The Junk Drawer Robotics curriculum engages middle school youth in understanding scientific concepts and processes, the engineering design process cycle, and technology creation and building. Junk Drawer Robotics provides youth these experiences by working with household items to complete simple design challenges. These robotics activities emphasize science, engineering and technology process skills, cross-age instruction (teenagers-as-teachers), the experiential learning cycle, and small group learning. Activities are designed to be led by an adult or teen facilitator.

Junk Drawer Robotics central themes in each level are:
1. Robot arms and hands; form and function, scientific habits of mind, and leverage; role of engineering design.
2. Robot movement; friction, basic electrical power and motors, gears systems, and buoyancy; role of constraints and engineering iteration.
3. Synergy when mechanical, electronic, and feedback systems are merged; electronic circuits, sensing, and mathematical number systems.

Each model contains a number of activities in these phases:

- **To Learn:** Science is finding out how things work. These activities emphasize exploration and form the foundation upon which youth build conceptual understanding.

- **To Do:** Engineering is designing something to work from what you discovered. These activities build upon the knowledge gained in the exploration phase related to the concepts in the module. Youth are presented with a design problem and work together to design and plan a solution.

- **To Make:** Technology is using tools and processes to make something work. These activities allow youth to build and test their design while solidifying their understanding of the concepts.

Read more about the curriculum at:
- From Mechanical Engineering Magazine – “Growing a New Crop of Engineers” memagazine.asme.org/Articles/2008/December/Growing_New_Crop_Engineers.cfm
- University of California Making a Difference: ucanr.org/delivers/?impact=864&a=0

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