



STEM CODING AND ROBOTICS

CoderZ™ is a powerful, scalable and fun platform for teaching in-demand, real-world STEM technologies such as object-oriented programming, robotics and physical computing.

CoderZ™ is an online learning environment where students learn STEM by coding real or virtual 3D robots that offers a unique learning experience that engages students with STEM while promoting 21st century skills.

- Computational thinking
- Self-learning
- Creative Problem Solving
- Teamwork
- Digital Literacy

CODERZ PLATFORM
CODERZ CURRICULUM
STEM PATHWAYS

CTC 4
CTC 6
CTC 7

Whether you want to enhance your robotics programs with cool robot simulations, upgrade your computer science classes with robotics and physical computing or increase student engagement in STEM through engaging on-line learning, robotics competitions, after school activities, flipped classrooms and more, CoderZ is the platform for you.

Low Floor, High Ceiling Pathway

Newbies start with our Blockly, Scratch-like programming while more advanced users can go right to Java in the object-oriented code editor. Combined with curriculum for coding novices through to advanced engineering problem solving, CoderZ fits all levels at all types of schools.



Engaging Simulation

Students love the immediate feedback of the simulation that allows them to test coding assumptions and see physical results outside the robotics lab and even outside the school building.

Accessible and Scalable

CoderZ is a cloud based online tool that runs in a Chrome web browser. Students can access their CoderZ account whenever they want, wherever they are. For the teacher, being online means a high-level of student interaction and the ability to offer an enriched learning experience. For the school or the district, the application is scalable and makes broad deployment and maintenance a breeze.

Real & Virtual Robots

CoderZ is compatible with popular robotics kits like the LEGO® MINDSTORMS® EV3 and SnapDragon platform. Students can program and operate the robots their schools prefers online and then download code to real robots after completing the programming challenges.

Comprehensive Educational Solution

CoderZ is more than just coding and robotic simulation. CoderZ offers curriculum, video tutorials, challenges, missions, and learning management features for student progress tracking, assessments and class management.

CoderZ also supports teachers in their role in educating students with teacher guides, professional development and online tools.



A Learning Environment that is Engaging and Interdisciplinary

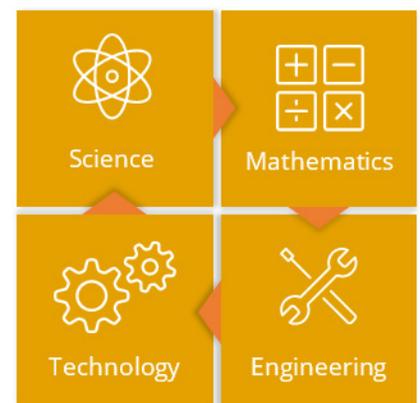
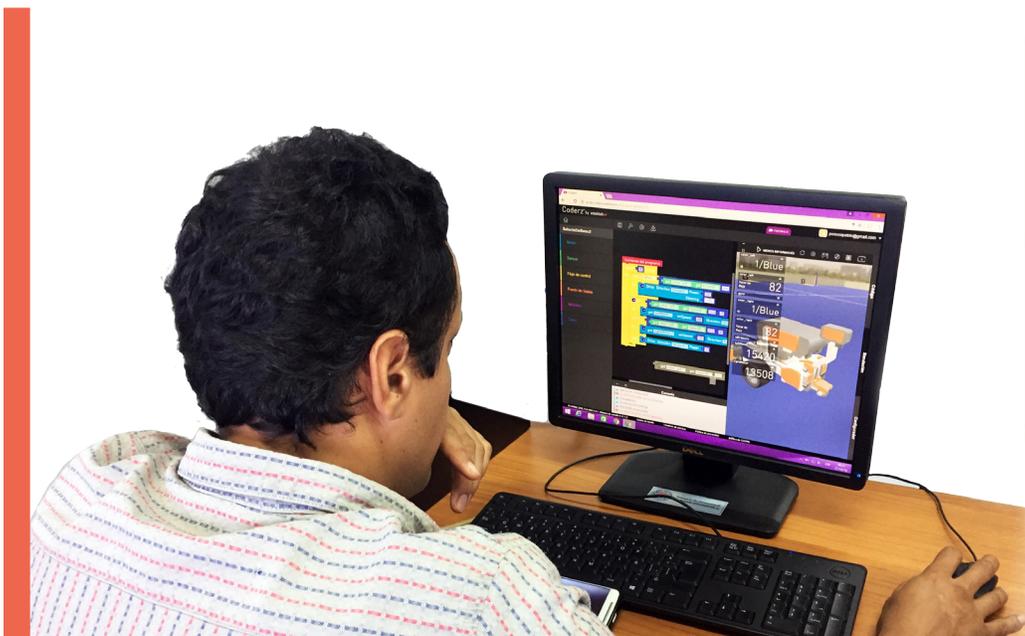
Features:

