



# STEM FOR PARENTS

3/6 BADGE MEETING

KATHY SEIDMAN, DOW CHEMICAL COMPANY STEM AMBASSADOR

## ABOUT ME

- Mom to Keira (7<sup>th</sup> Grade) and Sophia (4<sup>th</sup> Grade)
  - Both are in the Bensalem Gifted Program
- Wife to Ross (BADGE Board member)
- Bensalem resident since 2000, originally from Middletown, MD
- BS, Chemical Engineering, Drexel University



# MY CHEMICAL ENGINEERING JOURNEY

- 19 years @ Rohm & Haas, then Dow Chemical companies
- Supported of variety of businesses and roles over this time
  - Capital Deployment for Ion Exchange Resin business and Electronic Materials (2 years)
  - Process Engineer at Philadelphia Manufacturing plant (9 years)
    - Ion Exchange Process Engineer
    - Goal Agrosiences Process Engineer
    - Utilities Engineer
    - Technical Engineer
  - HEURs Technology Specialist and Process Steward for the Coatings Business (8 years)
- STEM Ambassador since 2015

# WHAT IS STEM?

- Stands for (S)cience, (T)echnology, (E)ngineering, and (M)ath
- Can also see it written as:
- STEAM, adds an (A)rt component
- STEMM and STEAMM, adds a (M)anufacturing component

## WHY FOCUS ON STEM?

- STEM careers provide us many technologies that have become part of our day to day lives (cell phones, computers, cutting edge medicines, vaccines, energy efficiency products, etc)
- Possible worker shortage in the future. According to the US Department of Education, only 16% of high school seniors in the US are proficient in math and interested in a STEM career. Additionally, only 50% go into a STEM career after pursuing a STEM major.
- STEM careers typically have higher salaries than most. According to the US Department of Labor, the average salary of all STEM occupations is \$85,570.
- Traditionally STEM fields have been dominated by males. As more focus has been given to females in this career, especially at a younger age – this gap is closing.

Information from Technology Education: <https://www.technologyeducation.org/stem-resources/>

# WHAT IS A DOW STEM AMBASSADOR?



<https://corporate.dow.com/en-us/about/global-citizenship/workforce/stem-ambassadors>

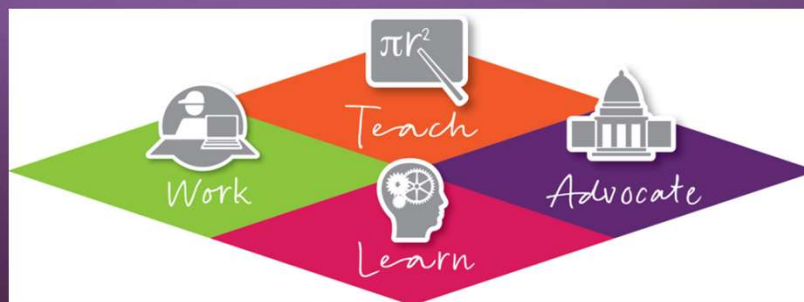
# DOW STEM AMBASSADORS MISSION STATEMENT

*Science • Technology • Engineering • Mathematics*



- **To Build the Workforce of Tomorrow** by empowering teachers, motivating student achievement, developing careers, and collaborating with communities, to transform STEM education into a driver for innovation, manufacturing and economic prosperity.

*Join the STEM movement – help build the workforce of tomorrow*



# DOW STEM EDUCATION PILLARS



## TEACH

### Empowering Teachers

Empowering teachers through:

- Teacher professional development
- Project-based learning
- Hands-on experiments



## LEARN

### Motivating Student Achievement

Motivating student achievement through:

- Project-based learning
- Hands on experiments
- STEM Careers Exploration
- Science Curriculum support
- Community STEM events



## WORK

### Developing STEM Careers

Developing STEM careers by:

- Creating university partnerships and recruitment programs (Aid to Education)
- Funding research and development at universities
- Developing curriculum and training in partnership with community colleges and non-profits
- Providing internships and co-ops



## ADVOCATE

### Collaborating with Communities

Collaborating with communities to:

- Act as a convener to drive the STEM movement
- Assess STEM needs in local communities
- Advocate for improvements to education

## Dow STEM Ambassadors



### Classroom Engagement

- Career Talks
- Hands on Experiments
- Project Based Learning

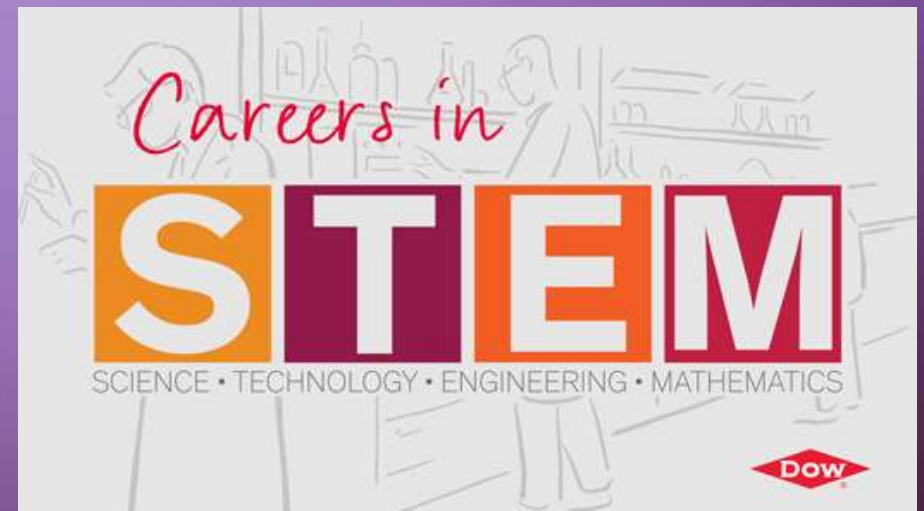


### After School Activities



# “TRADITIONAL” STEM CAREERS EXAMPLES

- Engineering
- Scientist/Researcher
- Doctor/Nurse
- Teacher
- Programmer/Software designer
- Robotics
- Manufacturing
- Electrician, Machinist, Welder, Pipefitter

