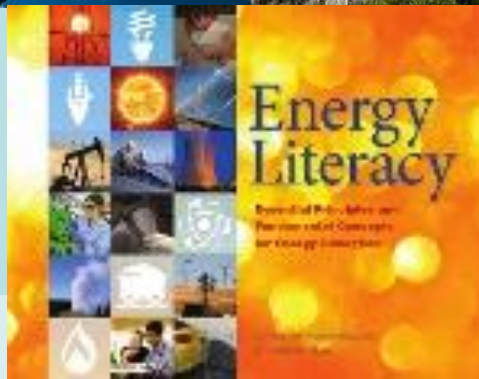
# Energy Is Everywhere!

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



*Webinar Series sponsored by  
Housing and Urban Development,  
Department of Energy, and  
Department of Education*

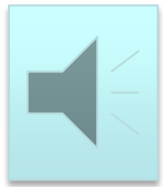


Successful Family Engagement  
7.16.2015

# WEBINAR # 9

## SUCCESSFUL FAMILY ENGAGEMENT

- Welcome and Intro to Webinar Series (HUD)
- Conversation with Pittsburgh's Carnegie Science Center
- Conversation with Albuquerque's !Explora! Science Center
- Q & A



***You are on mute! Use your webinar bar to fill out poll or chat to send in a question.***

Email [energyliteracy@ee.doe.gov](mailto:energyliteracy@ee.doe.gov) about the  
Energy is Everywhere Webinar Series

# Welcome

- *Why are we talking with members of the **Association of Science & Technology Centers?***

## 1. Resources and Programs to share

- ✓ Located across the country and internationally
- ✓ ASTC members include:
  - ✓ Science centers
  - ✓ Museums
  - ✓ Zoos
  - ✓ Aquariums
  - ✓ Planetariums
  - ✓ Botanical Gardens
  - ✓ Children's Museums
  - ✓ And More!
- ✓ Great Resources for Public Housing and Low-Income residents:
  - Mission is to serve the public
  - Resources and programs to engage

# Welcome

## 2. Ties into Science, Technology, Engineering, & Math (STEM)

- Report by the President's Council of Advisors on Science and Technology (PCAST) estimates there will be **one million fewer** STEM graduates **over the next decade** than U.S. industries need.
- The **demand** for professionals in STEM fields is projected to **outpace the supply** of trained workers and professionals.
- **STEM competencies** are increasingly required for workers both within and outside specific STEM occupations.
- *“Progress on STEM is critical to building a just and inclusive society: STEM participation and achievement statistics are ‘especially disturbing’ for women and minorities, who are substantially underrepresented in STEM fields.”*

# Welcome

## 3. Early Childhood Education

- Families are a young child's most important first teachers, but engaging busy families in meaningful interactive learning can be a challenge.
- Discuss best practices for successful family science engagement, including strategies developed by both museums to reach a diverse audience of families.





# **CARNEGIE SCIENCE CENTER**

*One of the four Carnegie Museums of Pittsburgh*

Wendy Brenneman  
Early Childhood  
Coordinator





- Carnegie Science Center delights, educates, and inspires through interactive experiences in science and technology.



- Science on the Road—outreach arm of Carnegie Science Center, traveling across PA, OH, WV, MD and beyond.

