Girl Powered

5 COACHING TIPS

The REC Foundation and VEX Robotics launched Girl Powered, with a goal to double the participation of girls in robotics over the next 5 years. To achieve this ambitious goal, it will require the support and involvement of the entire robotics community of coaches, teachers, mentors, volunteers, sponsors and event partners. Through Girl Powered, we will provide you with the tools needed to successfully reach out and engage more girls in the classroom and on the competition field. This document helps identify proven strategies to help engage girls in your robotics program in a meaningful way.

As you look around at an event, it's easy to see that majority of the participants are boys. Although girls in elementary school show an equal interest in science, technology, engineering and math as their male classmates, research shows that interest begins to decline in middle school or before. The world needs more problem solvers and, without the full populations' participation, we miss out on a range of ideas and solutions that come from different perspectives and experiences. We encourage you to utilize the tips shared here to make a comfortable environment for all students in your program.

1. COACH CONFIDENCE

When applying for jobs, many women will only apply if they meet 100% of the criteria, while most men will apply if they only meet 60%. One explanation is the difference in confidence between the two genders. Students need to build confidence from a young age, so they're in a position to advocate for themselves later in life.

When you hear a student using one of these crutches, encourage them to reword the sentence and say it again.

EXAMPLE

"I think we should test a wheeled shooter but I don't know" vs "We should test a wheeled shooter"

"Maybe we should use a 6 wheel drive?" vs "We should use a 6 wheel drive"

Educate your students to own their statements. Remove verbal crutches from your group's vocabulary including "kind of," "sort of," "I think," and "I'm not sure." Encourage students not to phrase statements as questions.

LEAD

by example. Avoid using apologetic language and disclaimers. Speak with authority and conviction.

WORK

to counteract stereotypes. Encourage girls to try building and programming, encourage boys to try writing and photography. Teach your group that ability is not fixed and everyone has the ability to improve. The brain is like a muscle, It gets stronger with practice.

MOTIVATE

team members to rotate positions and give everyone a chance to try out different roles on the team and learn what they like and don't like. Remind them that just because they might not be good at something right now doesn't mean they'll never be good at it. Similarly, if one student is better than another at something, this doesn't mean the student can't or shouldn't do it.

EXAMPLE

Sam wants to program, but Jamie is already a very good programmer, Sam should still try programming.

2. TEACH CONFLICT MANAGEMENT

In fear of being viewed as mean, girls often become passive when faced with conflict. To combat this, encourage girls to share their honest and constructive opinions.

Educate students how to give constructive feedback with examples. Explain to students that there is a difference between receiving constructive criticism and a personal attack. Just because someone doesn't like an idea, doesn't mean they don't like the person. Remind students that everyone is working towards a common goal and wants what is best for the team.

EXAMPLE

"Using a scoop to pick up a beanbag is dumb" vs. "A scoop might not be the best option because the beanbags could fall out"

Suggest that your team members keep in mind the following things before they act on a conflict:

- What choices do you have when acting on the situation?
- What could happen if you go through with these actions?
- Choose the best action based on the possible outcomes
- What are the reasons you made this choice? Justify engineering decisions with quantifiable arguments.

Teach that disagreement is a natural and healthy part of being on a team and the robot building process.

Try role playing a situation, ask which choices work and which don't work when handling the conflict.

Remind students they can come to you if they need help with a conflict. Be fair and considerate when managing conflicts.

If things do not work out in a team member's favor, show them that you understand how they feel and to think of this as an opportunity to learn new skills that may help them in the future.

Demonstrate ownership of success. Accept compliments by saying "thank you" instead of deflecting them.

Celebrate successes, acknowledge strengths and look for opportunities to praise work.

3. ENCOURAGE OWNERSHIP OF SUCCESS

Students that downplay or discredit their own successes may fail to internalize their achievements. In return, this may make them less confident in their abilities despite demonstrating skill or the potential.

Coach these students to accept credit for their successes. These may include trying something new that works, completing a task, or winning a competition. Try to combat phrases that diminish an accomplishment.

EXAMPLE

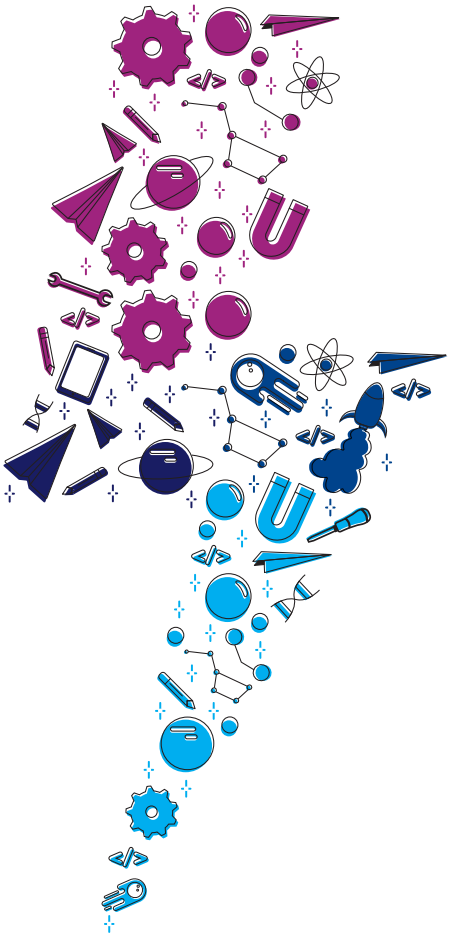
"It was just code that score the ball" vs "It was code that scored a ball"

"I drove the robot but anybody could have done it" vs "I drove the robot"

"I only remember because I scouted" vs "I remember because I scouted"

4. FOSTER EXPLORATION AND EMBRACE FAILURE

Trying something new can be intimidating, especially when faced with the potential to fail and not get it right the first time. No one starts out in robotics knowing everything, so learning will always be trial-and-error. Encourage girls to try things outside of their comfort zone.



EXAMPLE

Every time a space mission failed, NASA studied why it failed and made improvements for future missions. The early Mercury missions did not have exterior hand holds on spacecraft or flexible joints in space suits. A spacewalk to adjust some equipment outside the spacecraft nearly turned disastrous when the astronaut was exhausted from moving in a stiff suit and attempting to navigate smooth surfaces in zero gravity. Future space missions featured numerous rails on spacecraft exteriors and more flexible joints, allowing longer and more complicated spacewalks.

- Teach and encourage girls that taking risks raises opportunities to learn and grow.
- Create opportunities for success and a safe environment in which to fail. Have students share at the end of a meeting what failures and successes they had that day. Highlight how a failure can lead to a success. ("I have not failed. I've just found 10,000 ways that won't work" -T. Edison)
- Encourage curiosity. Brainstorm ideas and research answers with your group.
- Speak about times in which you took risks. What did you accomplish? What did you learn?
- Failure is part of the learning process. Help your team members embrace failure and learn from it.

5. CELEBRATE LEADERSHIP

Where boys are called leaders or assertive, girls are often called bossy and aggressive for the same actions. Celebrate your leadership and encourage a diversity of leaders. Leadership can be big like being a team captain, but it can also manifest itself in smaller ways, like running the pit at competition or being responsible for the construction of a robot sub-system such as an arm, shooter, or drivetrain.

- Remove the words "bossy" and "aggressive" from your group's vocabulary.
- Speak about your own experiences as a leader and talk about other leaders who have impacted your life.
- Celebrate local and worldwide female leaders, especially those involved in STEM.
- Encourage interest in careers involving STEM subjects.
- Participate in or host a build day, workshop, or all-girls event*