Society of Women Engineers
Aspire / Advance / Achieve

Celebrate SWE Outreach!

A Year in Review: 2019-2020

Letter from the Editor

Welcome to the very first issue of *Celebrate SWE Outreach! A Year in Review 2019-2020*. Everyday our members are working to fulfill the mission of the Society of Women Engineers. Our mission inspires us to:

"Empower women to achieve full potential in careers as engineers and leaders, expand the image of the engineering and technology professions as a positive force in improving the quality of life, and demonstrate the value of diversity and inclusion."

There is no better way to achieve this goal than through outreach! We know that every section has been engaging, inspiring, and enriching the minds of future STEM leaders. The life of a volunteer is fulfilling, but it does not come without effort. Countless hours of planning have been put in by our members to execute events and connect with students. This publication will give us a chance each year to celebrate those who have used their influence to inspire others through outreach. It is the work of SWE volunteers all around the world that allows the legacy of our organization to continue.

While putting together this publication, we were continuously impressed with the innovative activity ideas and the wonderful volunteers that allowed so many events to take place. It is our honor to showcase some of those efforts.

In this issue we will be looking at the state of SWE outreach for the FY19 and FY20 years. Take a look at the stats from the Outreach Metric Tool (OMT) and read the articles highlighting successful outreach events held by various sections, affiliate groups, and Members at Large. Our highlighted groups provided us with tips and best practices that can be found throughout the publication. To be in the running for next year's highlights, don't forget to keep summitting your events to the OMT. At the end of this document is a page of helpful resources that we hope you take advantage of.

From our partners that help us throughout the year to the conference award winners, we are so proud of everything that SWE has accomplished. We would like you to take this time to reflect on the year's successes and to be continuously inspired by each other.

Enjoy the first issue of *Celebrate SWE Outreach! A Year in Review 2019-2020*.

Elizabeth Gjini

Elizabeth Gjini

SWE Outreach Committee

Celebrate SWE Outreach! Publication Lead

Society of Women Engineers

Table of Contents

Committee Leadership

SWE's Outreach Committee is focused on providing resources, training and programs to support SWE Members and Adult Advocates who are performing outreach. The committee is responsible for tracking key outreach metrics, training SWE Members on how to effectively deliver outreach in the community, developing effective ways for SWE members and sections to share outreach best practices, and ensuring that students are protected when SWE members conduct outreach. The committee has four main work groups dedicated to supporting parents, educators, SWE members, counselors, etc.

Workgroups

Resources Workgroup

Publications Workgroup

Training and Certification Workgroup

Research and Development Workgroup

If you are interested in learning more about the outreach committee or becoming a volunteer, contact Katelyn Lichte outreach-chair@swe.org

Sadaf Qazi

FY20 Outreach Chair

Katelyn Lichte

FY20 Interim Outreach Chair

FY21 Outreach Chair

Haley Antoine

FY21 Outreach Chair-Elect

Training and Certification Workgroup

The Training and Certification Workgroup is responsible for creating training for SWE Members and Adult Advocates. Their focus is making sure that the needs of our members are being met and that they have the necessary training to confidently perform outreach.

Focus Areas

Introducing Girls to Engineering Topics

Working with Underserved Youth

Event Planning and Implementation

Role Models Matter

Katelyn Lichte

Training and Certification Lead

Samantha Balistreri

Working with Underserved Youth

Winifred Ereyi

Introducing Engineering Concepts

Lori Kahn

Role Models Matter

Kalie Lazarou

Event Planning & Implementation

Joyce Liu

Event Planning & Implementation

Megan McDevitt

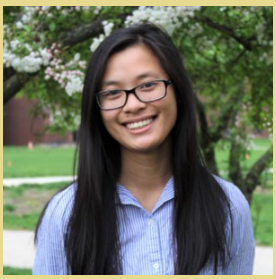
Event Planning & Implementation

Anahita Moghtader

Introducing Engineering Concepts

Anne Ryerson

Working with Underserved Youth



Melissa Tu

Introducing Engineering Concepts

Publications Committee Workgroup

The Publications Workgroup creates and distributes digital publications to educators and youth advocates. They publish newsletters highlighting resources for educators and for SWE Members doing outreach as well as compile an annual outreach year-in-review publication intended to celebrate the outreach performed by SWE Members.

Focus Areas

K-12 Educator Publications

Youth Advocacy Publications

Publication Distribution and Communications

Annual Celebrate SWE Outreach Publication

Sahara Becker
Publications Lead

Michael Cha
Publication Distribution & Communications

Elizabeth Gjini
Celebrate SWE Outreach Publication

Catherine Gurecky
K-12 Educator Publications

Debra Kimberling
K-12 Educator Publications

Mariel Kolker
K-12 Educator Publications

Amanda Larsen
Youth Advocacy

Resources Committee Workgroup

The Resources Workgroup reports on Outreach Metric Tool data, provides guides and webinars to SWE sections to enhance their outreach efforts, collects and shares best practices on innovative outreach techniques, and provides online resources for planning and implementing outreach events.

Focus Areas

Assessment & Metrics
Communications
Innovations
Outreach Tools

Sara Wheeland
Resource Lead

Sarah Deng
Innovations

Anita Gajjala
Assessment & Metric, Outreach Tools

Not Shown:
Savannah Smith
Communications

Sarah Holdrup
Assessment & Metric, Outreach Tools

Mattea Mobley
Innovations

Sydney Robinson
Assessment & Metric

Elizabeth (Bit) Scheidt
Communications, Innovations

Research and Development Committee Workgroup

The Research and Development Workgroup provides data-driven recommendations to SWE Advocacy leadership regarding outreach initiatives related to adult stakeholders, including parents, teachers, and other significant partners. This group also serves to aide in development of new programs to help adults be better advocates for SWE's messaging and is working to establish framework for global advocacy, including local infrastructure to support SWE's mission.

