From PreK to College: Building a VEX Community in your district

Shelli Brasher, Presenter
Ashley Phipps, Chat Monitor

BEFORE WE BEGIN

BEST PRACTICES

This is for YOU - the Coaches. Please ask questions when you have them.

Utilize the Chat
Share Pro Tips

Take Breaks

Ask Questions in the Chat

Be Respectful

From PreK to College:
Building a VEX Community in your district

- **Competitive Robotics**
  Where it all began
- **The Evolution**
  From College to Elementary
- **The 4th "R"**
  Meeting the needs of all

YOUR PRESENTER

Shelli Brasher

Senior Programs Manager
VEX 123, VEX GO and Girl Power

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Resides in Tennessee

Secondary Mathematics/STEM Teacher - Retired

Regional Support Manager

Educator/Coach Trainer

Sr. Programs Manager

Early Education Specialist

Girl Powered/Girl Scout Initiatives

Ashley Phipps

Director of Regional Operations
Team Engagement

Resides in Florida

STEAM Educator, K-12

- Art, K-12
- Technology, K-5
- STEM/Robotics, K-8

Robotics coach and mentor, 2014-Present

- Elementary - High School

RECF VEX Worlds Marketing Producer

Parent to six children ages 4-17

ashley_phipps@roboticseducation.org

How it all began

INSPIRATION ALL STARS

"You have to help straighten things out. Your participation in this robotics competition is the perfect first step. By respecting one another you're laying the foundation for understanding humanity. By going through the rigors of competition and exercising the grit needed to build your robot, you are learning about yourself."

-- Hall of Fame Induction Speech

Woodie Flowers

Massachusetts Institute of Technology
Pappalardo Professor Emeritus of Mechanical Engineering
Massachusetts, USA

