



STEM FOR PARENTS

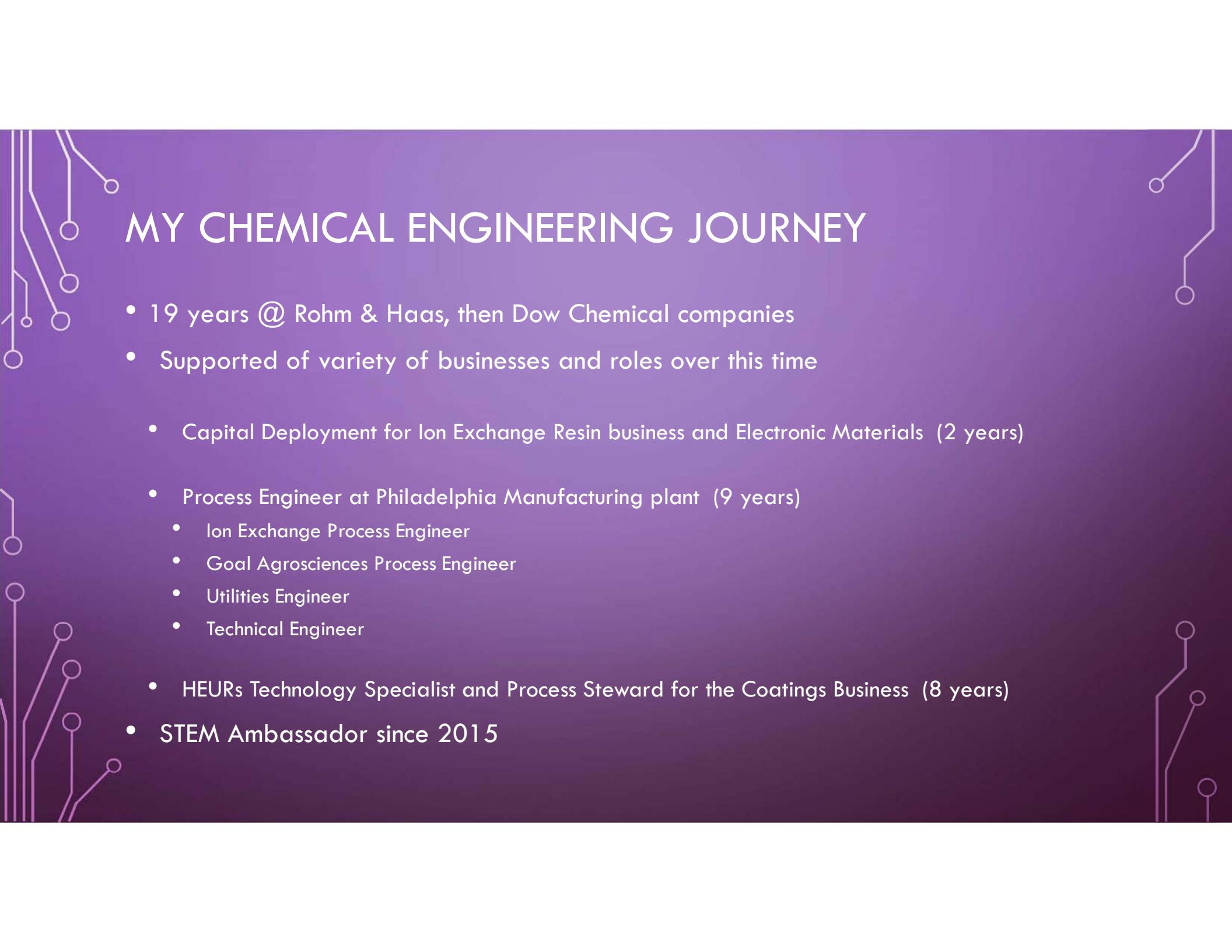
3/6 BADGE MEETING

KATHY SEIDMAN, DOW CHEMICAL COMPANY STEM AMBASSADOR

ABOUT ME

- Mom to Keira (7th Grade) and Sophia (4th 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 a 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 Agrosciences 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
- STEM and STEAM, 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>