Focus Areas

Strategic Partnerships
Metrics, Survey & Analysis
New Benefits
Reporting
Global Outreach

Mary Isaac
Research & Development Workgroup Lead, Metrics, Survey & Analysis

Ceal Craig
Strategic Partnerships

Allison Goodman
Global Outreach

Elizabeth Heyde
New Benefits

Shruti Khalwadekar
Global Outreach

Anne Lucietto
Strategic Partnerships

Sowmya Nagesh
Global Outreach

Kim Witke
Reporting

329
Total Reported STEM Outreach Events

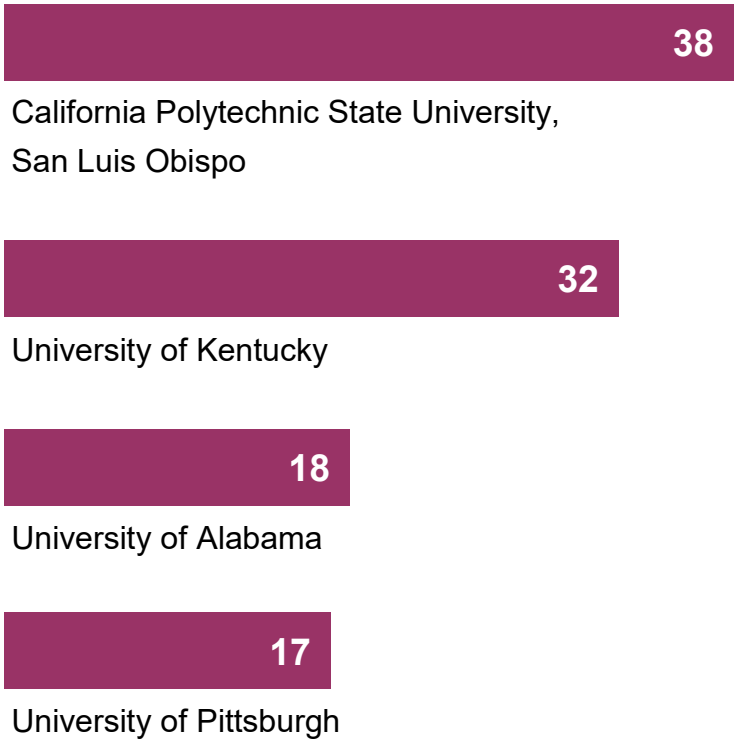
57
SWE Sections Represented

33
US States Represented

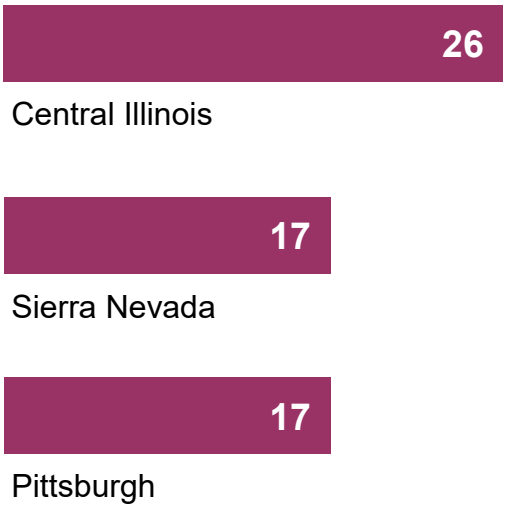
5
Member at Large Reported Events

1
International Affiliate Group Represented

Collegiate Sections with the Most OMT Entries



Professional Sections with the Most OMT Entries



FY20 Outreach Metric Tool Statistics

3,433
Total SWE Member Volunteer Engagements

2,039
Total Non-SWE Volunteer Engagements

21,838
Girls Reached

10,660
Boys Reached

10,757
Adult Participants

Our volunteers used multiple modes of engagement

39% of events used more than one mode of engagement

- **162** Hands-on Workshop
- **131** Presentations/Lectures
- **79** Demonstration Booths
- **67** Mentoring Sessions
- **46** Tours, Field Trips & College Info Sessions
- **39** Panel Discussions
- **28** Science Fairs & Competitions
- **18** Parent-Educator Programs
- **10** Career Demonstrations
- **5** Sleepovers
- **3** Virtual Events
- **3** Certificate of Merit/ Scholarship Programs

Wow! Innovation Challenge

WOW! Innovation Challenges are used to show off the innovated creativity of SWE Sections around the globe. Any MAL, global, collegiate, or professional section can apply for the awards, and the award money is given to sections to support their programs. Each challenge is different and supports SWE's missions.

The FY20 WOW! Innovation Challenge #1 recognized the innovative outreach techniques being used by SWE sections.

SWE Southern Methodist University
First Place Winners

The members of SWE Southern Methodist University are passionate about sharing engineering with the next generation of young women. One effective way to achieve this goal was to partner with organizations that share the same interest. They collaborated with SMU's Women in Science and Engineering chapter to plan an engineering activity that was used in one of the section's monthly WiSE days. During these events, local elementary schoolers visit the SMU campus and enjoy themed STEM activities.

This SWE section also launched a new program, Mustang Inspire, to encourage high school SWENext students in the Dallas area to explore different engineering disciplines. In addition to completing engineering activities, these students received a tour of the SMU engineering school and gained mentorship about college from SMU SWE students. Furthermore, the chapter has a tradition of volunteering at *Invent. It., Build. It.*, a SWENext event held at the WE global conference each fall. Last November, all of the chapter members that attended WE19 volunteered for this event.

By creating new partnerships and continuing outreach traditions, the Southern Methodist University Section has enabled young women to explore STEM disciplines and discover a passion for engineering.

SWE New England Shoreline Section
Second Place Winners

The New England Shoreline Section has collaborated with Girl Scouts since their charter in 1989. With the support of SWE collegiate sections and other college-based STEM organizations, the section runs a full schedule of Girl Scout workshops each year. For FY20, they had 8 separate workshops scheduled, servicing girls from K-12. Six of these programs help the girls complete the design challenges required for the "Think Like an Engineer" Journeys and provide them the knowledge to complete their journey by developing and implementing a "Take Action Project" using the Design Engineering process taught in the design challenges. At each of these sessions a leader/ adult program is offered to either help leaders support the girls in their Take Action Project or educate them on opportunities for girls in Engineering.