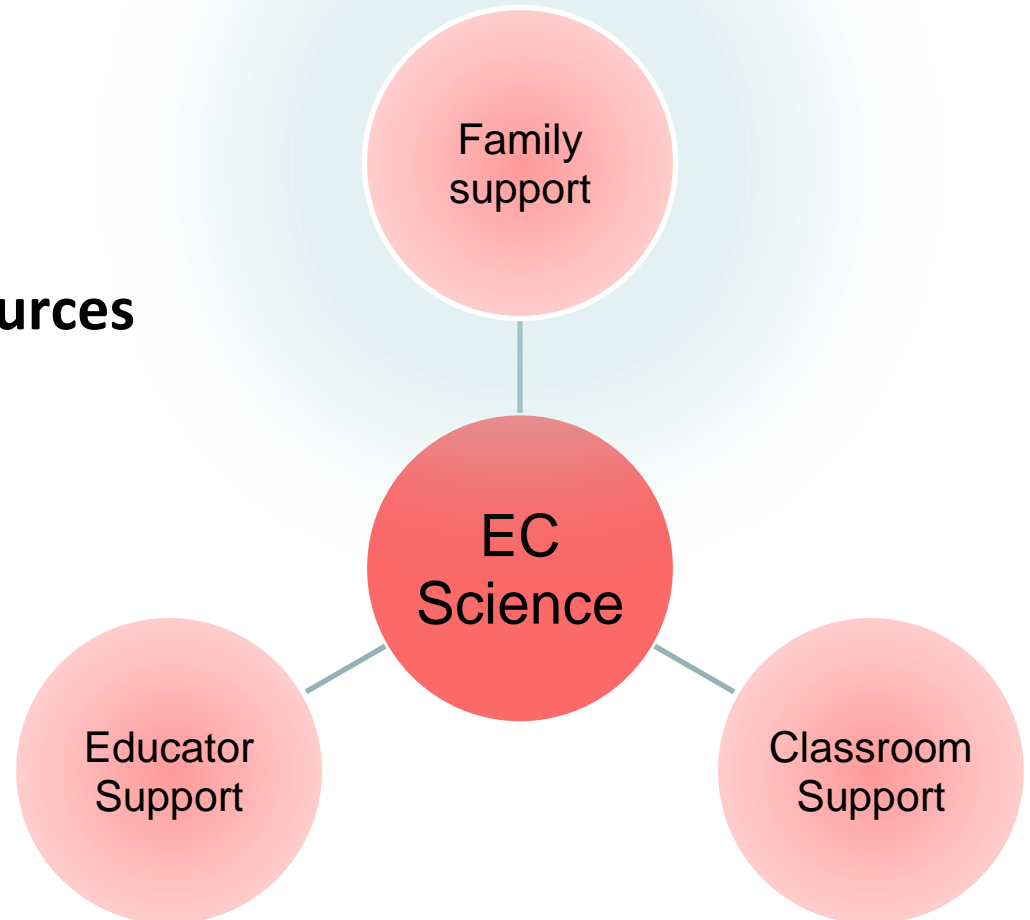
- EC STEM Project Model
- Project participants
- Project evaluation and feedback
- Family support activities
- Best practices for family engagement in STEM
- Online Resources





# ***Early Childhood Project Model***

- Classroom support
- Educator support
- **Family support**
  - **Family events**
  - **Classroom-home resources**



# *Project Participants*

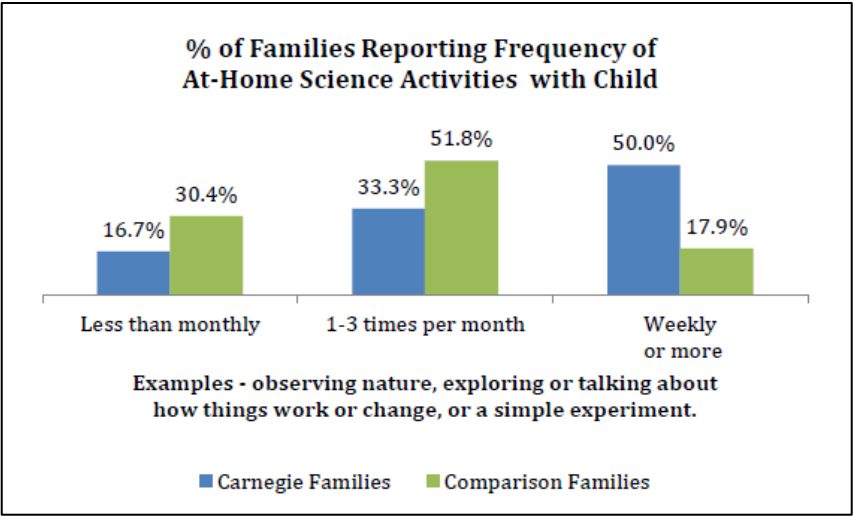
- Since 2007, 150+ Head Start classrooms
  - 1200 Universal Pre-K classrooms in WV



