ROBOTICS 101

BY
ASK A TECH TEACHER
Robotics
101

Ask a Tech Teacher™
Robotics 101

Robotics

Essential Question

How can technology make life better (and what is ‘better’?)

Big Idea

Technology enables me to control devices that make life easier, better, and more productive

Teacher Preparation/Materials Required

- Ensure required links are on student digital devices.
- Have robotics equipment and required programming tools.

Assessment Strategies

- Completed robot tasks
- Debugged program
- Participated in Bot Battles
- Joined class conversations
- [tried to] solve own problems
- Higher order thinking: analysis, evaluation, synthesis

Steps

Time required: 360 minutes
Suggested grade: Grades 5-High School

Why learn robotics? If students have used robots in the past, what have they learned from them? Take time on this question. Transfer is at the core of why we teach topics like robotics. Prod students to come up with:

- thinking skills
- problem-solving skills
- critical thinking
- application of learned math

Common Core Standards for Mathematical Practice list traits necessary to succeed in math, but these are fundamental to life’s daily decisions:

...to evaluate new circumstances and determine a direction, to consider possible paths to an end and select the most likely to succeed, and to mull over new ideas and fit them into accepted constructs.

These are difficult to teach unless part of a larger process.

Discuss the meaning of:

- Make sense of problems and persevere in solving them—robot does what it is told. Students must identify problem, find programming error, and fix it.
Robotics 101

- Reason abstractly and quantitatively—robot program is based on symbols. This requires ability to visualize results and an abstract understanding of what is occurring.
- Construct viable arguments and critique reasoning of others—‘Garbage in garbage out’ remains the motto of programming. If a script fails to achieve desired results, work as a team to critique process. And, help neighbors if they are stuck.
- Model with mathematics—debugging scripts is like decoding a math formula.
- Use appropriate tools strategically—NXT program offers a plethora of scripts, blocks, tools. Adapt them strategically to unique needs.
- Attend to precision—again, ‘garbage in garbage out’. For the program to accomplish what students want requires patience and precision.
- Look for and make use of structure—look at available tools, scripts, blocks, options, and select those that facilitate student needs.
- Look for and express regularity in repeated reasoning—when a formula/program/script repeats itself, this provides shortcuts to goals.

Intentionally Deleted
Other Singles from Structured Learning

- 14 Non-writing Options to Teach Writing
- **15 Digital Tools in 15 Days**
- 25 Digital Tools for the Classroom
- Blogging in the Classroom
- Brainstorming
- Bridge Building
- Debate in the Classroom
- Digital Book Report
- Digital Note-taking
- Digital Quick Stories
- Digital Quick Writes
- Digital Timelines in the Classroom
- Digital Tools for the Classroom
- Gamification of the Classroom
- Genius Hour
- Google Apps in the Classroom
- Human Body
- Image Copyright Do’s and Don’ts
- Infographics 101
- Internet Search and Research
- Keyboarding and the Scientific Method
- Khan Academy
- Presentation Boards in Class
- Robotics 101
- Screenshots, Screencasts, and Videos
- Service Learning and Tech
- STEM Bundle
- Symbols, Tools, and Toolbars
- Twitter in the Classroom
- Write an Ebook
# Robotics 101

## Tech Ed Resources

from Structured Learning and Ask a Tech Teacher

<table>
<thead>
<tr>
<th>Which book?</th>
<th>Price</th>
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<tbody>
<tr>
<td>K-8 Tech Textbook (each grade level—print, digital, or both)</td>
<td>$32.99/25.99/53.08 + p&amp;h</td>
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<tr>
<td>K-8 Student tech workbooks (with video, teacher manual)</td>
<td>$199 per grade level</td>
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<tr>
<td>35 More Projects for K-6 (aligned w curriculum—digital only)</td>
<td>$31.99/25.99/52.18 + p&amp;h</td>
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<tr>
<td>55 Tech Projects—Volume I, II, or both (digital only)</td>
<td>$18.99/$32.49 + p&amp;h</td>
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<tr>
<td>K-8 Keyboard Curriculum (print, digital, or both)</td>
<td>$25.99-$64</td>
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<tr>
<td>K-8 Student keyboarding wkbks (with video, teacher manual)</td>
<td>$199 per grade level</td>
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<tr>
<td>K-8 Digital Citizenship Curriculum</td>
<td>$29.95/25.99/50.38 + p&amp;h</td>
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<tr>
<td>K-8 Common Core Lessons</td>
<td>FREE-$48.55 + p&amp;h</td>
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<tr>
<td>Pedagogic Articles</td>
<td>$6.99 (digital only)</td>
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<tr>
<td>K-8 Tech Scope and Sequences (Word doc)</td>
<td>$9.99 each (digital only)</td>
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<td>Posters for the Tech Lab</td>
<td>$2.99 each (digital only)</td>
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<td>16 Holiday Projects</td>
<td>$4.99 (digital only)</td>
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<td>98 Tech Tips From Classroom</td>
<td>$9.99 (digital only)</td>
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<tr>
<td>Classes (certificate and college credit)</td>
<td>$260-$450</td>
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<td>Project-based learning (lesson plans)</td>
<td>$1.99 each on varied topics</td>
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<tr>
<td>New Teacher Survival Kit (K-5)</td>
<td>$360 and up (+ p&amp;h)</td>
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<td>New Teacher Survival Kit (K-6)</td>
<td>$380 and up (+ p&amp;h)</td>
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<td>New Teacher Survival Kit (6-8)</td>
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<td>Homeschool Tech Survival Kit</td>
<td>Starts at $99.00</td>
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<td>Bundles of lesson plans</td>
<td>$7.99 and up</td>
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<td>Mentoring (1 hr. at a time)</td>
<td>$50/hour and up</td>
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<tr>
<td>Year-long tech curriculum help (via wiki)</td>
<td>$145</td>
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<tr>
<td>Consulting/seminars/webinars</td>
<td>Call or email for prices</td>
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<td><strong>Total</strong></td>
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**Fill out this form (prices subject to change).**

Email [Zeke.rowe@structuredlearning.net](mailto:Zeke.rowe@structuredlearning.net).

Use PayPal, Amazon, TPT, pre-approved district PO

Questions? Contact Zeke Rowe