VEX Robotics/Coding

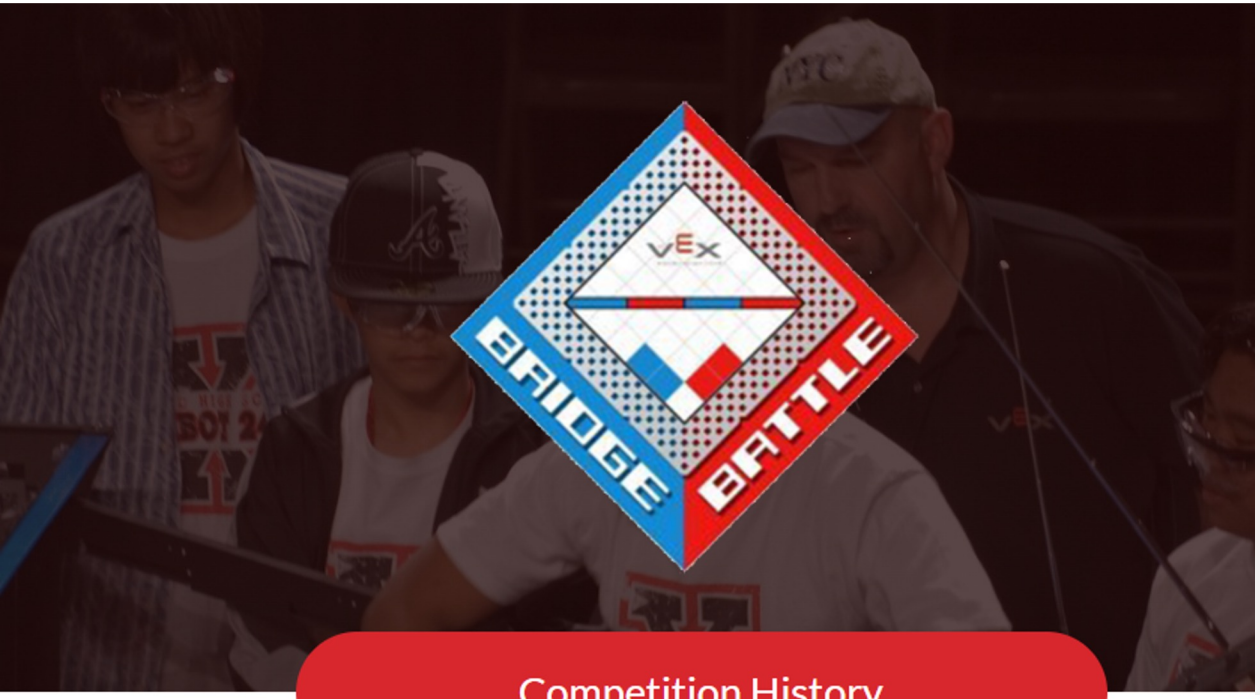
In High School/Vocational Classrooms

- **Primarily offered to a small number of students at the High School level**
- **Usually a CTE course of study**
- **Teacher had a related area of expertise**
- **Eventually offered to more students at Middle and High School level through STEM Courses**

Image to the left: from a PLTW project, the Marble Maze

VEX Robotics Competition

WHEN VRC COMPETITION PROGRAMS BEGAN



Competition History

Teams primarily consisted of high school students, but since there was no minimum age, children as young as Kindergarten were on VRC teams.

Growth in numbers of teams led to the division of high school/middle school teams, with elementary children still participating with VRC

VRC History - 2007-2008 - Bridge Battle

The First VEX Worlds

Middle School Team Coaches talked. We listened.

When VRC Competition Programs began to flourish at the Middle School Level:

Pros	Cons
Introducing Robotics/Coding **before** students are choosing their high school courses, leading to a career path	Builds that were complex and required the use of **tools**, which **required adults to help**…a lot!
Opportunity to introduce STEM concepts **before** the students develop a **preconceived notion** that they aren't smart enough to do robotics and coding	Playing a **2V2 game** requires a certain level of "social readiness"
Build a **Feeder** Program: Students coming into High School VRC programs have prior experience, making them more competitive against other High School teams	Middle school aged students **already** have **preconceived notions** on their abilities, so we needed to start earlier
	In many regions, Middle and High School teams still competed in **blended** events.

The Solution?

VEX IQ Competition

When IQ Competition Programs began:

VEX IQ Challenge History - 2012-2013 - Rings N Things

Teams primarily at middle school level, but no minimum age limit allowed younger students

Growth in numbers of IQ teams eventually led to the division of middle/elementary school teams