The section also supports the Global Leadership Conference for Senior/Ambassadors held in Rhode Island each year and attracting High School level Girl Scouts from all over New England. At this two day event the section runs the entire STEM track consisting of four different workshops. The section is supported by the collegiate sections from University of Rhode Island and Roger Williams University.

In Connecticut, members support individual troops with STEM program support for a variety of STEM programming, including Robotics and Space Science badges and Citizen Science activities. The section also supports E-Week activities by putting up E-Week displays at Libraries and running a drop in program at the Providence Children's Museum.

Wow! Innovation Challenge

The FY20 WOW! Innovation Challenge #2 recognized outreach best practices that tailor activities to different ages groups and techniques used to make sure all attendees feel included.

Humboldt State University
First Place Winners

Humboldt State SWE Section focuses on STEM outreach to K-8 students in our community. Every year in the fall, they host an Engineering Day event open to the public where they provide numerous fun and informative STEM activities for young kids. Similarly every year in the spring they host a Girl Scouts Day event that draws around 48 Girl Scouts from the community who engage in fun STEM activities such as escape rooms and water filtration activities. The goal of these two events is to encourage diversity and teach the importance of STEM to make girls feel empowered and comfortable to pursue a career in STEM. The sole engineering major at Humboldt State is Environmental Resources Engineering so they incorporate aspects from their curriculum as well as aspects from other engineering majors to teach K-8 students the many fascinating engineering career paths. The men and women in the Humboldt State SWE section are dedicated to improving and diversifying the community through communication with their local SWE professional section, hosting outreach events, and actively creating a safe and welcoming community for all.

Michigan Technological University
Second Place Winners

The Society of Women Engineers at Michigan Technological University is involved on campus and in our community. They love getting younger kids, especially girls, excited about STEM. They host an annual Girl Scout event where troops come and do activities for each age group. In FY20, they partnered with the Electrical Engineering department to teach the girls about circuits and create hands-on activities. Throughout the year, members also mentored a group of girls in the SWENext program at a local middle school, and they are very excited that the 6th grade team made it to the national competition. Members also volunteered at an after-school program where kids learned about science with hands-on projects outside of their everyday curriculum. SWE at Michigan Tech is always looking for opportunities to grow and make new connections, both as an organization on campus and as a member of the community.

Interesting in learning more about WOW! Innovation Challenges? Check out the website:

https://swe.org/k-12-outreach/youth-advocacy/wow-innovation-challenge/

Invent It. Build It. is one of SWE's signature outreach events, held each fall at SWE's annual conference.

This event includes:

- An exhibition hall featuring STEM- and girl-focused organizations (EXPO)
- Hands-on middle school (grades 6-8) and high school (grades 9-12) girls' programs
- A parent/educator program (PEP)

Invent It. Build It. provides an incredible opportunity for girls, parents, and educators to interact with hundreds of women engineers and engineering students.

Check out the website for information on the Invent It. Build It:
https://swe.org/k-12-outreach/invent-it-build-it/

Event Tip
Don't forget to wear your SWE swag!

Invent It Build It & DesignLab

Invent It. Build It. WE19

970 Total Participants included

- 400 Middle School students
- 280 High School students
- 200 Parent and Educator participants

Activities

Middle School
Windmill activity

High School
MythBusters activity

We Local DesignLab

SWENext DesignLab is an engineering engagement program for middle schoolers, high schoolers, parents and educators taking place at WE Local conferences

In 2019, **96 Students, Parent & Educators** engaged in outreach events

Check out the DesignLab Challenge Final Submissions from 2019

WE19 Award Winner

California Polytechnic State U., San Luis Obispo
Softec Robotics Expo | 300 elementary-school girls and boys | 100 adults reached | 11 volunteers | San Luis Obispo, CA

At the beginning of the Fall semester, Cal Poly SWE helped host the annual Softec Robotics Expo along with other organizations such as VEX, and FIRST. The theme was "Robotics and Sports" which focused on how robotics and engineering impacts everyday life. This SWE section provided an interactive station where kids designed and built a balloon-powered car using household items. Participants learned about thrust, drag, friction, energy and the engineering design process through multiple testing phases. To complete the experience, students got to test their completed designs in a thrilling race on the track! This awesome DIY activity encourages the students to independently learn and teach each other.

"I remember two sisters who didn't know anything about engineering and as we stepped through the building and testing a balloon-powered car, they discovered and were awed by each engineering concept that had them back at the expo table updating their designs. It was truly inspiring! - Cassidy Elwell, Vice President of Community Outreach for Cal Poly SWE

Georgia Tech
High School Outreach | 73 high-school girls | 14 volunteers | Atlanta, GA

Georgia Tech provided not one, but two events during the 2019-2020 academic year for high-school students interested in engineering. During their fall session, they had three activities: DIY water bottle trumpets, water filtration, and graphite circuits. Students were able to meet with current SWE members from a variety of engineering majors and get a campus tour. The spring event was different. There was a combination of leadership and engineering activities. This session also included a SWE panel and a tour. Many sections struggle with advertising their outreach events, but Georgia Tech has overcome this battle by creating a K12 Communications Chair. This person reaches out to schools in the Atlanta metro area to directly invite students to events. They were able to successfully increase their community engagement, especially with schools whom had never hard of SWE events before. Georgia Tech SWE recently won the Outstanding Outreach Event Award at WE Local Raleigh.

