Valuable resource for providing informal engineering learning experiences to elementary age children and their families.

Developed with support from the National Science Foundation and modeled after the Family Science and Family Math programs, Family Engineering promotes 21st Century skills of inquiry, creativity, teamwork, and collaborative problem solving.
Family Engineering is:

- Families engaged in fun, hands-on activities and events
- Families learning about what engineers do and the role engineering plays in everyday life
- Families discovering the many career opportunities in engineering
Community Outreach Events

- The Family Engineering program can be used by any individual or organization to plan and conduct successful community outreach events.

- Activities and event formats are accessible and inviting to diverse audiences, easy to implement with simple, inexpensive materials, and suitable for a variety of community settings.
Tomorrow’s workforce needs to be educated in science, technology, engineering, and math (STEM) to compete in the global market and contribute to society. Current statistics show that we’re falling behind in preparing today’s students for tomorrow’s challenges.
Most people have a limited understanding of what engineers do or how engineering affects daily life, and a career in engineering is often not a top priority for parents or kids.

American society for Quality Survey, Harris Interactive, 2008
As educators, parents, and role models for kids, we all need to do a better job making engineering interesting and accessible to males AND females, regardless of ethnicity.
Research shows a significant improvement in children’s self-confidence and academic success when families are more actively engaged in their learning.
The demand for engineers is growing, but the U.S. is not producing enough graduates with an engineering degree. From 1990-2010, overall college graduation levels have grown by about 50%, but engineering degrees have flat-lined at 120,000 annually. (National Center for Education Statistics)
Job Growth (2008-18)

STEM JOBS

17%

NON STEM JOBS

9.8%

US Department of Commerce 2011
Students who express interest in STEM in 8th grade are up to three times more likely to ultimately pursue STEM degrees later in life than students who do not express such interest.

Science magazine, 2006
During national field-testing, Family Engineering events had a significantly positive impact on families’ interest in engineering and understanding about what engineers do.
Family Engineering: An Activity & Event Planning Guide
Family Engineering Kit

- Opener Signs & Activity Cards
- Program Starter Kit
- Book with Instructions
Hosting A Family Engineering Night Hints

- Utilize the guide book as a resource
- Invite an engineer to participate
- Opener Activities
- Engineering Challenge Activities
- Refreshments
Family Engineering Night

- Opener Activities
  - Stop and Think
  - Assembly Line
  - Lyndon’s Choice

- Do Group Activities
Stop And Think

- We use engineered objects everyday without giving much thought to how they were designed. In this activity, family members will “stop and think” about some familiar everyday items. Focusing on an object’s purpose, design, and materials, families will share their ideas with each other and then shift their thinking to brainstorm new and creative uses for the object. P. 134
Stop and Think Questions

1. For what purpose or use did engineers design this object?
2. What design features help make this object work? (Think about materials, shape, etc.)
3. What other uses could this object have?
How quickly can a team of workers assemble a product? Family members will reverse engineer a ballpoint pen to discover how it was designed and assembled. Then, working as a team, they will create an assembly line to optimize the process of correctly re-assembling all their ballpoint pens in the least amount of time.
Let’s Communicate

- Use your engineering book as a privacy divider to hide what you are drawing.
- Draw an object describing what you are doing and details so that a partner can re-create the same drawing on their paper.
- Communication is harder than we think! To be successful, an engineer must be able to communicate effectively with others and work well on a team. Accuracy, clarity, and shared vision allow a team’s success.
Questions or Comments
THANK YOU!

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