- Platform to teach coding in middle or high school
- STEM education solution for class, district or state
- Cloud based access from any browser at school or at home
- Scalable, cost saving virtual robots with simulation
- Real robot integration
- Low floor, high ceiling – Blockly for beginners, Java for advanced
- Standards aligned curriculum for middle school and high school
- Interactive online robotics competitions



Solution Benefits:

- Easy to deploy and scale cost effectively in a school, a district or state wide
- Integrates curriculum for STEM and Computer Science
- Teacher enabling classroom management, assessments and professional development
- Engages students of all ages with exciting, gamified interface
- Project Based Learning challenges evaluate progress





Cloud Based Platform that is Accessible and Scalable

Realistic Simulations

CoderZ features life-like and real-time 3-D simulation of robotic code in action. The stunning simulation lets students test their code and solve problems from the real world.

Real-Time Feedback

The simulation offers a Heads-Up Display (HUD) that shows students data from their robot's various sensors. Students can manually drive the robot, trace their route by leaving a trail and quickly update and re-run the program. HUD information helps student examine and improve their work.

Visual Editor

The visual programming interface allows students to use drag-and-drop Blockly programming to learn the basics and at the same time see the Java code behind the blocks. This helps beginners start learning programming syntax while experienced students can program directly in Java.

Configurable

The CoderZ virtual robot can be configured to match a physical robot which enables students to build and test programs before compiling and downloading them to an actual robot. CoderZ supports multiple brands of real robots and can be used in virtual or real robotics competitions.

Dynamic Challenges

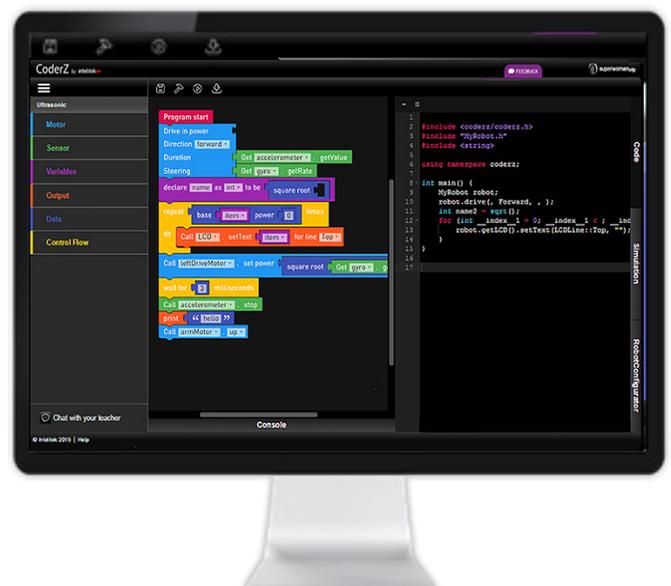
Game like challenges can be set up or be part of the curriculum to progressively present students with more stimulating exercises to test and expand their programming and problem solving skills.

Interactive

Collaborative platform can enable online robotics competitions as well as student-teacher and student-student cooperation.

Educator Friendly

Linked with teacher tools, curriculum, challenges, and online help capabilities, CoderZ is a comprehensive 21st century approach to learning STEM from Intelitek.



ENGAGING

With CoderZ, students can engage in fun real world challenges and get immediate feedback. CoderZ encourages students to progress at their own pace by creating reachable goals. With CoderZ students learn STEM and have fun at the same time.



ACCESSIBLE

CoderZ can be cost effectively deployed to a classroom, school or district. Cloud based and internet accessible, every student can code his or her own virtual robot in minutes.

INTERDISCIPLINARY

To succeed in 21st century jobs, students need knowledge of science, technology engineering, math and strong problem-solving skills. CoderZ integrates the STEM disciplines into a project-based learning environment to prepare students for the real-world.

- Engage Students in Computer Science Education (CSEd)
- Provide Exciting STEM Electives that Kids Will Love
- Introduce Robotics and Coding to the Classroom
- Integrate Computing in Career & Technical Education (CTE)





21st Century Curriculum and Learning Programs

Coding Robots

Level: Middle School

Languages: English, Spanish

Description: Coding Robots introduces students to the concepts of Robots and Code. This 45 hour program will teach your students the basics of mobile robots and how to operate them by programming. Over time students learn to solve STEM problems through code, using math and engineering to overcome challenges.