"Personally, I would not be a female engineer without encouragement from other female peers. I feel humbled to be able to give back to younger girls by establishing that they have the ability to pursue engineering." - Katie Zhu, Vice President of Youth Programs for Georgia Tech SWE

University of Michigan

Elementary Engineering Exploration Day | 93 elementary girls and boys reached | 76 adults reached | 35 volunteers | Ann Arbor, MI

Almost every kid is captivated by space and many engineering disciplines are responsible for our knowledge and exploration of it. Space was the theme of University of Michigan SWE's event geared towards elementary-school children. With the help of Women in Aeronautics and Astronautics and the American Nuclear Society the kids got to explore space through the eyes of computer scientists, aerospace engineers and nuclear engineers. They learned about counters and half-lives using M&Ms, built hovercrafts out of CDs and balloons, and even got to program a color pattern to lights in the atrium of one of the school's buildings. The parents did some learning too. They engaged with a panel of college students to discuss their experiences in STEM both before and during college and then participated in their own activity building structurally sound rollercoasters. This event had something for everyone!

"Many of the students come back every semester because they enjoy it so much and then they continue on to our middle school and high school outreach events which makes me super excited to see!" - Harshini Murali, University of Michigan SWE Member

Milwaukee School of Engineering

Engineering: A Hands-On Future | 65 high-school girls | 40 adults reached | 10 volunteers | Milwaukee, WI

There's no better way to explore engineering majors than an at a SWE event! Milwaukee School of Engineering (MSOE) SWE hosted an event to provide high-school girls an opportunity to learn about different majors and get hands-on experience through activities. Each attendee picked their top 3 choices from the following: Architectural/Civil, Biomedical, Biomolecular, Computer Science, Electrical, Industrial, Mechanical, and Computer/Software Engineering. Each session was run by a MSOE professor. Lunch was complete with a student panel of SWE members. After all 3 of their sessions were complete, the girls participated in an Engineering Activity Competition. They did a timed paper drop challenge where the top team received a prize.

"I gained a lot of event planning knowledge and was challenged to grow my communication skills. It was so exciting to see the girls at the event and how much everyone enjoyed it " - Brianna Berillo, MSOE SWE Outreach Chair

Boston

Jr. Tech Girls STEM Summit | 300 high-school girls reached | 8 volunteers | Boston, MA

In March 2019, the Boston SWE section inspired high-school students to pursue Manufacturing Engineering at an event run by Jr. Tech held at Wentworth Institute of Technology. It can be difficult to come up with interesting new ways to captivate older students, but this section came up with a SWEet activity. After a 10-minute presentation with an overview of manufacturing engineering principles, careers, and local colleges that support related degrees, they dove into a hands-on workshop. The students were tasked with creating their own assembly line to decorate and package cookies. They had to replicate two different designs on their cookies, and correctly label them as "SWEet Swirls" or "SWEet Sprinkles" after they were placed in a cupcake wrapper, then into a box and tied with a bow. In each 90-second trial they aimed to have the most finished packages. Based on their results, they reviewed the process to find new ways to be efficient. During a single session they were able to run through 3-4 trials.

"I learned a ton about building lessons for students by planning this event. Running the event was a lot of fun, and watching the girls have a blast trying to complete their cookie sets was so great to see. My favorite part was hearing them come up with strategies between their trial runs, and also when they shared what they learned at the end." - Ellie Marois, VP of K-12 Outreach for SWE Boston

Central Illinois

Engineering Day at Peoria Riverfront Museum | 500 girls and boys reached | 200 adults reached | 23 volunteers | Peoria, IL

There is no better way to spend "Celebrating Engineering Week with SWE" than at a museum. The Central Illinois SWE section has been participating in this event for several years and use this opportunity to focus on elementary and middle school age kids. They set up a variety of stations for children and adults to participate in focusing on different engineering disciplines. There was a Slime Station where kids could make magnetic, glow-in-the-dark and color changing thermochromic slime to take home. In the Family STEM Challenge, the whole family could participate to build a structure out of 200 cups. Participants could create holograms using iPads and plastic pyramids. They were even able to watch their coloring pages come to life with the Quiver App. At the end, kids received golden hard hats and Future Engineer SWE Certificates. The parents loved taking photos of their children holding up their certificates.

"I really enjoy spending time with our volunteers, and it is priceless to see so many kids having fun at our booths and being excited about engineering." - Christiana Aguirre, Central Illinois Committee Member

WE18 Award Winner

Dallas

Design Your World STEM Conference for Girls | 105 girls | 20 adults reached | 90 volunteers | Dallas, TX

This event hosted by Dallas SWE was a collaborative effort from many SWE clubs and sections. Collin College SWE, Woodrow Wilson HS SWENext and Mechanicats, Coppell HS SWENext, and Girls In STEM all came together to participate. They have been bringing this event to the Dallas -Fort Worth area since 2012 and it has been their award-winning signature outreach event. They invite girls to join in on a variety of activities sponsored by local companies to showcase different engineering disciplines. This year they built marshmallow towers, designed heart stents, made paper airplanes, programmed, built robots, and designed circuits. Parents and educators attended panel sessions to help parents navigate STEM learning for their children. They discussed topics like guiding girls through their decision-making processes, and resources to assist girls interested in STEM careers. There was even a STEM Fashion Show where STEM members/volunteers dressed up in a career outfit (i.e. construction project manager, hazmat suit, petroleum engineer in oilfield fire resistant clothing/hard hat, office professional).

"This year was particularly exciting with new ideas like the exhibition area, photobooth/props, giveaways (a company donated a drone for one of the giveaways!), and team chants. It's a privilege to work with the wonderful women of Dallas SWE." - Thi Dao, Dallas SWE Member

WE19 Award Winner

East Central Iowa

Think Like an Engineer Day | 150 girls | 40 adults reached | 40 volunteers | Cedar Rapids, IA

In FY19, the East Central Iowa Professional SWE section (ECI) partnered with the Girl Scout Council and STEAMOn to host a "Think Like an Engineer" Day where Girl Scouts could earn their journey badges. The event was open to all girls in grades K-12 and the girls were broken down into age groups by Girl Scout class (Daisies, Brownies, etc.). Throughout the event the groups of girls were each challenged by three different age-appropriate design challenges. The design challenges included designing prosthetics for elephants, making homes out of recyclable materials, creating wind turbines, and many other exciting challenges!

