

Robots & Coding unit study

Build a homeschool curriculum around robots and coding — programming, engineering design, math and the ethics of automation, for K-12.

GRADE BANDS K-2 · 3-5 · 6-8 · 9-12

FULL GUIDE <https://handsdowneducation.com/homeschool/robots>

How to use this planner

The six weeks below are sequenced from the guide's sample week: five weeks that each take one core subject through the topic, then a showcase week that turns the portfolio into a final product. Run each activity at the level your child is at (the grade band notes tell you how), keep the output, and by week six you have a portfolio that shows the unit end to end.

Pace is yours. A week here is three to five working sessions; a topic that is going well can take two calendar weeks, and one that has run dry can be closed early. Tick the box when a week's output is in the portfolio.

Six-week scope and sequence

Wk	Focus	Key activity	Portfolio output	Done
1	Reading & Writing through robots & coding	Read Asimov's 'Runaround' (the Three Laws story), then write a scene where the laws conflict — and a paragraph on whether real robots should have laws at all.	Portfolio entry: the week's reading & writing piece, dated, with one line from your child on what they found out.	☐
2	Math through robots & coding	Program a robot (or a screen turtle in Scratch) to draw a square, then a hexagon, then any regular polygon from one formula — exterior angles taught by a machine that obeys exactly.	Portfolio entry: the week's math piece, dated, with one line from your child on what they found out.	☐
3	Science through robots & coding	Build a bristlebot or brushbot from a toothbrush head and vibration motor; explain the circuit, then modify one variable and document what changes.	Portfolio entry: the week's science piece, dated, with one line from your child on what they found out.	☐
4	Social Studies through robots & coding	Chart which local jobs automation has already changed — supermarket checkouts, warehouse work — and interview one adult about how their work has shifted.	Portfolio entry: the week's social studies piece, dated, with one line from your child on what they found out.	☐
5	Art through robots & coding	Design a robot for one specific job (reef cleaning, elder care, mine rescue) with labeled sensors and actuators — industrial design's actual first step.	Portfolio entry: the week's art piece, dated, with one line from your child on what they found out.	☐
6	Showcase and review	Choose one final product that pulls the unit together — a presentation, an exhibit, a field guide or a short documentary — and give the week to making it. Finish with a portfolio review: lay every week's output on the table and let your child narrate what changed in what they know about robots & coding.	The final product plus a one-page unit summary in your child's words, filed with the portfolio.	☐

Running it at your child's level

K-2 learners start with sequencing: block-based commands, unplugged 'program your parent' games, and simple cause-effect circuits. No reading required for real computational thinking.

Teens can progress to Python, microcontrollers (a \$30 kit suffices), competition robotics if available, and genuine projects — a plant-watering robot is a complete engineering arc from need to working artifact.

A sample week, subject by subject

Reading & Writing

Read Asimov's 'Runaround' (the Three Laws story), then write a scene where the laws conflict — and a paragraph on whether real robots should have laws at all.

Math

Program a robot (or a screen turtle in Scratch) to draw a square, then a hexagon, then any regular polygon from one formula — exterior angles taught by a machine that obeys exactly.

Science

Build a bristlebot or brushbot from a toothbrush head and vibration motor; explain the circuit, then modify one variable and document what changes.

Social Studies

Chart which local jobs automation has already changed — supermarket checkouts, warehouse work — and interview one adult about how their work has shifted.

Art

Design a robot for one specific job (reef cleaning, elder care, mine rescue) with labeled sensors and actuators — industrial design's actual first step.

Common questions

How much do robotics kits cost?

A bristlebot costs under \$5; capable microcontroller kits run \$30-60; LEGO robotics sits higher. A strong two-year progression exists entirely under \$100 total.

Which programming language first?

Block-based (Scratch) until reading fluency and logic habits are solid, then Python. The concepts transfer wholesale; the syntax is the easy part.

I'm not technical. Can I supervise this?

Yes — the curriculum's job is sequencing, and the debugging mindset ('what did I expect, what happened, what's the smallest test?') is teachable by asking those three questions aloud, no expertise required.

Turn this into a full, standards-aligned curriculum

Generate a complete plan around robots & coding for your child's grade and pace — free to try, no account required.
<https://handsdowneducation.com/curriculum/generate>