Rick's Maker Space Highlights

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Books for Ideas:

- The Big Book of Maker Space Projects
- Tinkering - 2nd Edition
- 20 Makey Makey Projects for the Evil Genius
- Make: Planes, Gliders and Paper Rockets
- mBot for Makers

Websites for Rationale, Ideas and Planning:

- Maker Ed: makered.org
- Make: makezine.com
- Steindorf Maker Lab (website above)
- Instructables – www.instructables.com
- Digital Promise - digitalpromise.org/maker-leadership
- Curiosity Machine – Design Challenges Galore! - www.curiositymachine.org/
- Drexel University – Making Culture - https://drexel.edu/excite/engagement/learning-innovation/making-culture-report/
- AutoDesk – Getting Started http://www.makingstartshere.com/teach/
- Little Bits – Early STEM learning – linked on: www.cambriansd.org/makerlab

Events for Inspiration

- Maker Faire! – www.makerfaire.com

If you had a $1000 budget to get started…

- Glue Guns! (less than $5 each)
- Tinker Kits (30 for $150)
- Makey Makey Boards ($50 each, have kids work in teams - Needs to be connected to a laptop for programming with SCRATCH)
- SCRATCH (Free at: https://scratch.mit.edu/) Graphical programming interface to use with Arduino and Makey Makey boards.
- MicroBits - microbit.org - Tiny highly versatile microcontrollers with tons of curriculum.
- Hand tools – www.harborfreight.com - Electric Cardboard Cutters! - Amazon
- DIY Cart and Storage Bins

Parents can donate many of the materials below to build projects from the books listed above using the tools listed above.

- Cardboard Tubes
- Cereal Boxes
- Craft Sticks
- Aluminum Foil
- Masking Tape
- Rubber Bands
- Amazon Boxes
- Craft Supplies
- Yarn

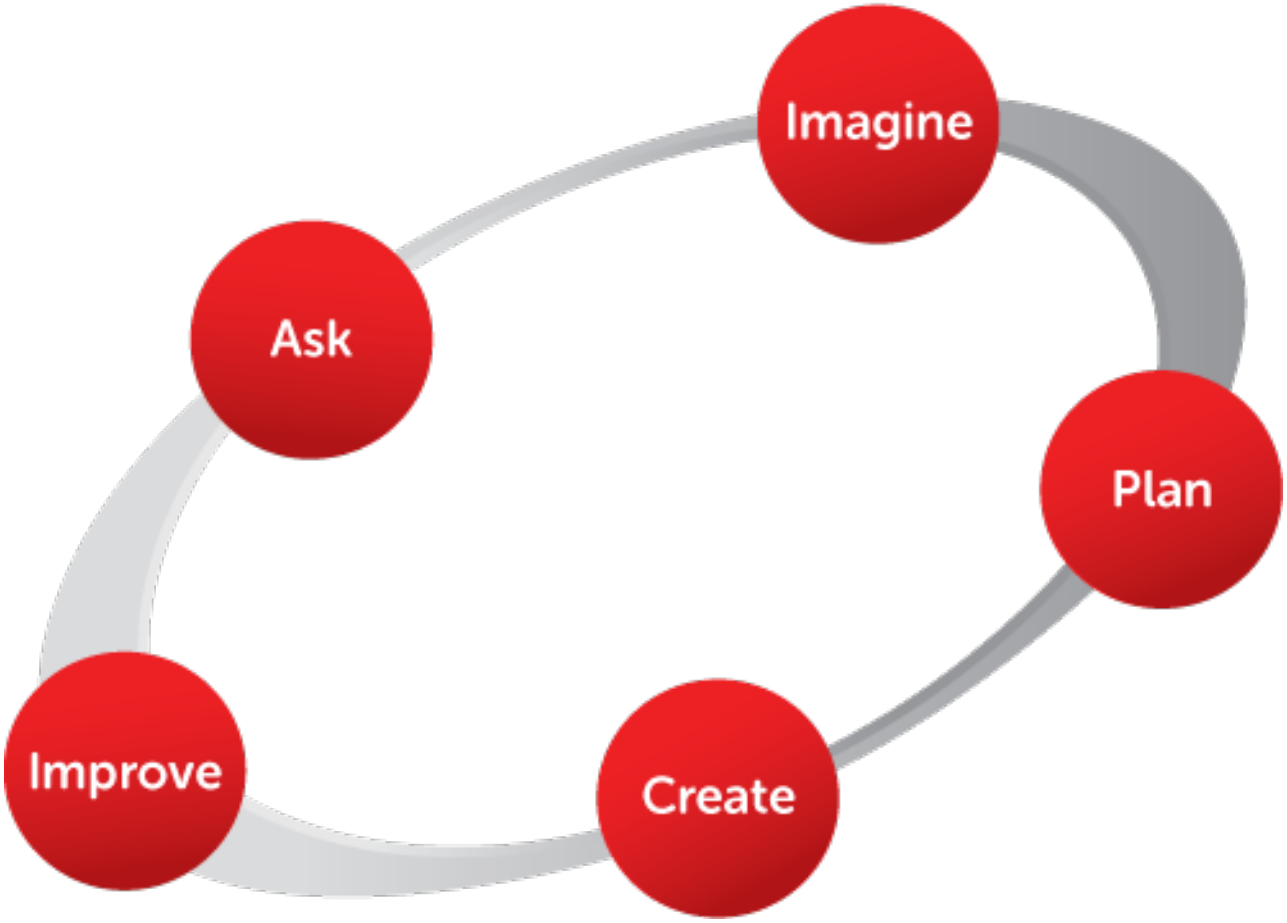
As your Budget Grows (Some of my Favorite Stuff)

- mBots, sensors and mBot Book – www.makeblock.com & amazon.com
- Sparkfun Inventor Kits – www.sparkfun.com/products/14189
- Particle Chips (For IoT Projects) - store.particle.io/
  VEX Robotics - www.vexrobotics.com
- Laser Cutter - fslaser.com
- Marble Paper Roller Coasters – paperrollercoasters.com/
- Strawbees - strawbees.com
- Engineering is Elementary – eie.org
- Air Rockets and Gliders – www.airrocketworks.com
- Dewalt Scroll Saw - www.dewalt.com
- 3D Printer - www.lulzbot.com

The resources listed above provide for **Open Ended** making experiences on a budget, for whole classes of kids. Projects, tools and materials here encourage **Design Thinking** with many different outcomes. For updates to this document go to: **www.cambriansd.org/makerlab**

The Engineering Design Process

*To solve engineering problems, engineers follow a series of steps called the "**Engineering Design Process**"*



ASK: *What is the problem? How have others approached it? What are your constraints?*

IMAGINE: *What are some solutions? Brainstorm ideas. Choose the best one.*

PLAN: *Draw a diagram. Make lists of materials you will need.*

CREATE: *Follow your plan and create something. Test it out!*

IMPROVE: *What works? What doesn't? What could work better? Modify your designs to make it better. Test it out!*

More details at: www.eie.org/eie-curriculum/engineering-design-process