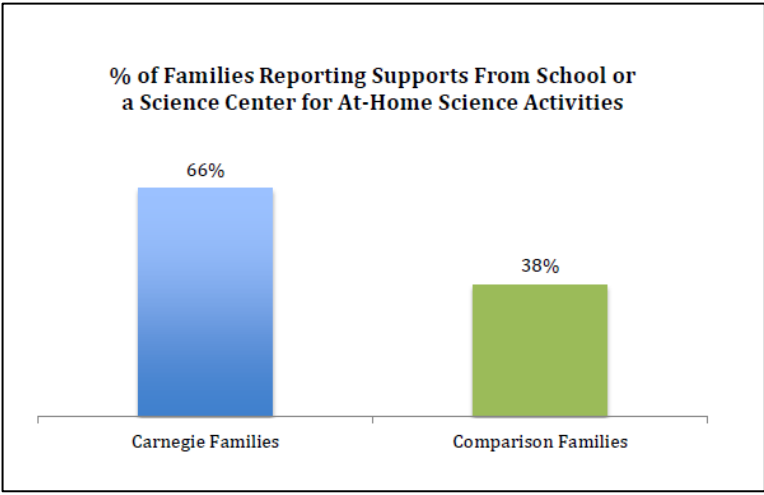
- <https://www.youtube.com/user/carnegiescience>

# Evaluation

In the third project year, 50% of Grow up Great with Science families reported doing a recent science experiment with their children, as opposed to 18% of comparison families.



In the third year, 66% of intervention families reported receiving science support, while 38% of comparison families received support.





# Feedback

3. Would you recommend this activity to other families with early childhood students?

Not at all    1                      2                      3                      4                      5    Definitely

Comments: Really didn't know they liked so many things that was science. Really explored their minds on this subject.

“Really didn’t know they liked so many things that was science. Really explored their minds on this subject.”

# *Family Support*

- Family science events
  - Hands-on
  - Cooperative
  - 8 activity stations







# Family Support

- Classroom-home resources
  - Activity sheets, aligned to classroom science
  - Send-home backpacks



## Night Worker

### Talk about it!

*The Night Worker* is about an engineer who works on a construction site at night. Here are some things you can talk about as you read.

