



WIE STAR VOLUNTEER TOOLKIT

Your 101 Guide to Organizing Impactful STEM Events for Girls Around the World

wie.ieee.org/membership/programs/outreach/

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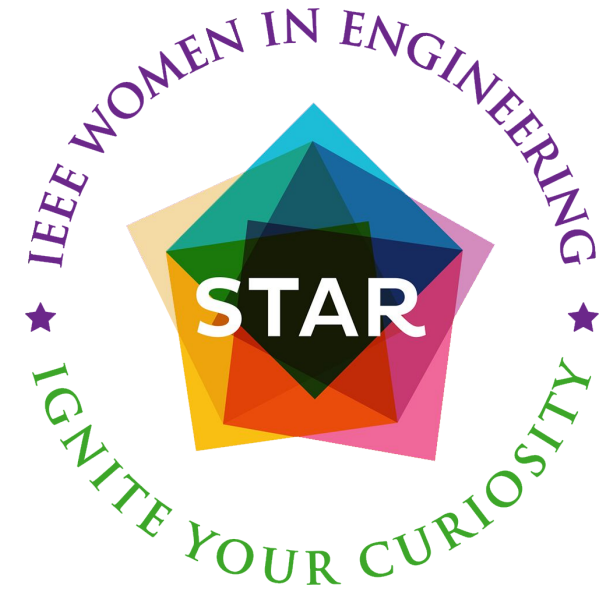
01 ABOUT IEEE WIE STAR

What is WIE STAR?

WIE STAR (Student-Teacher and Research Engineer/Scientist) is a global outreach initiative by IEEE Women in Engineering. It empowers young girls and women to explore STEM through hands-on, inspirational activities organized by IEEE WIE Affinity Groups worldwide.

Our Mission

To inspire, engage, and empower girls to pursue STEM education and careers by connecting them with passionate IEEE volunteer mentors.



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02 WHY GIRLS IN STEM?

35%

of STEM graduates worldwide
are women

28%

of the global STEM workforce is
made up of women.

1 in 3

researchers worldwide is a
woman.

22%

of STEM jobs in G20 countries are
held by women.

Why It Matters for Your WIE STAR Event

Girls who participate in hands-on STEM activities are more likely to envision themselves in STEM careers. **Your event could be the spark** that changes a girl's trajectory. Every workshop, demo, and mentoring conversation counts.

Statistics provided by UNESCO and World Economic Forum



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03 GETTING STARTED: NEEDS ASSESSMENT

Before planning your event, understand your community's needs:

Talk to Girls

- What topics excite them?
- Preferred schedule (after school / weekend)
- Prior STEM experience?
- Dream careers?

Engage Parents

- Activity difficulty preference
- Scheduling constraints
- Ways to reinforce STEM at home
- Volunteering interest?

Contact Employers

- Skills they value in candidates
- Willingness to partner/sponsor
- Women professionals to invite as speakers
- Internship possibilities?

Assess Your Team

- Volunteer skills available
- Budget & physical space
- Existing partnerships
- Tech & equipment on hand



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03 GETTING STARTED: FINDING PARTNERS & BUILDING YOUR TEAM

Who Can Support You?

- **Universities & Schools**
Venue, volunteers, academic credibility
- **Tech Companies & Startups**
Funding, equipment, industry speakers
- **Local Government**
Grants, policy support, media exposure
- **Museums & Libraries**
Space, materials, community reach
- **NGOs & Scouting Groups**
Networks, participant outreach, co-facilitation
- **Other IEEE Sections**
Volunteers, resources, global best practices

Partnership Tips

- Always explain what's IN IT for them
- Start with "ask" 9 of 10 may say no, but 1 yes changes everything
- Invite partners to observe activities and share outcome data
- Print partner names on materials and thank them publicly
- Maintain long-term relationships, don't just contact for funding
- Leverage your IEEE global network to find local chapter connections



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04 PLANNING YOUR EVENT: STEP-BY-STEP

1

Set Goals & Timeline

Define target age group, number of participants, date range, and key learning outcomes.

3

Build Your Team & Partners

Recruit mentors from universities, confirm venue partner, and secure sponsorship.

5

Design Lesson Plans

Follow the 5-section structure: Warm-Up → Presentation → Guided → Free Practice → Closing.

7

Deliver & Facilitate

Apply WIE Top Tips. Use UDL principles. Keep it fun, hands-on, and inclusive.

2

Conduct Needs Assessment

Survey girls, parents, and employers. Use a SWOT analysis with your team.

4

Choose Activities

Select age-appropriate, hands-on STEM activities that avoid stereotypes.

6

Advertise & Register

Use social media, school networks, and WIE channels. Prominently feature girls.

8

Assess & Follow Up

Collect pre/post feedback. Share results with partners. Keep girls connected!



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04 PLANNING YOUR EVENT: CHOOSING THE RIGHT ACTIVITIES



Age-Appropriate

Modify challenges for younger vs. older participants. Simpler tasks with mentor support for young girls; complex design for teens.



Hands-On & Interactive

Prioritize doing over watching. Use magnetic levitation trains, building robots, coding games, LED headbands, model bridges.



Locally Relevant

Adapt to your community's challenges, climate, and available resources. Replace materials with local alternatives when needed.



Budget & Space Aware

Choose activities that fit your available funds and venue. Paper airplane aerodynamics works; Lego robotics needs more investment.



Career-Connected

Link each activity to a real STEM career. Invite a professional woman in that field to attend or speak.



Stereotype-Free

Avoid reinforcing gender stereotypes. Girls can code, build robots, and launch rockets frame all activities this way.



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04 DESIGNING A LESSON PLAN

1

WARM-UP

5–10 min

Start with a 'hook'! Ask about bridges girls have crossed, or show a failed engineering video. Get them excited and bonded as a team.