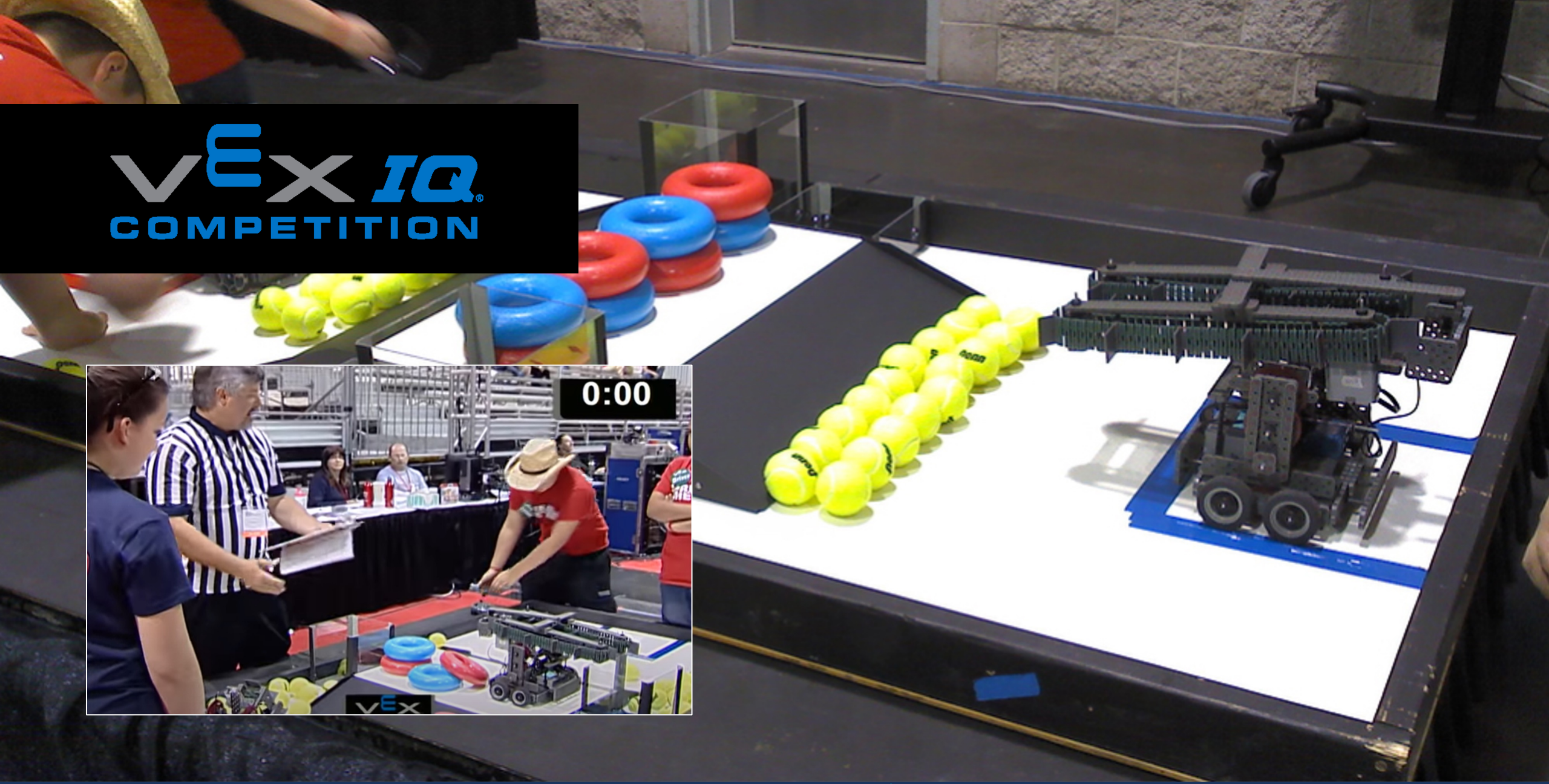

VEX IQ
COMPETITION
0:00
VEX

Photo above: Nadine Amaya at an Elementary IQ Tournament

The Challenge of Going Lower

Just How Low Can You Go?

- **IQ Teams primarily at middle school level**
- **Rarely, if ever, associated with a robotics/STEM class**
- **Usually a club, maybe in a Gifted Class**
- **Coach seldom an expert**
- **Eventually moved down to elementary school students**

Elementary School Coaches talked. Again, we listened.

When VIQC Competition Programs began:

Pros	Cons
STEM Starts Early! The importance of introducing these concepts and experiences **before preconceived notions** are developed	Difficulty in assembling with small pins. Hard to put together, hard to take apart, **requiring adult assistance**
Students coming into Middle School IQ or VRC programs have prior experience, making them more competitive against other High School teams…..**feeder!**	The **need for a lot of equipment** in order to implement in the classroom
They can do it and do it well!	Curriculum didn't relate to the core standards, so it was an **"extra"** that was provided as after school programs or for gifted students.

SO LET'S START STEM EARLY!

(and do it right!)

2022 REC FOUNDATION COACH SUMMIT


English
Art
Science
Literature
Music
Math
History
Geography

Reaching School STEM Learning Goals with the VEX Continuum

Grades Pre-K+

VEX 123

Grades 3+

VEX GO

Grades 6+

VEX IQ

Grades 9+

VEX V5

Grades 9+

VEX V5 WORKCELL

VEX 123

Ages 4+

Coding as Easy as 123!

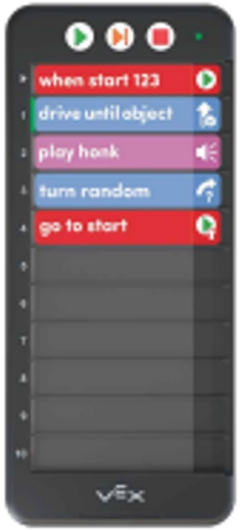
VEX 123 is an interactive, programmable robot that takes Computer Science and Computational Thinking off of the screen and brings them to life.