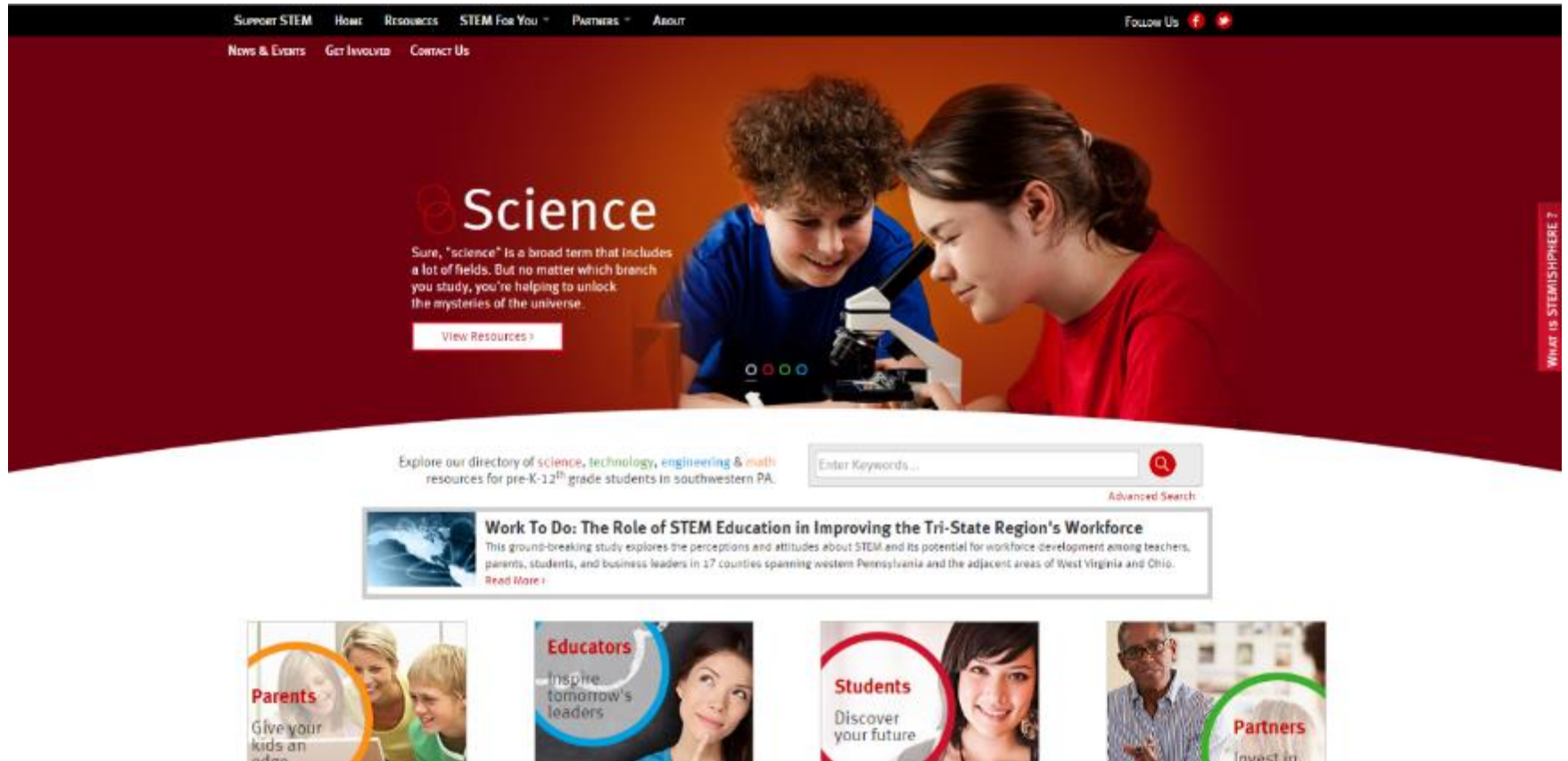
- 1) The first page of this book says, "Then he puts on his hard hat. He is an engineer. And he is a night worker." What job do you think an engineer does? Why do you think he needs to wear a hard hat?
- 2) Another page says "Alex hears the rattle and clang of heavy machinery." What do you think the construction machines in the picture can do?
- 3) One page says "Papa and Alex switch on their flashlights." Why do you think they need to use flashlights on the construction site? Can you find any other lights shining in the book?
- 4) Why do you think all the motion on the construction site stops when the workers take a break? Can the machines do their jobs without workers to run them?



# ***Best Practices***

- NSTA position statement on early childhood science education
  - <http://www.nsta.org/about/positions/earlychildhood.aspx>
- NSTA position statement on learning science in informal environments
  - <http://www.nsta.org/about/positions/informal.aspx>
- NSTA position statement on parent involvement in science learning
  - <http://www.nsta.org/about/positions/parents.aspx>
- Carnegie Science Center family engagement documents
  - <https://sites.google.com/site/cscechud/>

# Online Resources



The screenshot shows the Carnegie Science Center website. The top navigation bar includes links for Support STEM, Home, Resources, STEM For You, Partners, and About. Below this is a secondary bar with News & Events, Get Involved, and Contact Us. The main banner features a large image of two children looking through a microscope, with the word "Science" in large text. A quote reads: "Sure, 'science' is a broad term that includes a lot of fields. But no matter which branch you study, you're helping to unlock the mysteries of the universe." Below the quote is a "View Resources" button. To the right of the banner is a vertical sidebar with the text "WHAT IS STEMISPHERE?". Below the banner is a search bar with the placeholder text "Enter Keywords..." and a magnifying glass icon. Below the search bar is a link to "Advanced Search". Below the search bar is a featured article titled "Work To Do: The Role of STEM Education in Improving the Tri-State Region's Workforce". The article text states: "This ground-breaking study explores the perceptions and attitudes about STEM and its potential for workforce development among teachers, parents, students, and business leaders in 17 counties spanning western Pennsylvania and the adjacent areas of West Virginia and Ohio." Below the article text is a "Read More" link. Below the article are four circular icons representing different target audiences: Parents (Give your kids an advantage), Educators (Inspire tomorrow's leaders), Students (Discover your future), and Partners (Invest in...).