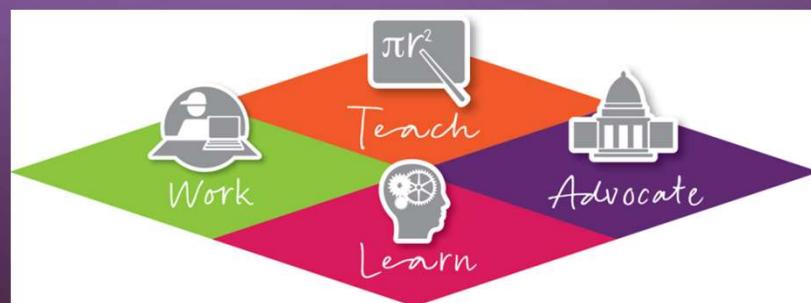
DOW STEM AMBASSADORS MISSION STATEMENT

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

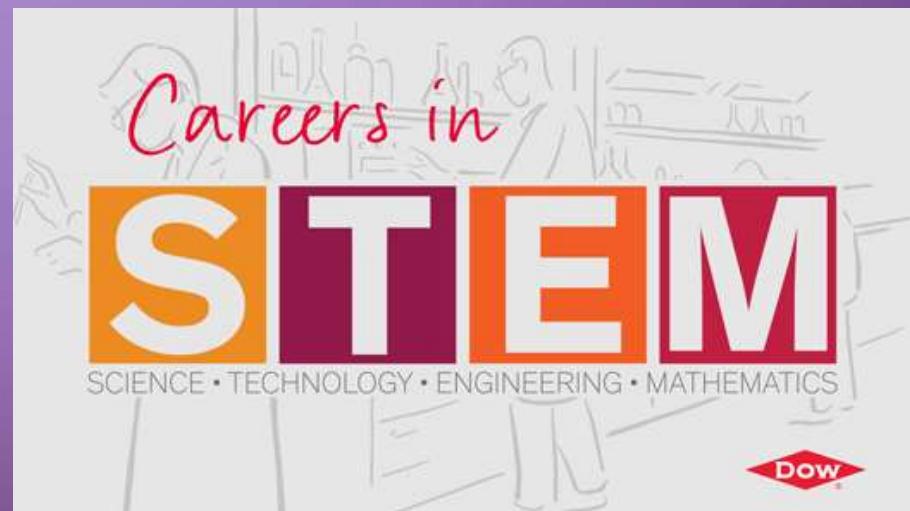
- Career Talks
- Hands on Experiments
- Project Based Learning



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

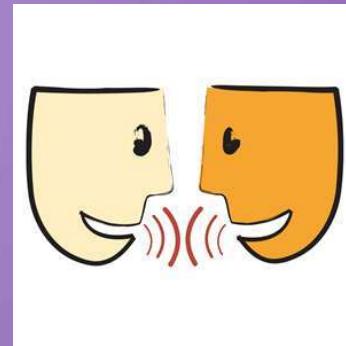
- Artist/Illustrator for Technical books/magazines/advertisements
- Museum Curator (Develops and fixes exhibits)
- Writer/Editor/Blogger
- Translator/Interpreter
- Law Careers – Environmental Lawyer, Patent attorney/examiner
- Business Careers - Marketing/Communications/Sales
- Arts Careers - Movie/Television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

STEM SKILLS I USE EVERYDAY

- Communication – written and oral

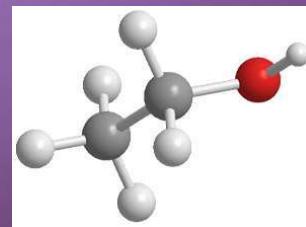


- Teamwork



- MATH!!!

$$\frac{G M_e M_s}{r^2} = M_s \omega^2 r$$



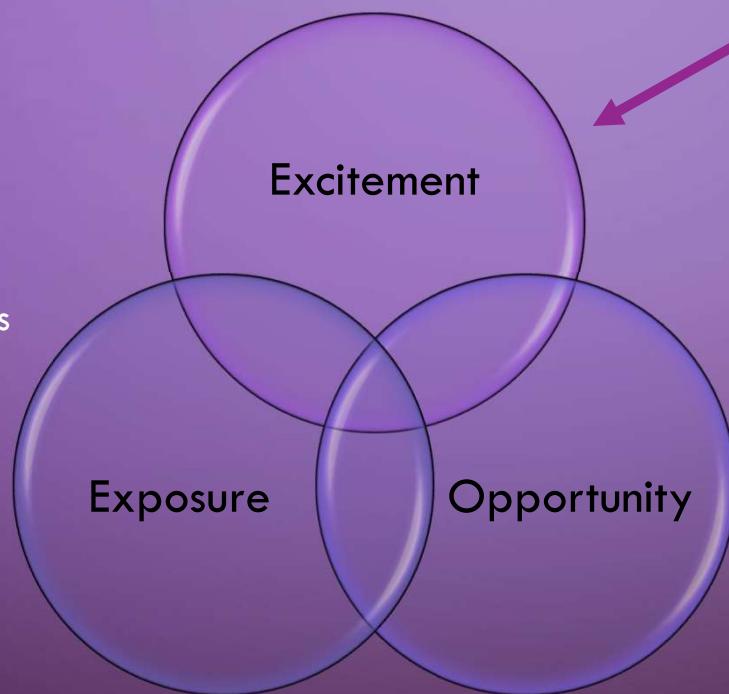
- Organic and Polymer Chemistry knowledge

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