1 Touch and Go

The 123 robot can learn sequences by simple touch. Control movements and sounds to learn basic logic and problem solving.

2 No Devices? No Problem!

The 123 robot is programmable without a computer. Using the VEX Coder and physical cards, you can learn real programming away from screens.



3 Powered by Scratch Blocks

VEXcode 123 - available for tablets, Chromebooks, Mac and Windows devices - allows you unlock the full power and capabilities of your 123 robot.

Ages 8+

VEX GO

An affordable construction system that teaches the fundamentals of STEM through fun, hands-on activities that help young students experience coding and engineering in a fun and positive way!

Empower Your Elementary Students by Building a Robot within Minutes!

Inspiring

Includes fun, collaborative

Creative

With VEX GO, kids can imagine

Approachable

Minimal instructions needed

VEX GO

STEM Starts Early for Grades 3+

go.vex.com

Single Classroom Robot Kit

Four Competitions in One Kit

VEX IQ

Ages 11+

The World Leader in STEM Education

VEX IQ, for grades 6+, enables classroom & competitive robotics that inspire students with a complete STEM experience, developing creativity & innovation.

IQ Robotics Construction System

- Designed to teach STEM
- Snap together parts are perfect for young builders
- Classroom robots are quick to build and learn
- Competition robots are more robust and exciting
- Prior robotics experience not required

IQ Kits Have Everything You Need

- The classroom kit keeps groups of 2-4 students highly engaged
- The competition kit will kickstart any new team

IQ Components are the Essentials of STEM

- Electronics to program robots and drive wirelessly
- Motors and wheels to get your robot moving
- Structural parts to bring your creation together
- Sensors allow your robot to react to the real world

Robotics is STEM

- Learn Computational Thinking
- Learn Computer Science
- Learn from Failure
- Learn to Iterate

Free with Every Robot

- Professional Development
- Educational Content
- Coding Software
- Anytime Support

Let's Get Connected

VEX IQ

Applied STEM Learning
for **Grades 6+**

iq.vex.com

Single Classroom Robot Kit

Single Competition Robot Kit

VEX EXP

Real-world STEM
for Classrooms Grades 9+

exp.vex.com

Single Classroom Robot Kit

Education Kit	280-7735	$749

All-in-one Classroom Solution!

VEX V5

Ages 14+

The World Leader in STEM Education

VEX V5, for grades 9+, enables engaging classroom & competitive robotics that inspires students with a complete STEM experience, ensuring workforce & college preparedness.

Teaching with V5 Robotics Construction System

- Designed to teach advanced STEM
- Real-world metal parts are perfect for older builders
- Classroom robots are fun to build and learn
- Competition robots are more robust and exciting

V5 Control System Provides Advanced Learning Options

- Robot Brain has interactive color touch screen
- Wireless driving and programming
- Smart Motors are more precise and powerful

V5 Components are the Essentials of STEM

- Multiple wheels, chains, and tread options for advanced robots
- Steel structural parts are cost effective for classrooms

Robotics is STEM

- Learn Computational Thinking
- Learn Computer Science
- Learn from Failure
- Learn to Iterate

Free with Every Robot

- Professional Development
- Educational Content
- Coding Software
- Anytime Support

Let's Get Connected

VEX V5 WORKCELL

Ages 14+

An Introduction into the World of Industrial Robotics Automation

The V5 Workcell is a construction system for a 5-axis robotic arm, conveyors and sensors.

The V5 Workcell together with VEXcode V5 provides students with the opportunity to develop technical and problem solving skills by building and coding a simulated manufacturing workcell.

Workforce Development Done Right

For the educator

- Scaffolded 12 lab curriculum
- Free Educator Certification course
- 17 hours of certification course content

For the student

- Problem solving and collaboration
- Expanded career options
- Integrated STEM learning

Factory Automation Competition

by the REC Foundation

The Factory Automation Competition is a classroom-based competition that allows students from around the world to integrate and recognize how STEM skills translate to the workforce.

