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
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

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Senior Programs Manager
VEX 123, VEX GO and Girl Power
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Director of Regional Operations
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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
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"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

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:

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

When IQ Competition Programs began:

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 Challenge History - 2012-2013 - Rings N Things
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:

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<td>STEM Starts Early! The importance of introducing these concepts and experiences <strong>before preconceived notions</strong> are developed</td>
<td>Difficulty in assembling with small pins. Hard to put together, requiring adult assistance</td>
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<tr>
<td>Students coming into Middle School IQ or VRC programs have prior experience, making them more competitive against other High School teams...feeder!</td>
<td>The need for a lot of equipment in order to implement in the classroom</td>
</tr>
<tr>
<td><strong>They can do it and do it well!</strong></td>
<td>Curriculum didn’t relate to the core standards, so it was an “extra” that was provided as after school programs or for gifted students.</td>
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SO LET’S START STEM EARLY!
(and do it right!)
Reaching School STEM Learning Goals with the VEX Continuum
Coding as Easy as 123!

VEX 123 is an interactive, programmable robot that takes Computer Science and Computational Thinking off 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 Code 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 to unlock the full power and capabilities of your 123 robot.
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
- Creative
- Approachable

VEX®GO

Ages 8+
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**
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
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.
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.
VEX IQ Competition

VEX Robotics Competition (V5)

VIRTUAL SKILLS
AERIAL DRONE COMPETITION
The BIG Picture!
District wide **Implementation**

<table>
<thead>
<tr>
<th>Ages 4+</th>
<th>Elementary</th>
<th>Middle</th>
<th>High</th>
<th>Post-Secondary</th>
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<tr>
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<td><img src="image" alt="VEX V5" /></td>
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**Classroom**
THANK YOU
Putting the “Fun” in Fundraising

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

Presented by Brandi Bolinger