2

PRESENTATION

10–15 min

Keep it brief! Show images, short videos, physical models. Present in multiple ways for different learning styles. Don't over-explain.

3

GUIDED PRACTICE

20–25 min

Give each team a challenge card. Mentor monitors, asks questions, and offers hints. Bring group together if everyone is stuck.

4

FREE PRACTICE

30–40 min

Step back let participants shine! This is where the real learning happens. Mentors give feedback but don't give answers.

5

CLOSING / REFLECT

10 min

3-2-1 reflection: 3 things learned, 2 interesting facts, 1 question remaining. Celebrate every team's work!

Pro Tips for WIE STAR Lesson Plans

Always plan EXTRA activities (finishing early is worse than running out of time!) • Clarify what every student should be doing at all times • Include a career spark moment in every lesson • Use SWBAT objectives: Students Will Be Able To...



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05 TOP TIPS FOR DELIVERING STEM TO GIRLS



Make It FUN

Hands-on, interactive activities only. Magnetic trains, racing cars, Arduino, AI demos, feedback mechanisms show what worked.



Inspire

Have high-school/university women co-deliver workshops. Younger girls see role models; older girls stay motivated in STEM.



Seek Partnerships

Reach out to libraries, museums, scouting groups, universities, and your local WIE Affinity Group for collaboration.



Broaden Minds

Reach underrepresented groups. Find a successful underrepresented woman to speak at the event to broaden horizons.



Keep in Touch

Follow up after every event. Invite girls to future activities. Build a community, not just a one-off event.



A Better World

Help girls see how STEM improves lives. By pursuing STEM, they can solve real-world problems and change the world!



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06 MENTORS & VOLUNTEERS

The Mentor's Role in STEM



Catalyst

Sparks curiosity and gets participants excited



Consultant

Guides without giving answers; asks great questions



Connector

Links participants to careers and role models



Collaborator

Works alongside girls as part of the team

RECRUIT

- University student groups & engineering clubs
- Social media (LinkedIn, Instagram, Facebook)
- Highlight: work experience, networks, fun!

MOTIVATE

- Flexible scheduling around exams & commitments
- Give email addresses & team access (Slack/Drive)
- Certificates, recommendation letters, recognition

TRAIN

- Brief on the STEM philosophy: learn by doing
- Explain UDL, classroom management & assessment
- Observe experienced mentors first, then co-facilitate



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07 Assessment & Impact: MEASURING YOUR IMPACT

Use a PRE-TEST before your event and the same POST-TEST after. Comparing results shows you, and your partners whether your program worked.

Problem-Solving

- I try to get all the facts before solving a problem
- I look at all possible solutions
- When something doesn't work, I try again

Teamwork & Communication

- I organize my thoughts before speaking
- I try to understand others' perspectives
- I handle disagreements respectfully

Self-Confidence

- I believe I can master new skills
- I am not afraid to try challenging tasks
- I expect to do well when I try hard

Interest in STEM Careers

- I think I could be a good scientist/engineer
- I find STEM relevant to my life and goals
- STEM knowledge will help my future career



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07 Assessment & Impact: ADVERTISING & COMMUNITY OUTREACH

For Students

- Emphasize FUN: build machines, code games, meet friends!
- Make it feel life-changing: 'Learn how electricity works!'
- Show older girls as cool role models
- Highlight skills that lead to exciting jobs
- Use Instagram, TikTok, YouTube Shorts : short & upbeat videos

For Parents

- Focus on STEM's value in the job market
- Emphasize safety, supervision, and structured learning
- Explain UDL: everyone is welcome and engaged
- Suggest at-home STEM reinforcement activities
- Host info sessions, schedule around working hours

For Supporters

- Quantify impact: participants reached, skills developed
- Link to SDG goals and talent pipeline needs
- Offer logo placement and public recognition
- Share demographic data (aggregated, never individual)
- Ask directly "If you don't ask, people assume you don't need it!"



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07 Assessment & Impact: KEEPING GIRLS CONNECTED



Recognize Achievement & Share Your Impact

Issue participation certificates, share winners on social media. Send a summary report to partners and parents. Post event highlights on IEEE WIE social media



Host Follow-on Events

Plan a series of workshops or a full program year. Recurring events build skills progressively and deepen engagement.



Mentorship Program

Connect girls with IEEE women engineer mentors for 1:1 guidance on education and career paths via WIE Affinity Groups. Or invite older participants back to help mentor at future events. This inspires younger girls and reinforces the



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08 RESOURCES & NEXT STEPS: WIE MANGA STORY

Phase 1: Read & Hook

Participants read a selected manga story featuring a female protagonist navigating a real-world scenario.



IEEE WIE MANGA Story
wie.ieee.org/publications/manga-story-contest/

Use these stories as the power source for technical challenges, providing immediate role models and emotional stakes.

Phase 2: Identify the Problem

Analyze the narrative.
What structural, environmental, or technical challenge is the protagonist facing?

Phase 3: Build the Solution

Transition to hands-on - STEM. Girls design, code, or construct the tool the protagonist needs to succeed (e.g., a circuit, a bridge).

Phase 4: Resolve the Story

Participants test their physical solutions, effectively writing the 'ending' of the manga through their engineering success.



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08 RESOURCES & NEXT STEPS

Your Next Steps

1. Connect with your IEEE WIE Affinity Group
2. Identify your target audience & run a quick survey
3. Recruit 3–5 volunteer mentors from local universities
4. Select 1–2 hands-on STEM activities to pilot
5. Reach out to one potential venue or sponsor
6. Plan a pilot event within the next 60 days
7. Submit your event to WIE STAR program portal
8. Share your results with the global WIE community!



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Ready to make your mark?
Start your WIE STAR journey today.

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