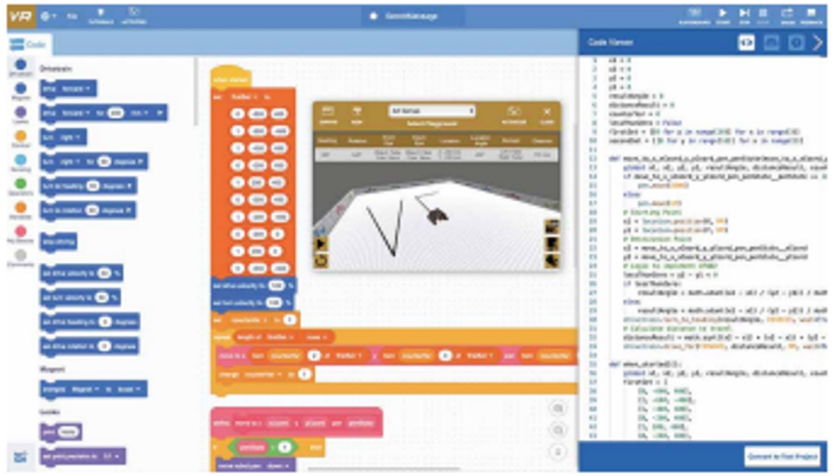
Teams are presented with various manufacturing challenges to have the best throughput and run time at different competition levels.

VEX CODE VR

From Classroom to Remote Learning, VEXcode VR brings Computer Science to Your Students any time, any place.