At the end of the event, each class of Girl Scouts was asked to present one of their design challenges to the larger group. Awards were also handed out to the groups of girls that handled failure and redesign the best. Throughout the day, panels were also held for the parents, troop leaders, educators, and others who were in attendance to help them be better role models to their girls. FY19 was the pilot year for this event and it proved to be very successful.

"Seeing girls of various ages discover (and apply) engineering for the first time is one of the most rewarding experiences. The future of engineering is in good hands!" – Katelyn Lichte, FY19 ECI Outreach Chair and SWE Outreach Chair Elect

Wisconsin

Rube Goldberg Middle School Competition | 136 middle-school girls and boy reached | 2 volunteers | Milwaukee, WI

With the help of STEMForward as a partner, Wisconsin SWE members got to judge the participants of the May 2019 Rube Goldberg Middle School Competition. This event was a great way to see young minds at work as they had to present unique ways to create their Rube Goldberg Machines. The students were challenged with questions in front of the judges.

"The Rube Goldberg Middle School Competition has great participation by girls. The girls we interact with are very excited about the process they went through to create their machine and sharing it with female judges. What I find encouraging is how they overcome problems and keep persisting. The nature of Rube Goldberg machines is that they often don't work as you want/expect them too. Seeing how a team responds to failure is refreshing and reminds me to keep striving." - Heidi Balestrieri , Wisconsin SWE Member

Event Tip
Consider hosting virtual outreach events and panels. You can even mail hands-on activity kits to go along with live-stream events

SUBMIT YOUR EVENTS

If you want the chance to be featured in next years issue of *Celebrate SWE Outreach!*, don't forget to submit your FY21 events to the Outreach Metric Tool (OMT). All types of STEM outreach events are accepted. We love to hear how you are inspiring the future generations of STEM leaders.

Jakarta Affiliate of SWE

Family in STEAM | 17 girls and boys reached | 8 adults reached | 6 volunteers | Jakarta, DKI Jakarta, Indonesia

Invited by Disrupto Society Jakarta to run an event, the Jakarta affiliate group decided to help families understand STEAM and its impact. It was a family friendly event where they spent the day interacting with engineers. With participation from the organizations Yayasan KDM and Kuark International families got to make robots, see a talkshow, and watch the movie "Dream Big: Engineering Our World". These were such creative ways to inspire future engineers. This event was squeezed in just before the COVID-19 outbreak. We are so proud of these volunteers for making a difference and love to see full families get involved in the fun.

"I gained networks with different organizations (non-profit, business, educational) and we got exposure, so we are invited again to participate in their online event in June." - Jane Nawilis, VP of Jakarta Affiliate of SWE

Jakarta Affiliate of SWE

For the Love of STEAM | 82 girls and boy reached | 30 adults reached | 15 volunteers | Jakarta, Indonesia

This event reached children of all ages ranging from 5 to 19 years old. Dressed in feminine colored t-shirts these amazing volunteers shared their passion for engineering with others. The Jakarta Affiliate of SWE utilized businesses to help teach STEAM topics. To make sure everyone was challenged and having fun, each age group had different activities. Just to name a few, first and second graders blasted rockets into the sky and made their own ice cream. Third and fourth graders made vacuum cleaners to suck up light particles. Fifth and sixth graders were introduced to Micro:bit, a pocket-sized micro computer designed by BBC for Computer Education. And seventh grade students and up learned to make their own game and app with Clevio. There were so many fun activities and volunteers loved to see such happy faces.

"For the Love of STEAM was created with our passion in sharing our passion in engineering to young girls. The name came out when we were brainstorming and realize that we do all these, without pay, because we love STEAM" - Davida Gondohusodo , Jakarta Affiliate of SWE Member

Jakarta Affiliate of SWE

Technovation Global Competition | 6 high-school aged girls reached | 8 adults reached | 3 volunteers | Jakarta, DKI Jakarta, Indonesia

In the midst of a pandemic, our international affiliate groups are leading the way with virtual outreach events. Jakarta Affiliate of SWE members and CauseLab became mentors for two female teams participating in the Technovation Global Competition. The competition allows the girls to learn about entrepreneurship and STEM by creating a business plan, a pitch video and a prototype app to solve a community problem. The coding of the prototype app was done by the girls themselves using Thunkable taught by a female volunteer from Clevio Coding Camp. Recruiting of the teams was a challenge at first; the interest and the awareness of the public of STEAM is still very low in Jakarta. With the help of Ganara Art (art educational facility) they were able to attract parents and students. Check out their pitch videos on Youtube: SemuaSehat Team and On/Off Team

"I am so happy to be able to expose STEAM to those not familiar with it in the first place (art students). It was lovely to hear the girls laugh and be impressed with themselves when they got their first coding to run and see that they can make their own app." – Jane Nawilis, VP of Jakarta Affiliate of SWE

Event Tip
Be enthusiastic when participating in events to show how much fun and rewarding it is to be a female in STEM

Member at Large Highlights

Mackenzie Gorham

My Amazing Future | 200 middle-school girls reached | 15 adults reached | 70 volunteers | Idaho Falls, ID

In February 2020, Mackenzie Gorham represented SWE as a MAL at an event hosted by Idaho National Laboratory called My Amazing Future. She has been providing a panel on SWENext to educators for the past 2 years at this event. The middle-school girls who participated learned about STEM by rotating through sessions hosted by different scientists and engineers. They participated in tours of lab space and did some hands-on activities focusing on medical, nuclear, robotics, or programming topics.

"[This was a] great chance to interact with some gifted middle school girls interested in careers in STEM." - Makenzie Gorham, MAL

Conference Award Winners

2019

WE Local Outstanding Outreach Event Award

This award recognizes a group or groups who plan and carry out a high-quality outreach event to inspire future engineers.

