



ROBOTICS 101

BY
ASK A TECH TEACHER

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Ask a Tech Teacher™

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info@structuredlearning.net
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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.*

- *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
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- [Bridge Building](#)
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Which book?	Price
<i>K-8 Tech Textbook (each grade level—print, digital, or both)</i>	\$32.99/25.99//53.08 + p&h
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<i>K-8 Digital Citizenship Curriculum</i>	\$29.95/25.99/50.38 + p&h
<i>K-8 Common Core Lessons</i>	FREE-\$48.55 + p&h
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<i>K-8 Tech Scope and Sequences (Word doc)</i>	\$9.99 each (digital only)
<i>Posters for the Tech Lab</i>	\$2.99 each (digital only)
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<i>98 Tech Tips From Classroom</i>	\$9.99 (digital only)
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<i>New Teacher Survival Kit (K-5)</i>	\$360 and up (+ p&h)
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<i>New Teacher Survival Kit (6-8)</i>	\$330 and up (+ p&h)
<i>Homeschool Tech Survival Kit</i>	Starts at \$99.00
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<i>Year-long tech curriculum help (via wiki)</i>	\$145
<i>Consulting/seminars/webinars</i>	Call or email for prices
Total	

Fill out this form (prices subject to change).

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Questions? Contact Zeke Rowe