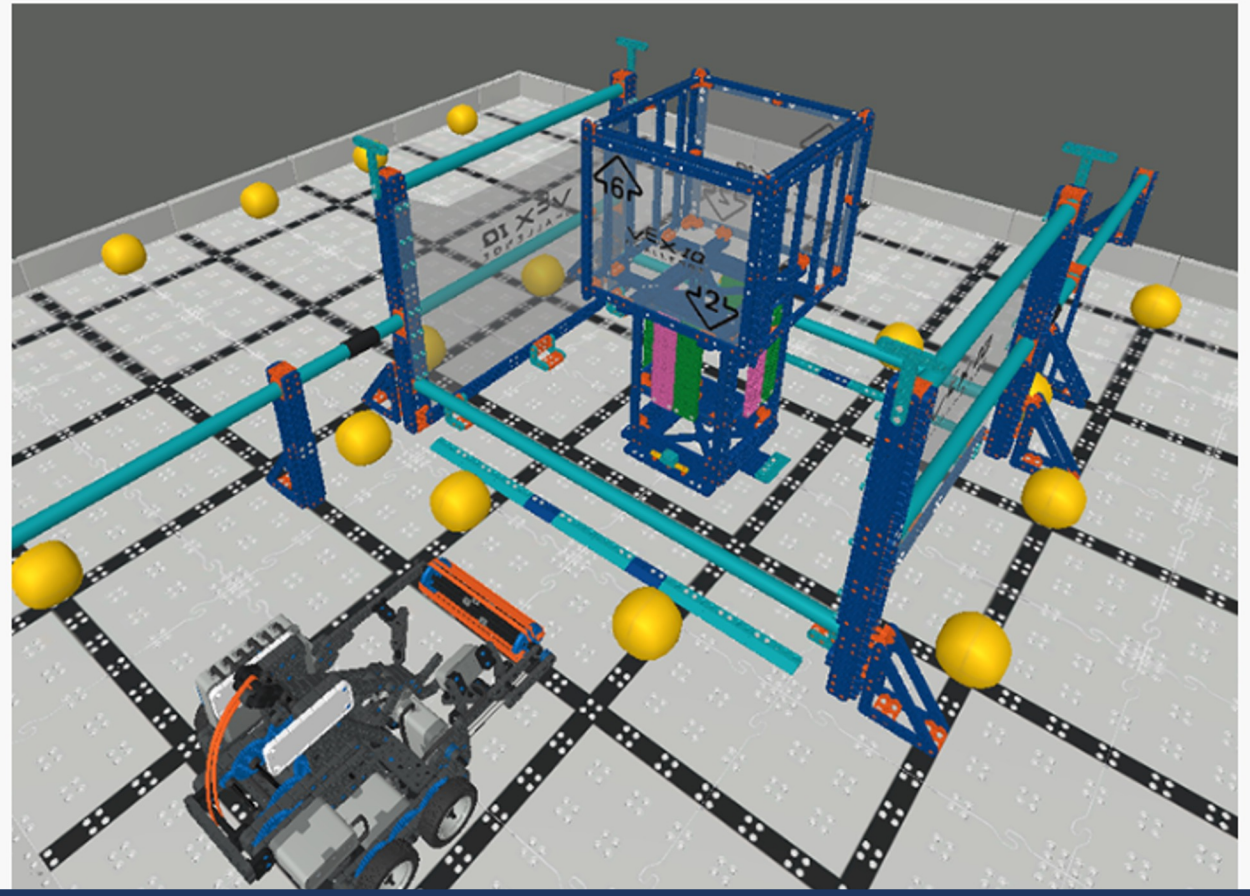
About VEXcode VR

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. We all know that robots make Computer Science (CS) come to life with real world applications. Now STEM learning can continue while at home for students, teachers and mentors