WE18 Mission Award Winners
Best Practice – Outreach

This award recognizes the successes of SWE members and individuals who enhance the engineering profession through contributions to industry, education and the community.

California Polytechnic State University, San Luis Obispo

Yale University

Pennsylvania State University

Emerson's Women in STEM

Dallas

Kansas City

WE Local Europe, Berlin
Outstanding Outreach Event

KUSWE Koç University

WE Local Denver
Outstanding Outreach Event

Central New Mexico

Kansas City

WE Local Bellevue
Outstanding Outreach Event

California Polytechnic State University, San Luis Obispo

WE Local Baltimore
Outstanding Outreach Event

Pittsburg

WE Local St. Louis
Outstanding Outreach Event

Dallas

University of Alabama at Birmingham

Washington University in St. Louis

Conference Award Winners

2020

WE Local Outstanding Outreach Event Award

This award recognizes a group or groups who plan and carry out a high-quality outreach event to inspire future engineers.

WE Local Des Moines
Outstanding Outreach Event

Emerson Women in STEM Marshalltown

Wichita Professional Section

WE Local Salt Lake City
Outstanding Outreach Event

Colorado School of Mines

SWE Rocky Mountain

WE19 Mission Award Winners
Best Practice – Outreach

This award recognizes the successes of SWE members and individuals who enhance the engineering profession through contributions to industry, education and the community.

California Polytechnic State University, San Luis Obispo

University of Wisconsin-Madison

University of Texas at Austin

Rocky Mountain

Wichita

East Central Iowa

WE Local San Diego
Outstanding Outreach Event

California Polytechnic State University, San Luis Obispo

Northrop Grumman Women's International Network (NGWIN) South Bay ERG

San Jose State University

Santa Clara University

WE Local Raleigh
Outstanding Outreach Event

Georgia Tech

University of Virginia

University of Cincinnati

SWENext Club Information

CALLING ALL SWE MEMBERS AND MENTORS!

SWENext Clubs provide a space for K-12 students to explore engineering and have extraordinary out of the classroom experiences! The only requirement for a SWENext Club is that it must have an active SWE member (Professional, Collegiate, or K -12 Educator) serve as their SWE Club Counselor. That person can be YOU!

You can get connected to a SWENext club by reaching out to one you see on the SWENext Clubs Map or **start your own**!

SWENext Club students need advocates and mentors like you to:

- Expose them to opportunities in STEM fields
- Navigate college applications
- Host and attend outreach events
- Get hands-on experiences in engineering
- Secure funding
- Compete in SWENext annual competitions and challenges
- Learn about local engineering companies and colleges
- And more!

Though not required by SWE, clubs are encouraged to also have a Club Advisor (e.g. K-12 Educator, Boy and Girls Club Counselor, etc). Comparison of counselor and advisor roles and responsibilities for each position are highlighted below.

Club Advisor

- Liaison to school or organization administration
- Responsible for maintaining safety and youth protection during all activities
- Acts as main point of contact for SWENext members on a day-to-day basis
- Ensures club is upholding school/ organization bylaws

SWE Counselor

- Liaison to SWE
- Provides support when needed for events and activities
- Answers any questions regarding SWE's processes and mission
- Ensures club is upholding SWE principles

If you know a K-12 teacher who would like to become a SWE Counselor, they simply need to join SWE for a reduced rate as a K-12 Educator Member.

Take a look at the Youth Programs page to get more information about SWENext or email swenextclubs@swe.org.

SWENext Club Information

Did you know that SWENext clubs can do their own outreach for younger students in your community?

These are some ways SWENext can help build a brighter future:

- Host a STEM day for younger students
- Volunteer at local STEM events
- Visit and speak with local elementary and middle schools

It is helpful to have an Outreach Director on your club leadership team to help facilitate event logistics. Your SWE Counselor and Advisor will be great resources when planning events!

Check out the SWENext Club 101 Guide or contact swenextclubs@swe.org for more information

Event Tip
Have booth or station for people to sign up for SWENext at your outreach event

STEM Event Hosting Ideas

STEM Saturdays

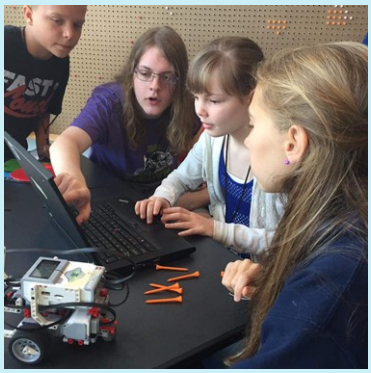
- Invite local elementary or middle school students
- Pick a theme and host 2-3 different STEM activities based on the theme

Host a Hackathon

- Determine a coding challenge and coding language
- Lead a preliminary workshop to attendees
- Guide teams of middle school students through a small-scale hackathon

Organize an Innovation Fair

- Ask local companies, universities, SWE sections, school clubs, and nonprofit organizations to bring a small STEM-based activity or demonstration to your Fair
    - Advertise the event to your community
    - Design workshops to host throughout the day to help educate your community on the value of STEM as a career



Pitt County Robotics SWENext Club
Annual Girl Scout Event | Club Founded 2016

The Pitt County Robotics SWENext Club was founded in 2016 in order to provide a stronger community for girls to be able to embrace STEM and inspire them to pursue STEM careers.

They host an annual event for Girl Scouts in their community. One of their members is an active Girl Scout and she coordinates between the club and Pitt County service unit. They work together to plan activities around available badges to encourage as many girls as possible to attend. During the event they provide snacks and have SWENext members volunteer to ensure the safety of the younger girls. They are very conscious of the safety policy of Girl Scouts known as "Safety-Wise" that describes a ratio of adult to child. At the end of the event, they always talk about what worked and what did not so that they can improve the next year. They look forward to growing this program in the future!

