

STEM Explorations for Elementary Children and Their Parents

***National Science Teachers Association
STEM Forum & Expo
Atlantic City, New Jersey, May 18, 2012***

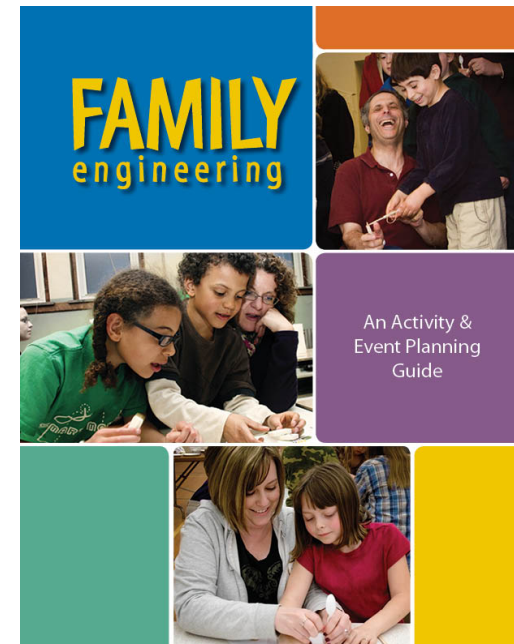
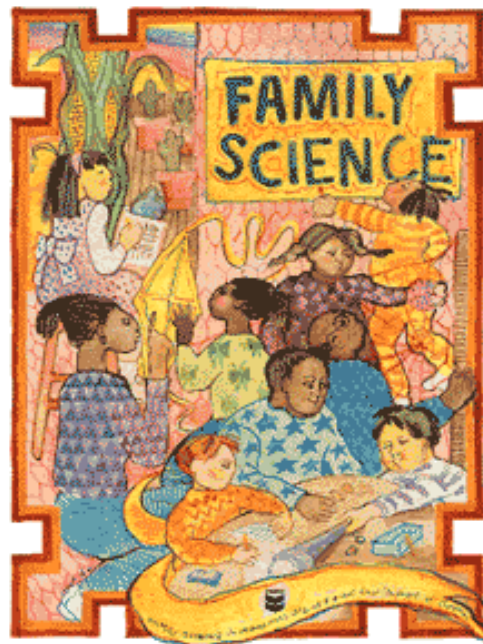
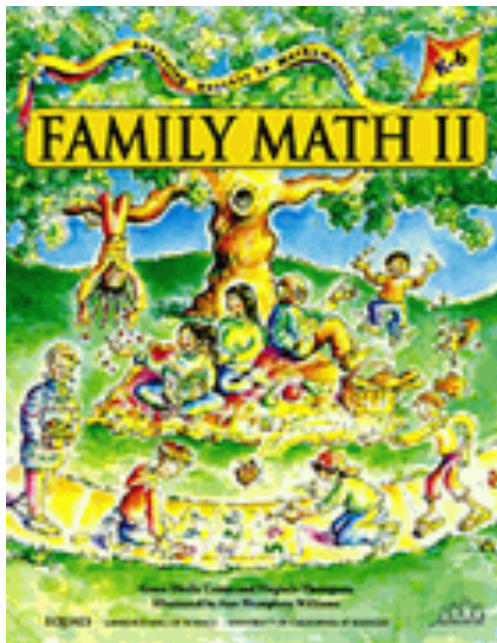
David Heil

President, David Heil & Associates, Inc.
Founding President, Foundation for Family Science & Engineering

Mia Jackson

Associate, David Heil & Associates, Inc.

Resources for Family STEM Learning



Family Science & Family Engineering

Informal education programs that actively engage elementary-aged children and their families in fun, hands-on science and engineering activities and events.

- Fun and engaging
- Families learning together
- Simple materials
- Easy to facilitate
- Suitable for a variety of settings



- Accessible for diverse audiences
- Explore science and engineering concepts and careers
- Promotes 21st Century skills of inquiry, creativity, teamwork, and collaborative problem solving

Family Engineering Program Development Partners And Funders



**Foundation for
Family Science
& Engineering**

Michigan Tech

Michigan Technological University



National Science Foundation
WHERE DISCOVERIES BEGIN

Family Engineering and Family Science Program Goals

1. Engage families in science and engineering with fun, hands-on activities.
2. Increase public understanding and appreciation of the role science and engineering play in everyday life.
3. Introduce children at an early age to the many career opportunities in science and engineering.
4. Increase parents' interest in and ability to encourage their children to pursue an engineering or science career.
5. Provide age-appropriate resources to support volunteers in conducting informal education programs with elementary-aged children and their parents.

The evidence is consistent,
positive, and convincing:
**families have a major influence on
their children's achievement in
school and through life.**



*A New Wave of Evidence: The Impact of School,
Family, and Community Connections on
Student Achievement*
Henderson and Mapp, 2002

Family Science and Family Engineering Support Next Generation Science Standards

Science and Engineering Practices:

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

*A Framework for K-12 Science Education
National Research Council, 2012*

What Does a Family Science and Engineering Event Look Like?



Self Directed Openers



Facilitated Engineering Challenges



Who Can Organize a Family Science or Family Engineering Event?

