Kathy Ceceri: What Newbies Can Learn by Making Simple Robots
Real robots are getting simpler all the time.

- Shrinking technology
- Inexpensive Everyday Materials
- Programmable Bodies
- Biomimetic Design
Simple Crafts/Simple Robots

Cardboard Robot Hand

e-NABLE RoboHand
Crowdsourced 3D Printed Prosthetic
Research Lab/DIY Version

Union College
Steerable Tensegrity

Bre Pettis/MAKE
Tensegrity & littleBits
Beyond Crafts: Taking Simple Robots to the Next Level:

- Electronics and Soldering
- Programming
- 3D Printing
- Lifelike Robot Bodies
The Challenge for Newbies:

Making involves failing.

Newbies need to adopt the engineer's mindset:

• You Fail
• You Learn
• You Try Again

Use making simple robots to build up your persistence muscles.
Some Ways to Get Up That Steep Learning Curve

• Learn to troubleshoot

• Scaffold projects with kits & tutorials

• Adapt and improvise

• Keep setting stretch goals
My Challenge: Soldering & Electronics

BEAM Robots
Store charge in low light
Simple technology – but sophisticated thinking

Original Solar WobbleBot
No soldering or electronics
Needs bright direct light
My Solution: Scaffold Using “Kit”

My Challenge: Pure Programming

Chatbots at Cornell made from:
• Text-based CleverBot program
  • Text-to-speech software
  • Avatar rendering animation
My Solution: Learn Programming with Scratch

Don't be afraid to use learning tools meant for kids!
My Challenge: Explore the Uncanny Valley

Hiroshi Ishiguro of Osaka University and his robot clone Geminoid HI-4
Adapt: Boil a Project Down to its Essence

Make a bas relief self-portrait with Crayola Model Magic
My Stretch Goal: Animate a Burlap FiberBot with Arduino

My Solution: Use Adafruit's sewable Gemma microcontroller board & Mini LED Matrix code
Behind the Scenes, Making Is Messy.

Don't worry if the solder clumps up or you get a random error message, as long as it works!
More Advice for Newbies

1. Find how-to videos online.

2. Ask for help (and ignore the trolls!).

3. Take a class.

4. Join a makerspace.

5. Pay it forward.

And one more tip...
Start your own reference library!

Early release at shop.oreilly.com
CraftsForLearning.com
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