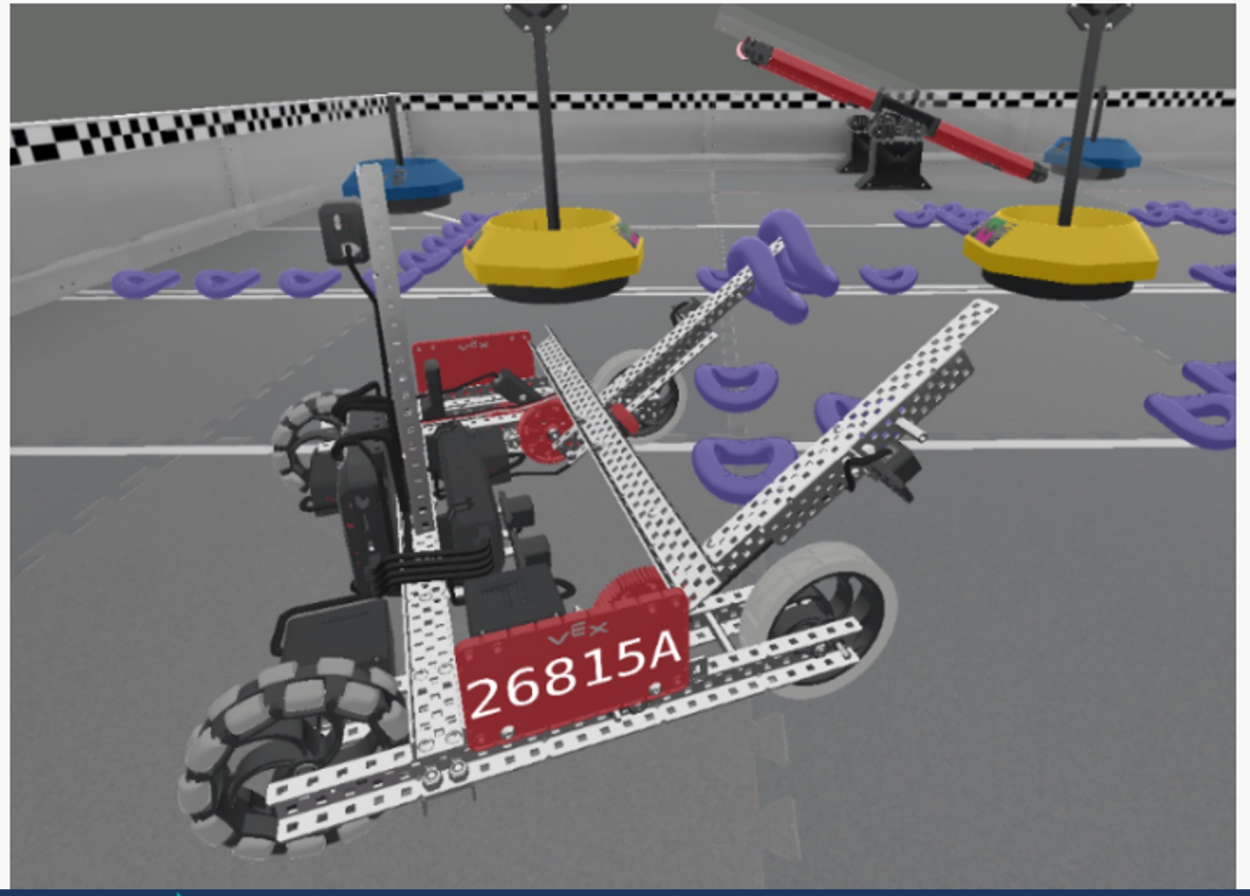


VEXcode VIRTUAL SKILLS

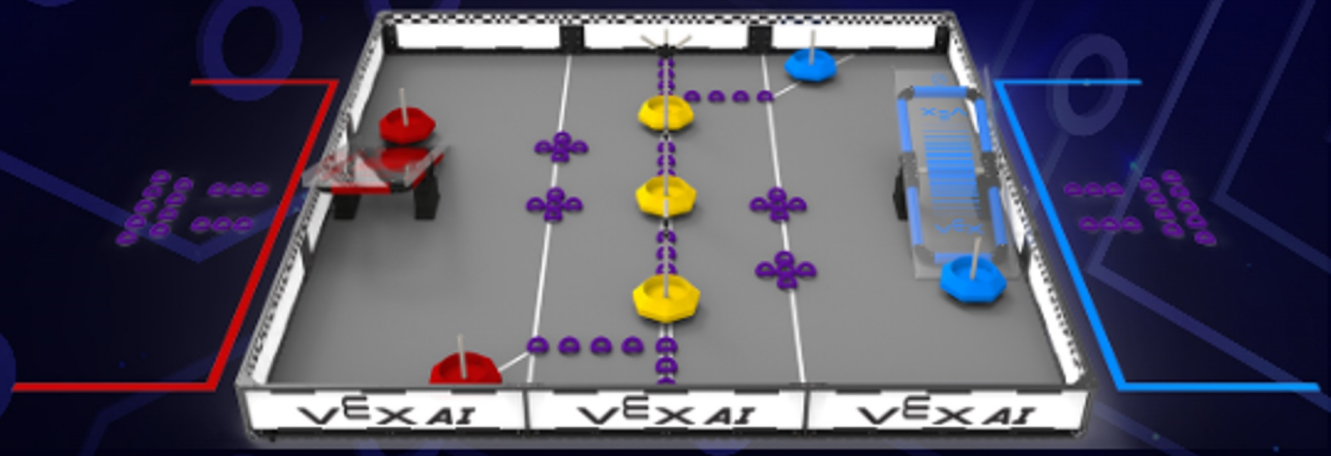
VEX IQ Competition



VEX Robotics Competition (V5)



