

Science-Technology Activities & Resources For Libraries

PI: Paul B. Dusenbery (National Center for Interactive learning at Space Science Institue)

### **Project Overview**

In 2010, there were 1.6 billion visits to the nearly 17,000 libraries in the U.S. Libraries serve people of all races, ages, and socio-economic backgrounds. 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.

STAR Library Education Network (STAR\_Net) is a national program led by the Space Science Institute's National Center for Interactive Learning (NCIL). STAR stands for Science-Technology Activities and Resources (www.starnetlibraries.org). Core partners include the American Library Association, Lunar and Planetary Institute, and the National Girls Collaborative Project. Other partners include the National Academy of Engineering, Engineers Without Borders-USA, IEEE-USA, the National Renewable Energy Lab, American Geophysical Union, Geological Society of America, and many more.

This NSF-funded project (# 1010844) developed two interactive traveling exhibits hosted by 19 libraries (Discover Earth: A Century of Change and Discover Tech: Engineers Make a World of Difference), active learning resources, online and in-person workshops, and an online community of librarians and STEM professionals (currently, about 550 members). Through 2013, 412,000 patrons visited the exhibits and an additional 35,000 participants attended hundreds of programs offered by host libraries and their community partners.





#### **Evaluation Results**

Design and fabricate Discover Earth and Discover Tech exhibits

The summative evaluation (Evaluation & Research Associates) utilized mixed methods to investigate project implementation and its outcomes. Methods included pre- and post-exhibit surveys administered to staff from each library that hosted the exhibits and site visits to five Discover Earth and Discover Tech libraries, during which patrons and library staff were observed and interviewed.

Key findings from the evaluation (ERA, 2013) included the following:

- 1) STAR\_Net professional development helped Discover Earth and Discover Tech librarians host the exhibits and deliver informal science education programming;
- 2) The redesigned STAR\_Net CoP website has increased reach, but has not yet reached its potential;
- 3) All of the libraries implemented informal science activities while they hosted the Discover Earth or Discover Tech exhibit, and at least two thirds of the libraries reported that they had offered additional STEM programming after the exhibit had left their libraries;
- 4) STAR\_Net succeeded in reaching the targeted library participants and audiences at the host libraries; and
- 5) Many library patrons at the host libraries became more interested, knowledgeable, and engaged in the STEM topics presented in the exhibits and related programming.

# Deliverables

**Target Audiences** 

3) STEM Organizations & Educators

**Project Goals** 

1) Increase youth and adult patrons' interest, knowledge, and

Increase STEM program participation at libraries in

underrepresented in STEM, especially those in rural

3) Build the capacity of libraries and library staff nationwide to

4) Assess informal, free-choice learning in a library setting and

disseminate results to educators and STEM professionals.

deliver inspirational and effective STEM learning experiences

communities with populations underserved and

1) Public Libraries & Staff

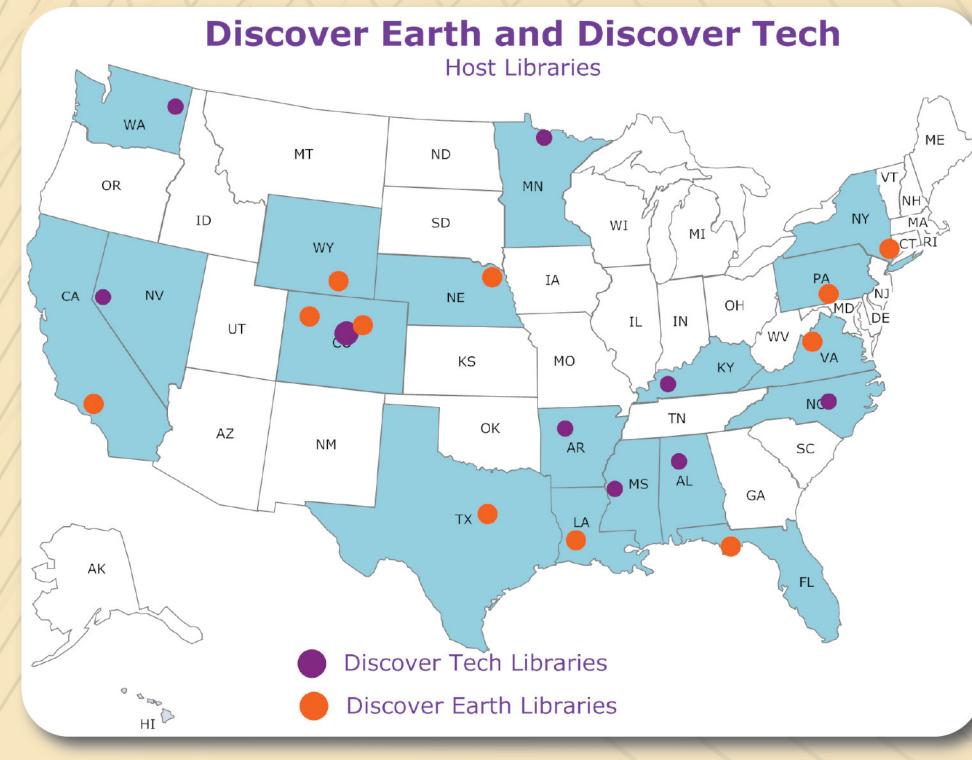
2) Patrons

engagement in STEM topics;

for their communities; and

communities;

- Design, fabricate and tour 2 STEM-based, interactive exhibits (Discover Earth and Discover Tech).
- Develop inquiry-based activities and resources (for host and non-host libraries) in collaboration with professional STEM organizations.
- Develop and implement a library staff training program (online and in-person).
- Create a CoP (Community of Practice) that includes project team members, librarians, and professionals in relevant STEM disciplines.
- Design a project website.
- Conduct education research and evaluation and disseminate results to the ISE and library community.



This map shows the location of the Discover Earth and Discover Tech libraries. The exhibit tours were managed by ALA. Each host library had one of the exhibits for 2 months.

## **Web Resources**

www.starnetlibraries.org (Project Website) www.community.starnetlibraries.org (Online Community Site) www.nc4il.org/papers.html (Papers & Reports)



## Research Findings

As part of the STAR\_Net project, Baek (2013a; 2013b) examined two research questions: 1) How do libraries support the development of STEM learning? and 2) How has the introduction of STEM learning opportunities changed the professional identities of librarians and what barriers and challenges do they face in implementing an effective STEM program within their

Baek (2013a) developed a foundational research model for exploring STEM learning in libraries that used the set of informal science learning characteristics identified by Bell et al. (2009) as well as the concept of a *Third Place* (Oldenburg, 1999). The first place is home. The second place is the workplace (for adults) and school (for students). Baek observed that "By creating an environment that welcomes newcomers to the community, libraries can become an on-ramp to STEM learning".

With the introduction of STEM into the library's traditional programming, librarians need to evaluate the change in duties that may include taking on the role of a STEM educator (Baek, 2013b). This includes implications for the broader field that provides the professional training for librarians.