Kennett High School SWENext Club
District Math Nights and Family STEM Night | Club Founded 2017

A handful of FIRST Robotics students from Kennett High School in Kennett Square, PA thought it was about time that a club was formed where girls could learn about different engineering careers. Their goal was to interact with current professionals and prepare themselves to navigate challenges in college and the workplace. In December 2017, the SWENext Club at Kennett High School was born!

Not only do the students learn all about engineering at their club meetings, they also take the time to give back through STEM outreach in their community. Their club members volunteer at district-wide Math Nights and Family STEM Night. Family STEM Night is an annual spring event that invites K-8 students to learn, build, and create with their parents. This event provides over 25 different activities encompassing all aspects of STEM. The Kennett High School SWENext Club created and hosted the Tower Station where families were challenged to build the tallest free standing tower with marshmallows and toothpicks. Parents and children alike enjoyed the challenge while learning a little physics along the way!

These SWENexters are making waves in their community and were even featured in Philly Magazine! Awesome work ladies!

Lehigh Valley Academics SWENext Club

Engineering Week Elementary Outreach | Club Founded 2016

From Bethlehem, Pennsylvania, the Lehigh Valley Academic SWENext Club was founded in 2016 and hosts meetings twice a month for 9th through 12th grade students. Each year during Engineering Week, they do STEM activities with local elementary school students. One of their activities involved teaching students to make cars out of household items. After, they raced their completed cars down a custom built hill structure!

Kennett High School SWENext Club

FIRST Annual FLL Jr Expo | Club Founded 2018

The Poway High School (PHS) SWENext Club from San Diego, California was founded in September 2018 by three members of FIRST Robotics Competition (FRC) Team Spyder 1622. These students wanted to promote, inspire, and empower other girls to pursue STEM. These students brought SWENext to Poway High to build a community that would provide support and encouragement for all female members.

The group is very proud of their work that promotes STEM to elementary and middle schools. Many of their members are mentors for FIRST Lego League (FLL) & FIRST Tech Challenge (FTC) teams. They hosted a FLL Workshop for 8 brand new teams before competing at their first tournament and hosted the FIRST Annual FLL Jr Expo for three elementary schools. These SWENexters also act as judges at FLL tournament and volunteers at FTC events. Beyond that, they are also a Community Partner with the Girl Scouts. The PHS SWENext Club was recently highlighted by the San Diego Union Tribune for their extraordinary work in the community. Check out their instagram: @phs_swenextclub!

Partner Shout-Outs

We want to give a big shout-out to the many partners that make our outreach programs possible. They do everything from sponsoring events, volunteering, supplying venues, and so much more. What we do at SWE would not be possible without their generous contributions.

FIRST

FIRST (For Inspiration and Recognition of Science and Technology) inspires young people's interest and participation in science and technology. Based in Manchester, NH, the 501(c)(3) not-for-profit public charity designs accessible, innovative programs that motivate young people to pursue education and career opportunities in science, technology, engineering, and math, while building self-confidence, knowledge, and life skills. They host robotics competitions, LEGO league and tech challenges. For more information about FIRST visit: www.firstinspires.org/

Girl Scouts

The inclusive, all-female environment of a Girl Scout troop creates a safe space where girls can try new things, develop a range of skills, take on leadership roles, and just be themselves. Everything a Girl Scout does centers around STEM, the outdoors, development of life skills, and entrepreneurship, and is designed to meet her where she is now and to grow along with her. For more information about Girl Scouts visit: www.girlscouts.org/

4-H

4-H empowers young people with the skills to lead for a lifetime. It's a research-based experience that includes a mentor, a hands-on project, and a meaningful leadership opportunity. Kids and teens complete hands-on projects in areas like health, science, agriculture and civic engagement in a positive environment where they receive guidance from adult mentors and are encouraged to take on proactive leadership roles. For more information about 4-H visit: www.4-h.org/

Partner Shout-Outs

Professional Societies

AAUW
AICHE
Alpha Helix Biomedical Society
ASCE
ASME
BMES
Engineering Ambassadors
Engineers without Borders
IIIE
IISE
NSBE
SHPE
Society of Material Engineers

Youth Organizations

BotsIQ
Boys and Girls Clubs
Chances and Services for Youth
Design Squad Nation
Girls Inc.
Latino STEM Alliance
MACH Academy Inc.
Project Lead the Way (PLTW)
STEMForward
S.Y.STEM Coalition
The Clubhouse Network
YMCA

Corporate

Abbott
Boeing
Caterpillar
Claris International Inc.
Honeywell
Johnson Controls
Lockheed Martin
Mayora
Merck
NOPEC
Northrop Grumman
OshKosh Corporation
Savannah River Nuclear Solutions
Telkomtelstra
Tripatra Engineers and Constructors
United Technologies
VEX

Other

Best Prep
Days for Girls
Dream Center of Peria
Ireland Embassy
Mass STEM Hub
Nepris
Strong Women Strong Girls

And to all the schools, museums, universities, libraries, and other organizations not mentioned here who have partnered with us, we give our sincerest thanks.

Outreach Event Planning Tips and Best Practices

Through our individual journeys to inspire future engineers, we must remember to continually support each other. The following are tips and best practices collected from our highlighted SWE sections to help you plan your next outreach event.

Finding volunteers:

- Request volunteers in your weekly section email blasts and newsletters. You can even allow volunteers to sign up in shifts
- Invite your neighboring professional or collegiate SWE section to volunteer. Reaching out to individuals can make the request more personal and may be the encouragement some members need to get involved
- Allow your volunteers to bring their own kids to participate in the event

Planning:

- During busy months, re-use activities. It helps to reduce time spent on planning and cost of new materials
- Start planning at 2-5 months out to allow enough time to come up with ideas, find volunteers and order supplies. This time-frame can vary depending on the size of the event
- Committees are a great way to distribute planning responsibilities and can empower new section leaders
- Test out the activity ahead of time to ensure it is fun and not potentially frustrating for younger students and volunteers facilitating the event
- To further engage and encourage creativity in young students, themed programming can be a way to present complex engineering concepts and encourage participation in the activity

Funding:

- Buy supplies in bulk and find other activities that use the same materials to cut down on costs
- If you require a registration fee, provide a waiver for groups who otherwise might not be able to participate
- Write proposals to send to partners and sponsors who can share planning and funding responsibilities
- For large-scale event, consider appling for a grant

Website Inspiration: Outreach Edition

Need inspiration for your website's outreach tab? Take a look at what other SWE sections are doing with their sites.