- Free regional and web-based STEM resources for students, families, and educators
  - <http://stemisphere.carnegiesciencecenter.org/>

# Thank You,



**CARNEGIE SCIENCE CENTER**  
*One of the four Carnegie Museums of Pittsburgh*

Wendy Brenneman

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# Explora

*Albuquerque, NM*

TARA HENDERSON: EDUCATION SERVICES  
MANAGER



# Growing a Scientist



**iexplora!**

Ideas You Can Touch  
Ideas que puedes tocar

Fall in love with science,  
with your child!

In *Growing a Scientist*, a semester or series based program, preschoolers ages 2 $\frac{1}{2}$  to 5 and their adults make discoveries about science by questioning, experiencing, and investigating. Experienced educators engage children and their adults in science activities that incorporate art literature and fun!





# Growing a Scientist programs occur: At the Museum and in the Community

- Individual registration as part of Explora's family programs
- In partnership with Even Start centers in their classrooms as part of parent-education classes
- At local early childhood centers serving low-income and at risk families with preschool aged children





Repeat exposure and experience:  
The key to building the comfort and  
expertise of the students and their  
parents in exploring science.



**iexplora!**

Ideas You Can Touch  
Ideas que puedes tocar



# ***Feedback from teachers:***



**explora!**

Ideas You Can Touch  
Ideas que puedes tocar

- One family said that the Explora classes taught their son science concepts in a way that he (and they as parents) could understand. The hands-on exploration was engaging for both the students and parents. They learned as parents how to ask questions to their preschooler to extend and promote learning.
  - » Beth – EvenStart teacher
- The Explora class is good for teachers because it helps us be more creative in our classrooms. It also helps parents by giving them ideas about how to interact and develop activities with their children at home.”
  - » Lilian – teacher at center working with families experiencing homelessness

## ***Also a learning experience for parents:***



- Families have said that it helped them with their GED/High School Equivalency class because they could visualize the concepts they were learning in their adult class.
  - » Beth – EvenStart Teacher
- “I’ll have to send his other grandma out of town more often. I think I learned more than he did.”
  - » Gayle – Grandma who has been bringing her grandkids to Growing a Scientist for the past 12 years

# ***Science is not boring after all:***



- “The excitement shared between children and families was infectious. Parents got an understanding that science is part of everyday life. You don’t need a laboratory or Bunsen burner to learn about science!”
- “ I have now discovered that science is everywhere and everything, as a child I thought of it as only a school subject, limited.”
- “I thought they [math and science] were education and boring subjects but just discovered its really fun and interesting.”

» Quotes from surveys completed by parents/teachers

# Building relationships between Explora educators and the families



- “Explora’s Growing a Scientist Program transforms complex scientific concepts into hands-on experiences that children and families enjoy together. Toni and Tom, the education coordinators, are the best!”
  - » Tim— teacher at nonprofit childcare facility working with low income and at-risk families.
- One parent commented that through the Growing a Scientist program and working with Ms. Toni she has learned how to become a better parent.

# Learning Extends beyond the hour and a half of the facilitated program



- “The kids really enjoyed the projects presented, especially the magnetic rocket ship. The students took it upon themselves to experiment with magnets in the classroom for a full three weeks after the project.”
  - » Allison - teacher at nonprofit childcare facility working with low income and at-risk families.
- “The activities were fun, engaging and developmentally appropriate. My child had fun and so did we as parents. It helped us discover learning at home. We started asking open-ended questions with Mason and discovered new things together.”
  - » Jamie – mom to Mason, aged five



# Family Membership to Explora

included as part of the outreach  
Growing a Scientist Programs



***I currently have a parent in the program and since he has received his free membership, he has been able to take his family to Explora often and very grateful for the unlimited pass. During the weekend/Summer, some of our families have to be out the shelter during the day so options are limited as to where they can go with their children and Explora has been an access for them to be together and do something fun. Having this free, unlimited pass helps many of our families during a difficult time in their life.***

***Ortencia - Family Case Manager at a center serving families experiencing homelessness***

# Questions and Contact Us

Email [energyliteracy@ee.doe.gov](mailto:energyliteracy@ee.doe.gov) about the  
Energy is Everywhere Webinar Series

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***THANK YOU!***