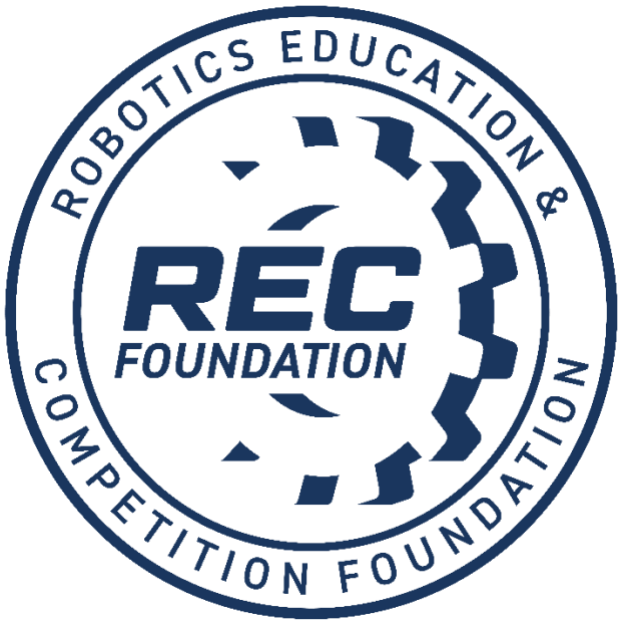

ROBOTICS EDUCATION & COMPETITION FOUNDATION

Covid-19 Guide for Educators, Coaches, and Mentors

2020-2021

This document was created to help our coaches and teams navigate in-person, hybrid, or remote instruction and events.

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Section 1 – Why Robotics?

Greetings VEX Educators and Coaches,

If you have heard me speak about robotics, you know one of my core values is my confidence in the iterative design process and the usefulness of learning from failure. I feel that the importance of the iterative design approach has never been more true than the 2020-2021 robotics season. Unfortunately, Covid-19 has thrown us a curve ball and it seems like every month we are going through the iterative design process of what works, what doesn't work, what failed, and how do we succeed. I want to stress to the community that these trials and tribulations have been what sets us apart from any other activities in which our students participate.

These are challenging times for us at the REC Foundation as well as the robotics community in general. We have fielded questions from concerned mentors, coaches and Event Partners for the last few months on what the robotics season will be like for their students. I can assure you that our number one goal is to give students as close to a "normal" season as possible. That only happens with cooperation and support from our robotics community. We currently have over one million students in our program; one million students that want to pursue their passion for robotics no matter what "normal" looks like.

The REC Foundation created the Season Restart Guide and this Covid-19 Coach Guide as a starting point for our robotics community. If your team is still unable to participate due to district or school-specific restrictions, we want to help give your students a robotics season. They worked too hard and waited too long not to have one so we have included suggestions on how to start your own team or reach out to the community to start a team.

As always, please reach out to your Regional Support Manager for additional information and guidance. The REC Foundation is here to help you inspire students, one robot at a time.

Dan Mantz

CEO
REC Foundation

Section 2 – Remote Teaching Resources

The following information can be implemented for In-Person, Hybrid and Remote Instruction

The REC Foundation has endeavored to make teaching resources easy to find, understand, and implement so that you can focus on helping your students achieve their maximum potential. Make sure to visit the following resources for more information.

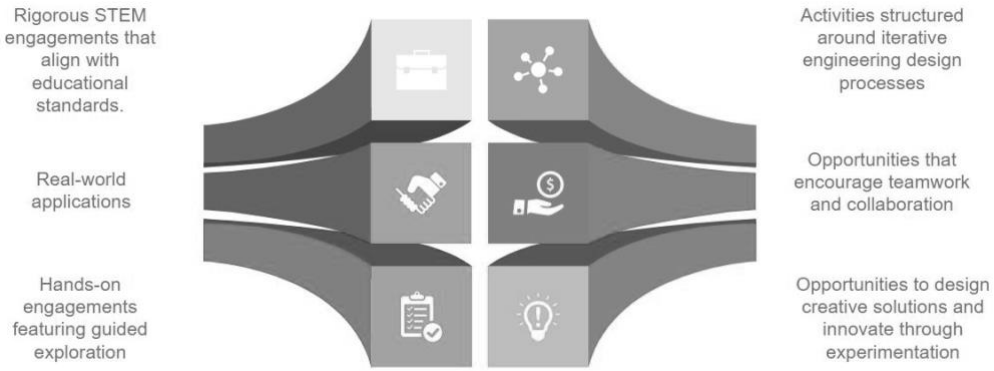
Educational Webinars

The REC Foundation is hosting Tuesday Tech Talks and Thursday Tournament Manager Tech Bytes webinar series. These webinars include topics such as Team Management, The Engineering Design Notebook, and the Engineering Design Process, How to use the Tournament Manager software and many other topics! You can find more information and view past webinars by visiting the REC Foundation YouTube channel. Additionally, find our CEO Town Hall and Event Partner Summit presentations on the same channel.

