Building Teams that Build Robots

A guidebook for new

FTC Mentors and Coaches

Thank you

Mentors and Coaches
provide the glue that
hold FTC Teams together.
We value and appreciate you!

FTC Program Goals

To show students

- that STEM subjects and problem-solving are not only fun and rewarding, but are proven paths to successful careers and a bright future for us all;

- the value of hard work, innovation and creativity; and

- the importance of working together, sharing ideas and treating each other with respect and dignity.

Life Skills

"Participants report strong, positive impacts on their knowledge, interests, attitudes and skills.

More than 90% of the Team members reported learning more about how science and technology can be used to **solve problems in the real world**; that the subjects they learned in school have real-world applications; and **the importance of being able to cooperate and compete** with the same people using **Gracious Professionalism**; 85% or more reported learning about the kinds of jobs people do that use science and technology.

Eighty percent (80%) or more also reported that they were **more interested in doing well** at school, plan to **take more challenging math or science courses**, and were more interested in going to college.

A high percentage of participants– generally over 90% -- also reported **learning critical life and workplace skills** through the program, including **teamwork**, interpersonal/negotiation skills, planning and **problem-solving**, time management, and **communications and presentation skills**."

--FTC/FRC Cross-Program Evaluation–Final Report
Center for Youth and Communities, Brandeis University, September 2011

FOR INSPIRATION AND RECOGNITION OF SCIENCE AND TECHNOLOGY

Gracious Professionalism

At *FIRST*, Team members help other Team members, but they also help other Teams.

Professionals possess special knowledge and are trusted by society to use that knowledge responsibly.

Gracious professionals make a valued contribution in a manner pleasing to others and to themselves.

In the context of *FIRST*, this means that all Teams and participants should:

- Learn to be strong competitors, but also treat one another with respect and kindness in the process.
- Avoid leaving anyone feeling as if they are excluded or unappreciated.
- Knowledge, pride, and empathy should be comfortably and genuinely blended.

Why Teambuilding?

- Teambuilding is an important skillset to help students be successful in the "real world".

- Students will learn from each other as well as from Mentors and Coaches.

- When people are comfortable, they are more willing to take risks and can handle failure better.

- Students will develop the ability to network and make connections with others.
- A better understanding and appreciation for others is critical in the global world we live in.

- Sharing ideas leads to more ideas and greater innovation.

- Students will build life-long friendships that brings meaning and value to the work they are doing together.

Together
Everyone
Achieves
More

…but HOW do Mentors and Coaches build Teams?

Together

Build relationships

- Create Team identity
  - Motto/cheer
  - Logo(s)
  - T-shirts/costumes
- Rituals and patterns
  - Team check-ins
  - Annual event(s)
  - Regular social meeting (not just about building robots!)
- Have Fun!
  - Teambuilding activities: get students to intermingle and be silly together

Everyone

- Have a process to ensure equality within the group.

- Celebrate all skills and abilities.

- Ensure each person has an equal say in decisions.

- Gently curb students with dominant personalities.

- Encourage students with softer personalities.

- Recruit new members (as long as the Team size stays manageable).

Achieves

- Every member has a role;

- Each role depends on the others; and

- Students are encouraged to take on new roles.

- Everyone contributes to the Engineering Notebook.

- There are opportunities for everyone to shine and be recognized.

More

- Set Team goals both for the group and for the annual competition(s).

- Troubleshoot problems right away, but work **with** the students to solve the issue.

- Provide feedback that is positive and constructive.

- Gradually release responsibility of the team over to the Team.

- Have Team meetings to discuss the Team's progress and comfort level.

- Reach out and give back to the Community and other Teams.

Building FTC Teams

- Start at the first meeting – even before you have the materials. Get the group engaged in an activity (non-robot-building!).

- Participate. Role modeling is the best way to get the students to participate or to see the value of the activity.

- Incorporate robot-building and non-robot-building activities into your group's routine.