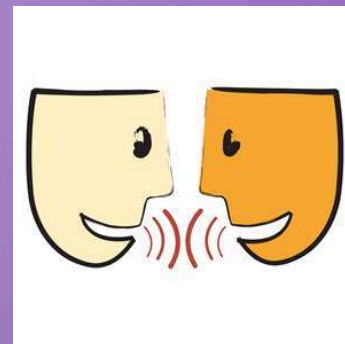


# “NON-TRADITIONAL” STEM CAREERS EXAMPLES

- Artist/Illustrator for Technical books/magazines/advertisements
- Museum Curator (Develops and fixes exhibits)
- Writer/Editor/Blogger
- Translator/Interpreter
- Law Careers – Environmental Lawyer, Patent attorney/examiner
- Business Careers - Marketing/Communications/Sales
- Arts Careers - Movie/Television Consultant (Sci-Fi, Science movies, documentaries), Special FX designer, Science related photographer

# STEM SKILLS I USE EVERYDAY

- Communication – written and oral

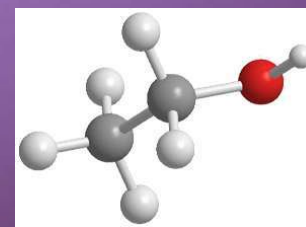


- Teamwork



- MATH!!!!

$$\frac{GM_e M_s}{r^2} = M_s \omega^2 r$$



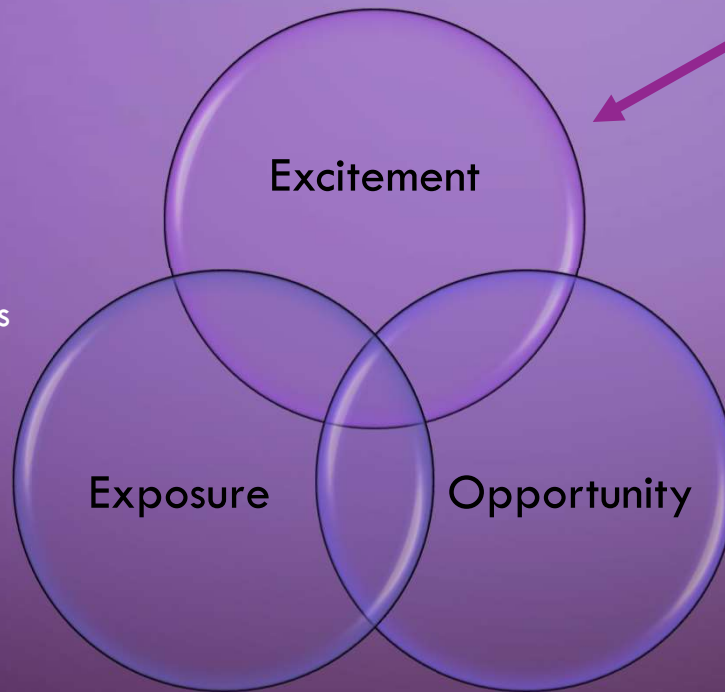
- Organic and Polymer Chemistry knowledge

- Critical Thinking/Problem Solving



# CRITICAL FACETS FOR ENGAGEMENT IN STEM – A PARENT’S PERSPECTIVE

- Participate in hands-on Science experiments
- Talking to STEM professionals
- Talking to STEM teachers



Share your excitement and support for STEM.

- Encouraging your children to participate in
  - School's science fairs
  - Ask about science/math assignments
  - Perform fun experiments at home
- Spark their curiosity of the world around them

Take your children to community STEM events, many are free and local

- Bensalem Library has multiple events throughout the year
- Franklin Institute Science Carnival
- Local Universities

# TIPS FOR SCIENCE ACTIVITIES AT HOME

- Think safety!
  - Safety glasses, goggles, gloves
- Closely supervise your children
- Review the activity in its entirety before starting it – understand what you are doing and the risks
- Prepare the area for the activity and for clean-up
- **REMEMBER TO HAVE FUN!!!!!!**

# RESOURCES

- Dow's STEM Ambassadors – STEM career information, experiments
  - <https://corporate.dow.com/en-us/about/global-citizenship/workforce/stem-ambassadors>

## Google Search for STEM Activities

- Technology Education – a collection of STEM related links/information for all grades
  - <https://www.technologyeducation.org/stem-resources/>
- Science NetLinks (AAAS - American Association for the Advancement of Science) – Searchable lessons for K-12
  - <http://sciencenetlinks.com/lessons/>
- Science Buddies – STEM activities for kids
  - <https://www.sciencebuddies.org/stem-activities>

# UPCOMING FREE STEM EVENTS

- Unplugged Coding
  - March 13<sup>th</sup>, Bensalem Library
- STEM Career Fair
  - March 28<sup>th</sup>, Grundy Library, Bristol
- FIRST Robotics District Event
  - March 29<sup>th</sup> – 31<sup>st</sup>, Bensalem High School
- Philadelphia Science Festival
  - May 4<sup>th</sup>, Science Carnival, Benjamin Franklin Parkway
- Girls who Code
  - Tuesdays thru May 28<sup>th</sup>, Centertec, Oxford Valley Mall