COURSE OUTLINE

- Week 1 - What Are Robots? - Learn what makes up a robot and how to operate basic operation using code.
- Week 2 - Driving Lesson - Learn how to create and control the movement of robots by controlling its motors through basic code.
- Week 3 - Navigation - Use geometry, math, encoders and loops to see how you can accurately navigate your robot and bring it home.
- Week 4 - Sensors - Sensing what's around the robot and how to use this. We will learn about controlling distance and using optical sensors to look around.
- Week 5 - Control - Use two-state and proportional control to master your robot. Learn about ultrasonic and gyro sensors and take control of your robot.
- Week 6 - Visual sensors - You are now ready for variables, state machines and three-state controls. Use light sensors to follow lines and much more.
- Week 7 - Advanced Control - Overcome obstacles using advanced coding techniques and control best practices. Tweak and tune your code to perfection.
- Week 8 - Advanced Sensing - Search for objects using scan techniques and remove them using a manipulator. It's more challenging than you think.
- Week 9 - Conclusion - Put the skills learned to the test with some tough challenges.

Engineering Problem Solving

Level: High School

Languages: English

Description: The Introduction to Engineering Problem Solving Course uses FIRST® Tech Challenge core principles and compatible hardware to provide students the ability to learn in a hands-on environment.

Students work in teams to solve real world problems using the engineering design process.

College Credit: Dual Credit for Iowa University Engineering Problem Solving I

COURSE OUTLINE

- Living in a STEAM World
- Project 1: Planetary Rover
 - Students build a planetary rover according to given instructions then explore it from various STEAM aspects.
- Building a Planetary Rover – PushBot
- Driving the Planetary Rover – PushBot
- Exploring Planetary Rover Motion
- Exploring Electrical Motors
- Exploring Gears
- Landing a Planetary Rover
- Center of Gravity
- Thermodynamics
- Project 2: Material Handling Robot
 - Students implement the knowledge attained from the first set of activities learning to program the robot using Java. They experience using sensors and strategies for solving problems.
- Sensors
- Forklift
- Navigation

Standards Alignment:

- Career Readiness Standard
- Computer Science Teachers Association (CSTA)
- Next Generation Science Standards (NGSS)
- Common Core Standards for Mathematical Practice

LearnMate You are logged in (log out)

Home ▶ My courses ▶ Intelitek Content ▶ Introduction to STEM Pathways ▶ CoderZ ▶ Coding Robots ▶ Week 1 ▶ 1.2 Coding in CoderZ (Exit activity)

Navigation 1.2 Coding in CoderZ

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1.2 Coding in CoderZ

Question 2: Project Workspace | Back | Next | 11 of 24

The Project Workspace is where you drag command blocks into your code. You can see an example of a blocks program in the Project Workspace. Each type of command statement is a different color. Examine the code for the project you just renamed and answer the question.

What do you think the yellowish-orange block does?

Causes a section of the program to repeat itself.

Stops the robot from driving.

Tells the robot to drive forward.

Gets sensor data from a sensor.

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1.2 Coding in CoderZ

Combining Sensors | Back | Next | 9 of 18

Can you think about a way to use a combination of the touch sensor and the ultrasonic sensor to get to your destination accurately and quickly?

See what you can come up with. We have a bunch of ideas for you on the next few slides.

Touch: False

gyro: 0

Degrees: 0

color: 1/Black

color: 14

ultrasonic: 180

Level: 0

Level: 0

rightmotor: 0

STEM Pathways



Today, surrounded by technology, students have to adapt and learn STEM foundations to prepare them for just about any career in the 21st century.

For over 30 years Intelitek has been helping education systems, throughout the world, to promote STEM education and encourage tech awareness and STEM careers.

Intelitek's STEM Pathways programs provide an easy-to-implement solutions for delivering early engagement and discovery of science, technology, engineering and math topics for middle and high school students.

Using multiple instructional strategies including activity-based learning and immersive e-learning, students explore technology, examine science and math concepts and investigate careers in STEM.

Intelitek curriculum include programs that involve engineering, industrial design, energy systems, communications, robotics and coding,

These standards-based curriculum emphasize 21st Century job skills including teamwork, leadership and creative problem-solving and help students see the connection between STEM and the world around them

Intelitek Learning Solutions

Intelitek transforms education across the globe with comprehensive technology learning solutions. Our innovative tools and technologies empower instructors and inspire students to improve the world around them. We understand the changing needs of your career and technology classrooms and design flexible solutions that meet those needs.

With sustainable support and professional development to ensure the continued success of your programs, Intelitek programs deliver the competencies needed for in-demand careers.

At Intelitek we are producing results for students, teachers, nations and economies.

Value of CoderZ to Educators

- **Accessible** - Provides the engaging excitement of robotics for all students while avoiding the challenging costs of robotic hardware?
- **Engaging** – gamified user interface and student interaction captures student’s attention so they hardly realize that this is learning and homework
- **Cross-Discipline** - Teaches Robotics, Coding, Computer Science and Integrated STEM topics in an engaging way that relates to the real world
- **Education Ready** - A learning solution with rich content curriculum, teacher resources, assessments, challenges and professional development
- **Multi-level** – platform for beginners and advanced students and all those in between. Portable from grade to grade and even between schools.