- K-5 classroom teachers and administrators
- Parent teacher organizations (PTA)
- Professional scientists & engineers
- College science and engineering (STEM) students
- High school science or engineering clubs
- Members of professional science and engineering societies
- Informal educators at museums, community centers, scouts, etc.
- Businesses and organizations that support STEM education
- Parents



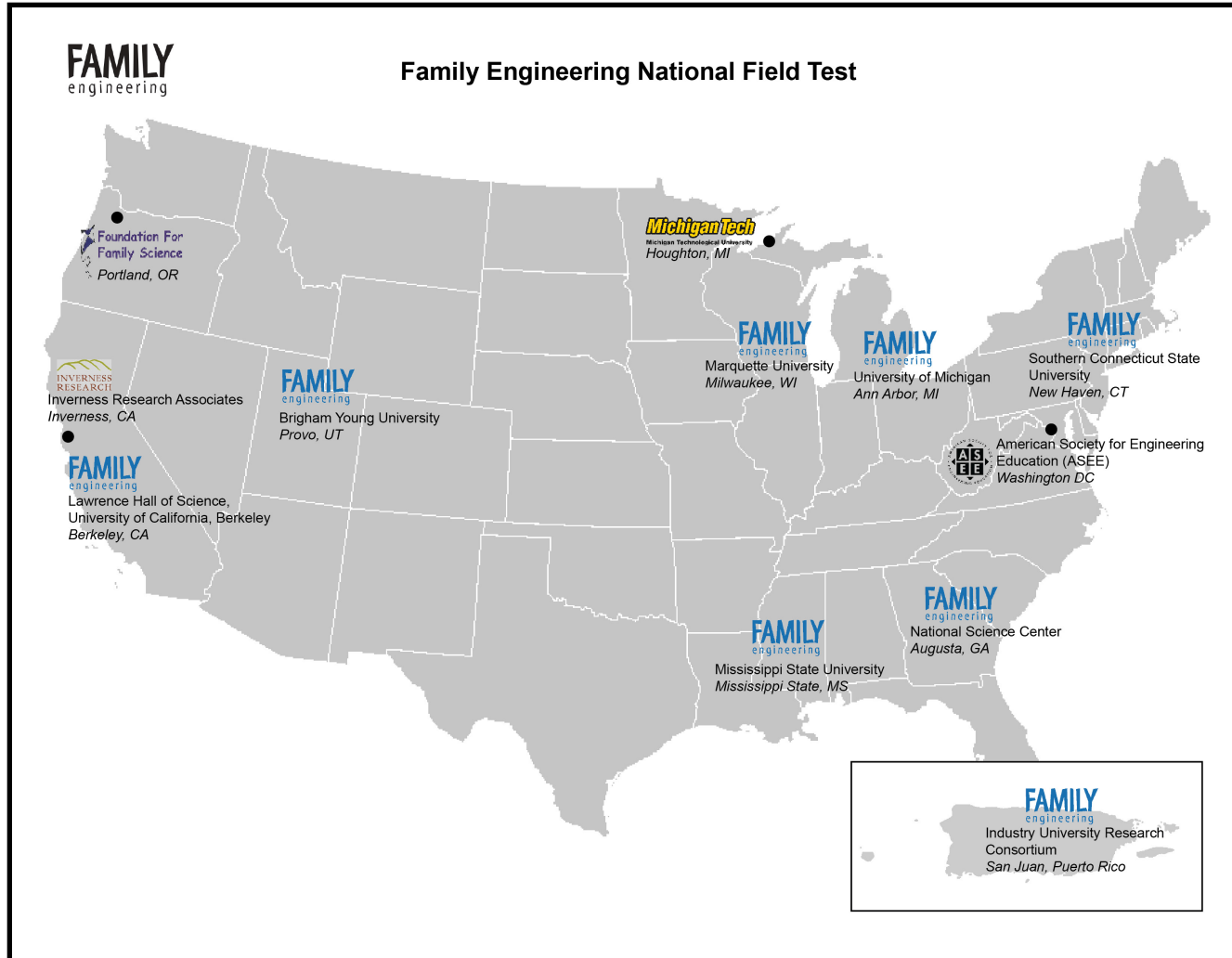
Getting Involved in Family Science and Family Engineering

- **Attend a Training Workshop**
Join the growing network of trained volunteers – contact us to set up a customized training workshop in your school district or state.



- **Host a School or Community-Based Event**
Helpful resources: *Family Engineering: An Activity & Event Planning Guide* and *Family Science*.

National Field Test Sites



Feedback on Family Engineering

➤ **Increasing Awareness and Interest**

Family Engineering events have shown significant positive impacts on families' interest in, and awareness of, what engineers do.

"It allowed my children and I to think and work together. Very informative about many roles engineering plays in our everyday lives."

Parent, Ann Arbor Trail Academy, Detroit

➤ **Effective Informal Engineering Education Resource**

"This guide would be an invaluable tool for anyone planning a family engineering event...I am rarely this unequivocal about a review. I endorse this book and applaud the passion and attention to detail that went into its creation."

-NSTA Recommends, March 2012 (Deb McNabney, Reviewer)

Family Science and Engineering Opener Signs and Activity Cards



Family Engineering Event Starter Kit





**To learn more about Family Science or Family Engineering,
contact us at:**

4614 SW Kelly Avenue, Suite 100

Portland, Oregon 97239

Telephone: (503) 245-2102

Email: info@familyengineering.org

www.familyscience.org

www.familyengineering.org