North Dakota State University

http://www.ndsuswe.org/outreach.html

- Defines a specific tab just for outreach!
- Contains sign up links for updates about upcoming events
- Provides information on upcoming events complete with description and registration links
- Highlights scholarships for events that have sign up fees
- Associates current and past events with photo blocks for visual effect

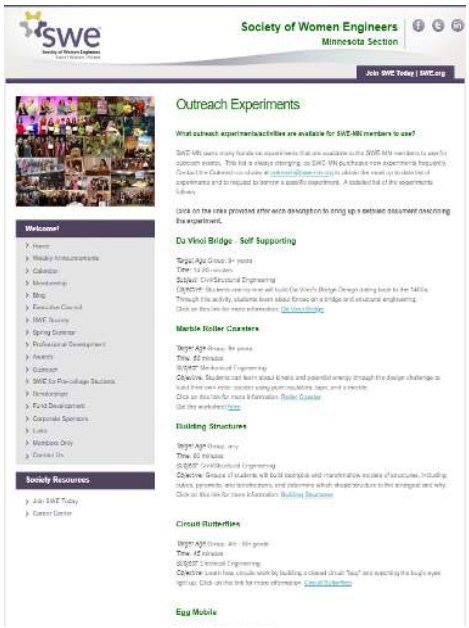
UC Berkeley

https://swe.berkeley.edu/outreach.html

- Starts with a description of their outreach objective
- Showcases past and upcoming events using an easy-to-read grid layout
- *Uses a Learn More* tab to provide information for events and registration links
- Keeps it interesting by having the perfect ratio of photos to text
- Advertises SWENext and Parent Education Programs
- Contains a sign up link for their outreach mailing list

Minnesota

http://www.swe-mn.org/outreach-experiments.html



- Utilizes a SWE-given Weebly website
- Supplies information on volunteering for outreach committee and events
- Continuously updates an outreach experiment tab which has STEM activities you can do at home
- Includes target age group, time, subject, and objective in experiment descriptions
- Advertises SWENext and parent resources

Volunteer Quiz

What kind of SWE volunteer are you? Take our quiz to find out.

1

Which place would you rather visit?

A. Museum of Science in Boston
B. A multiple country journey across Europe
C. National Women's History Museum
D. Anywhere as long as your SWE friends are with you

2

What is most important to you?

A. Knowledge
B. Leadership
C. Advocacy
D. Teamwork

3

What do you want for your birthday this year?

A. A New Whiteboard
B. Monthly Planning Journal
C. No Gift. Donate your money to a local charity
D. Baking Supplies

4

Pick an animal.

A. Dolphin
B. Elephant
C. Dove
D. Horse

5

Which WE19 conference session would you attend?

A. Invent It. Build It Outreach Expo
B. Strategic Planning Meeting
C. Role Models to Encourage Girls in STEM
D. WE19 Awards Banquet

6

Pick a female role model.

A. Christina Koch: a NASA astronaut who set a record for longest single spaceflight done by a woman
B. Beatrice Hicks: Society of Women Engineers' first president
C. Eleanor Roosevelt: First Lady of the United States 1933-1945 with work related to women's empowerment
D. Ida B. Wells: journalist, educator, early leader in the civil rights movement, and founder of the National Association for the Advancement of Colored People

7

How would you spend your weekend?

A. Reading a book
B. Throwing a party
C. Helping a friend
D. Attending a sporting event

Mostly A's The Teacher	Mostly B's The Planner	Mostly C's The Advocate	Mostly D's The MVP
You are science and technology focused. You want to inspire young minds through amazing experiments and demonstrations.	The event wouldn't go on without you. You are putting in the hours to prepare everything for the other volunteers to succeed.	You are focused on empowering women through everything you do. You are always looking out for a fellow female in STEM.	You are always there for your SWEsters no matter what. You sign up to volunteer when your section is short and help whenever you can.

Helpful Resources

Flyers and Newsletters

Outreach Newsletters
link here

SWENext Newsletters
link here

SWENext Flyers
Version 1: link here
Version 2: link here

BeThatEngineer Brochures
link here

SWE Membership Flyers
Professional: link here
Collegiate: link here

Outreach Metric Tool (OMT)

Don't forget to submit your events to the OMT. Preview the OMT here

Outreach Toolkit

Step-by-step instructions and resources to refer to when planning an outreach event or program

Fun Engineering Activities

Elementary School Clubs
Find K - 5 activity challenges and how to activity videos here

Middle School Clubs
Find grade 6 - 8 activities, articles, and videos about different engineering disciplines here

High School Clubs
Find grade 9 - 12 resources for free activities, challenges, competitions, and clubs here

Educator Resources

Information on Educator Membership, K-12 resources, and newsletters can be found here

Photo Release Forms

Adult: link here
Minor: link here

Event Tip
Hand out SWENext flyers and information for parents and teachers to bring home

Program Development Grant

Apply for a micro-grants to support the strategic activities of SWE Organizations here

SWE.org Outreach Tab

Explore the various resources on swe.org
Youth Programs: link here
Youth Advocacy: link here

FabFems

Want to become a role model to other women in STEM or are looking for one? Join a community of women helping women.

Contact

Need more information?
Email us: outreach@swe.org

Did you like this publication? Give us feedback and tell us what you would like to see in the future:
https://forms.gle/AXqJ9j8Mo54YPdfz6