- Students learn in a variety of ways, so vary teambuilding activities, too. Have some that are physical, intellectual, creative, etc.

Building FTC Teams

- Incorporate student interests. If you have a student who is passionate about soccer, find a away to get the Team to be engaged in soccer for at least one day. Or baking. Or music. Or whatever. Make it about the students, all the students, and not the adults.

- Observe who is a natural leader and who is more reserved. As the year progresses, restrict the leaders from talking (or select the one/few person(s) who get to talk) as part of the rules of teambuilding activities – it forces new leaders to develop and for the Team to rely on someone they hadn't before.

- As time passes and the Team grows close, release responsibility for teambuilding to the Team. Have students select and plan teambuilding activities, and have Team meetings to address conflicts (as appropriate).

Building FTC Teams

- Create space for serious stuff. Adolescence is a turbulent time rife with emotions. Without feeling that you have to be counselors, you can create a Team that helps each other through tough times by listening and supporting. Try a weekly/monthly check-in where everyone shares something going great and something they are struggling with. It can be as big or small as the student is comfortable with, but giving them the space to share is what's important. Maintain an appropriate level of confidentiality.

- Role model. Share, play, talk about your interests, fail, etc, but be sure your voice doesn't dominate. Students naturally look to the adult, so you will have to discourage that by letting there be silence until someone speaks up or by encouraging the students to take charge.

Activities to Create Teams

Any activity that ends in laughter will build a Team and bring them closer together, especially if the adults involved participate!

If you need something to fill time, the group is lacking energy, or divisions are being made amongst the group, then try Tag; Charades; Red Rover; Dodgeball; Hangman; Hopscotch; Pictionary; Red-Light, Green-Light; Mother, May I? and many more – you don't need a fancy activity, and often the fun games kids played when they were younger they still enjoy (even if they complain, deep down they are really having fun).
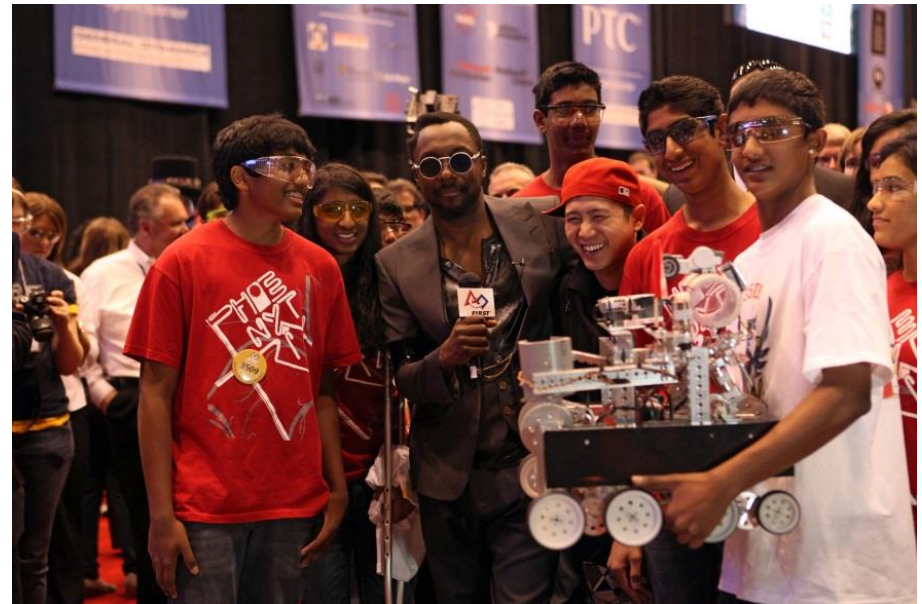
Activities to Create Teams

For new Teams, or Teams with new members, try these activities (a quick internet search for these types of activities will yield many options to select from):

- **Name Games** – these are best suited for brand new Teams or if there are new Team members. These are fun activities to help everyone learn each others' names. You can have a few prepared ahead of time or ask students to suggest ones they know. Mix up the group and keep moving the students around whenever possible so they come into contact with different kids.