VEX AI COMPETITION



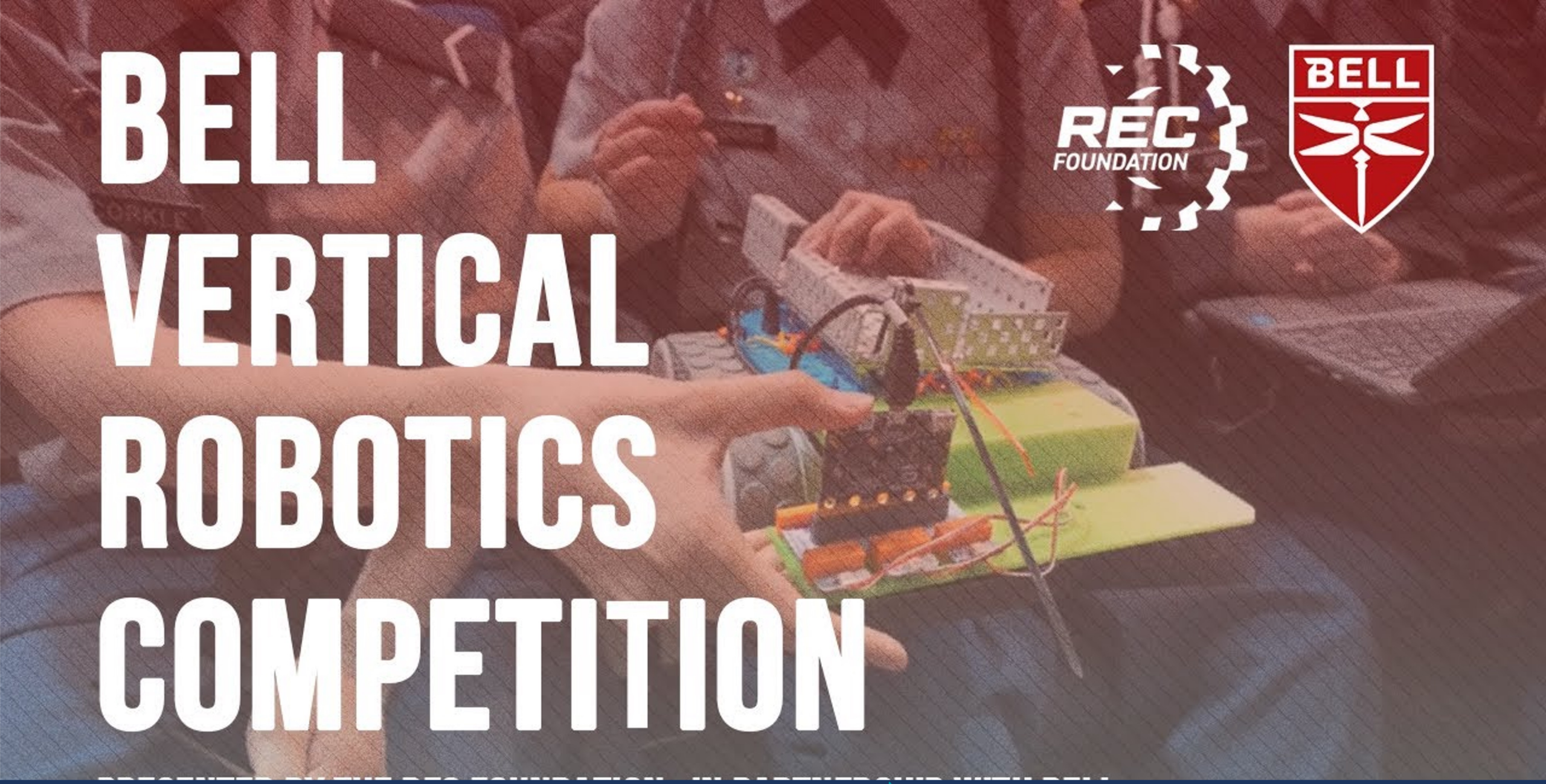
Object Classification

Object Pixel location

Distance to Object

Services Page Update Page

BELL VERTICAL ROBOTICS COMPETITION



PRESENTED BY THE REC FOUNDATION IN PARTNERSHIP WITH BELL

AERIAL DRONE COMPETITION

REC FOUNDATION

ROBOTICS EDUCATION & COMPETITION FOUNDATION
Inspiring students, one robot at a time.

COACH SUMMIT 2022

The BIG Picture!

District wide Implementation

| Classroom

Ages 4+	Elementary	Middle	High	Post-Secondary
VEX 123 VEX CODE VR	VEX 123 VEX GO VEX GO COMPETITION TAKE ON A MISSION!	VEX GO VEX GO COMPETITION TAKE ON A MISSION! VEX IQ VEX EXP	VEX EXP VEX V5 WORKCELL	VEX V5 WORKCELL

2022 REC FOUNDATION COACH SUMMIT

THANK YOU

2022 REC FOUNDATION COACH SUMMIT

COMING UP NEXT

Putting the "Fun" in Fundraising

Learn tried-and-true ways to increase the financial sustainability of your programs

*Presented by **Brandi Bolinger***

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