VEX Robotics will continue to host in-depth webinars where educators and coaches can find information about the ongoing developments in educator resources. These webinars will include topics ranging from how to properly clean VEXequipment, practical tips for working with students with social distances and other limitations on interaction, STEM Labs in your classroom, and teaching using VEXCode VR remotely. You can find more information by visiting the VEX Robotics YouTube Channel.

STEM Labs

STEM Labs are free activities available online and are specifically designed to make learning more meaningful for students. STEM Labs function as "plugin" lessons that can fit into your existing curriculum that utilizes VEX Robotics parts. You can also utilize multiple STEM Labs in sequential order to create a unique, extended learning experience for your students. The STEM Labs are aligned to educational standards and promote collaboration and exploratory learning. Students will engage hands-on-learning activities that allow them to apply technology, science, math, and engineering skills as they enjoy a 21st-century learning experience while utilizing problem-solving and computational thinking skills that apply to many disciplines.



Knowledge Base Articles

Since its inception, the VEX Robotics Knowledge Base provides practical and thought-provoking discussions centered on STEM and educational robotics. With many schools choosing Remote learning environments, VEX is committed to helping teachers and parents continue to keep children engaged in STEM while at home. These Knowledge Base articles include direct links to STEM Labs, as well as pacing guides for both the VEX IQ and V5 platforms.

VEXcode VR

Do your students not have access to their physical robots? VEXcode VR lets you code a Virtual robot using a block based coding environment powered by Scratch Blocks. VEXcode VR is based on VEXcode, the same programming environment used for VEX 123, GO, IQ and V5 robots. Now STEM learning can continue while at home for students, teachers and mentors with no access to their robots.

Why VEXcode VR?

- Developing coding solutions with a robot provides a relevant context for engaging students in CS.
- Robots with sensors and physics integrate CS into STEM.
- Remote playgrounds help to contextualize STEM learning and authentic student inquiry.
- Activities provide a structured and approachable STEM learning experience.
- VEXCode VR knowledge and principles translate directly to VEX 123, GO, IQ and V5.
- Robots make Computer Science (CS) come to life with tangible, real world applications.

Online Challenges

This season, the REC Foundation has released a series of ongoing Online Challenges for the 2020-2021 Season. These Online Challenges provide special

opportunities for educators and teams to compete remotely and maintain social distancing while competing for spots to the 2021 VEX Robotics World Championship. Educators are able to incorporate these Online Challenges into their remote assignments for students while allowing them to showcase their talents and skills. Online challenges include topics ranging from STEM research, web design, programming, CAD Design, photography, video production, and many more!

Teams must register for the 2020-2021 competition season to participate in Online Challenges. Please register at RobotEvents.com.

Engineering Design Process

"The Journey of a Thousand Miles Begins with One Step" – Chinese Proverb

The REC Foundation believes that the Engineering Design Process teaches team members a variety of critical life skills including project management, time management, brainstorming and teamwork. Documenting the engineering design process helps students acquire workforce development skills. Not only does the team use an Engineering Notebook to organize and document their thoughts, it is also a place to reflect on activities and projects.

This season, teams are permitted to transition their Engineering Notebook to an online/digital format. You can find more information on the judges guide at the Judge Guide Addendum and the Engineering Notebook Rubric.

Section 3 – Covid-19 Best Practices

The following information can be implemented for In-Person, Hybrid and Remote Instruction.

The REC Foundation accumulated the following lists of tips, suggestions and best practices to use with your classroom and teams. The REC Foundation reminds all participants, especially Event Partners, that they should contact their state, provincial, and local health authorities prior to resuming any in-person activities.