- **Ice breakers** – these are also for new Teams or if there are a lot of new Team members. This is an activity designed to get people sharing a little bit about themselves so they can connect with the other kids.

- **Problem-solving** – Use these throughout the year to build and maintain your Team. Getting the students to work together to solve a small problem will help them learn to work together and trust each other. You can start these out being completely unrelated to robot-building, and then as everyone develops the skillset, get them closer to STEM-related problems. Start with simple problems – Sudoku, Tic Tac Toe, or Rebus Puzzles.

Activities to Create Teams

Building a Team takes time and involves personal risk. To help develop a close Team, start by doing "low risk" activities together, then add a dimension of risk once the Team is comfortable with "medium risk" activities. For Teams that are very comfortable and/or have been together for a while, take the relationships to the next level with "high risk" activities that rely on and help deepen trust.

- **Low Risk**– these are the Name Game and Ice Breaker – style activities. Even a rousing game of "Mother, May I" is low risk in that it asks little of the students physically or emotionally.

- **Medium Risk**– These are activities that involve students getting closer personally and emotionally. They can include Tag or "I Love People" or "The Human Knot." They might also include sharing more personal details, including fears.

- **High Risk** –These activities are not for new Teams, as they generally require a higher level of vulnerability on the part of each member. Activities could include trust falls or rock climbing and sharing might include difficult past experiences.

Coaching Tips
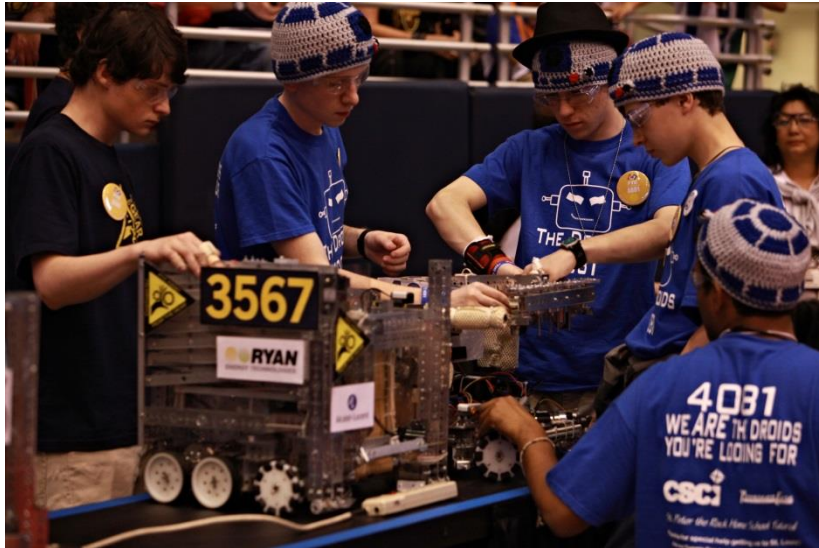
- Mentors and Coaches should work together and share the workload and spotlight.

- Get to know each member of the Team as a person and identify the strengths they bring to the Team.

- Support and encourage Team members to try new skills and tasks.

- Ask open-ended or leading questions.
  Try these:
  – What's your plan?
  – What's another way to achieve this goal?
  – How can _____ help?
  – Would you like to try _____?
  – What have we learned?

Resources

FTC has many useful resources available (listed below). The most valuable resource is other Mentors and Coaches, so be sure to connect with them on social media, through the FTC Forum, or get connected through your Affiliate Partner.

- FTC Forums: http://ftcforum.usfirst.org
- Continuing Education credit – CEU: http://ftctraining.usfirst.org/
- *Mentor's Guide:* http://www.usfirst.org/2013-FTCMentorGuide.pdf
- Mentor 101 training video: http://www.youtube.com/
- FTC Quick Start video guide: http://www.youtube.com/playlist
- Affiliate Partner in your area: http://www.usfirst.org/regional-contacts