



2025 CTE Summer Swap Academy

hosted by Maize Career Academy
facilitated by Kansas Center for CTE



Robotics in Action

Developed for Grades 6-8 Robotics Teachers

Imagine a classroom where students are not passive learners, but active creators, engineers, and problem solvers. Picture them working collaboratively to build robots that respond to their commands and even interact with their environment. In this session, participants will explore how robotics can ignite a passion for learning in our students. Participants will jump into the role of a beginner robotics student, building a few different simple builds, as well as coding on the VEX V5 platform.

Specific topics that will be addressed:

- Build a simple gear train and learning vocabulary of the VEX parts
- Code using sensors with if/then statements
- Planning activities using vex.vr.com - a free virtual coding environment
- Building a clawbot and using both code and a remote control to run it
- How to run an informal robotics competition (my favorite part of the semester!)
- Using digital notebooks to document student work
- How to buy robotics equipment from VEX Robotics- and what you could use to get started

Participants will leave feeling confident in using and teaching robotics. You will be given specific activities and projects to do with your students, with criteria/constraints and rubrics for those projects. Some examples of those projects are a wind turbine, pull toy, and drag racer. I will share a copy of a digital notebook that can be assigned to students to document their work each day. You will also receive the slides for Triball Turnaround- a game we made based on the VEX competition [Over Under](#), but a much simpler version that middle school students can be successful competing in. We use this as our final project both to bring together all the skills learned in the semester, but also to introduce students to robotics teams and what a competition looks like.

Participants will need to bring:

Lesson Swap: Time will be built in to share and trade your favorite lesson plan/activity relating to robotics challenge, ways to teach coding skills, or robotics in the real world. *Please bring 15 copies of ONE lesson plan/activity!*

Laptop & charger: This will be used to access vex.vr.com (virtual environment) and <https://codev5.vex.com/> (we'll use this to download code on our robot brains). You can also use your laptop for taking notes, accessing build guides, and looking at the VEX store if you are planning to buy equipment to get your school started.

PPE: No PPE is required for this session, but closed toe shoes may be best for Day 2 when we have some robots driving around.

Supplies: You do not need to bring any of your own supplies for activities. Just your lesson swap, charged laptop, and willingness to learn some cool new skills!



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About the Presenter

Jessica Buchanan teaches Automation & Robotics, Design & Modeling, and Flight & Space at Maize Middle School. Before teaching these engineering gateway courses, she was a 5th grade teacher in the Maize school district. This is her 10th year teaching and 4th year teaching CTE classes. Jessica has been part of the Textron Aviation Externship program, and loves to bring community connections into her classroom. In February of 2024, Jessica was recognized as a Kansas Master Teacher through Emporia State University. When not teaching, she coaches Cross Country at Maize High School and Track and Field at Maize Middle School. She loves building connections with students, teaching them content that introduces engineering concepts, and always tries to incorporate creativity, collaboration, and critical thinking into lessons.