Safe use of equipment

Cleaning

- ➥ Knowledge Base Article on VEX cleaning

Sharing of equipment

- Perform daily temperature checks and frequent hand washing each time the team meets.
- Incorporate hand-washing as a part of your team's routine at the start of every meeting or before parts are handled without protective gear.
- Wear gloves when handling or sharing parts.
- Apply for grants that would allow educators or districts to purchase "individual" kits for students.
- Assign parts kits to individual students or small groups to minimize cross-contamination. Color-coding containers or purchasing different colored VEX parts can help identify different kits.
- Repurpose the clear VEX IQ boxes that ship with kits as "Disinfected" or "Needs Disinfecting" to help keep parts organized.
- Sign out equipment to your lead builder and allow them to build the robot at home while other team members are on video call documenting the process. (If allowed by your school/district)
- Lead programmer can program and send code file to builder to download to robot and test
- Communicate using Google Hangout or video streaming calls for non-build days.
- Utilize Google Folder, Microsoft Teams, Slack Channels or Class Dojo to remotely communicate with parents and students.
- Assign students into groups:
    - During the first part of the season kits are used by one group to design and compete
    - Kit is disassembled and sanitized for use by the next group. Repeat. Note: A series of clear pictures, as well as videotaping robots being disassembled can help in those robots potentially being remade later.
    - After all groups compete, earlier teams can be reformed and robots remade with the best robots representing the organization for the next level of competition (State or Regional Championship).
- Use a rotating schedule for build time and use of the field to keep an appropriate number of students in the room at a time.

Additional Best Practices

Specific classroom ideas for educators, from educators

- If your students want to participate and are unable to due to the district or school-specific restrictions:
    - Consider teams formed not by schools but by other organizations such as 4-H, scouting, religious organizations, community organizations, and independent neighborhood groups.

    - Hold small robotics meetings in mentor's homes. Parents choose if their child participates in-person or remotely based on their comfort level.
    - Provide alternate venues (I.e. library, city hall, community center) so students can still compete.
- Creating a Remote digital platform classroom with access to the STEM Labs, Knowledge Base articles, VEXcode VR, and REC Foundation Online Challenges. Most schools are using Google Classroom, Schoology or creating specific courses on Canvas.
- Work with local industries for "remote mentors" specializing in STEM fields. This is a no cost option that may even lead to monetary sponsorship in the future and can be a great learning experience for students.
- Designate a team captain to meet with the rest of their team remotely and discuss building ideas. The designated team members build the design and report back to the team.
- Utilize a 6-foot table and have students work on each end to maintain social distancing using gloves and masks.
- Utilize CAD software and have students design their robot in a socially-distanced setting. That design might then be built by a single student or several students in isolation.
- Create fun and helpful activities for students to build as a warm-up to building a robot. (Examples: Design a hand sanitizer dispenser and the Helping Hand activity located in the STEM Labs).
- Meet outside to practice/compete using the socially-distanced method approved by your local/state/federal agencies. Tents or other open structures may assist with meeting those requirements.
- Students and Teams collaborate Remotely using Google Docs, Slides, Jamboards, etc.
- Have teams contribute to the team journal using Google Docs. Designate one student to physically capture that information in the team journal.
- Incorporate one (or many) of the Online Challenges into your lessons.

Section 4 – Team Guide Update

The following information can be implemented for an In-Person or Hybrid Setting

The REC Foundation's Team Guide is available to assist a coach through the entire robotics season. This Section is an update to the Team Guide based on the Covid-19 crisis. In this Section, we explore the temporary changes to the robotics experience this season.

In-Person Events

Events that take place in-person are, essentially, the same as the events described in the Team Guide. It is important to read the event posting on RobotEvents.com carefully to know of any modifications that the EP is making. This may include:

- Health & Safety: mandatory protective gear, attendance limits, social distancing requirements, no high-fives or handshakes, etc.
- Smaller leagues and tournaments
- District-centralized Tournaments
- Live-streaming events instead of an audience
- No public charging stations for batteries and controllers
- No concessions
- Pre-recording event meetings avoids requiring everyone to be in the same place.

Modified or Hybrid Events

This year the REC Foundation is allowing for a variation to the events described in the Team Guide with Modified and Hybrid events. The changes that are listed above for the In-person events are still options but, additionally, refer to the following resources for descriptions to changes with Modified and Hybrid events:

- VEX IQ Challenge Game Manual – Robot Skills Challenge Format Options Section *(Remote Competition Events)*
- VEX Robotics Competition Game Manual Appendix B – Robot Skills Challenge Format Options Section *(Remote Competition Events)*
- Judge Guide Addendum (Includes verbiage on Digital Engineering Notebooks)

Participant Release Forms

The REC Foundation requires the submission of Consent Forms for all event participants, including coaches. New this year, Consent Forms are only accepted via online submission through Smartwaiver. The mandatory online submission reduces in-person contact at events and allows participants to submit the form once per season. The Consent Form is required for all team members, including participation in Online Challenges. This is another way the REC Foundation is keeping our community safe.

Grant Information

Grants are still available for the 2020-2021 robotics season! To find a grant in your area go to RobotEvents.com/grants and search by zip code. You do need to create a free RobotEvents.com account before you can apply.

Note for previous grant recipients: A requirement for REC Foundation grants is the requirement to compete in an event during the season. We understand that this might not be possible due to travel restrictions in your area, so the REC Foundation is extending the option to compete in one of our many online challenges as a registered team. Please contact your Regional Support Manager for more information and specific questions.