

LEMELSON-MIT

Celebrating invention, inspiring youth

Getting started with
basic materials:
cardboard, foam, clay

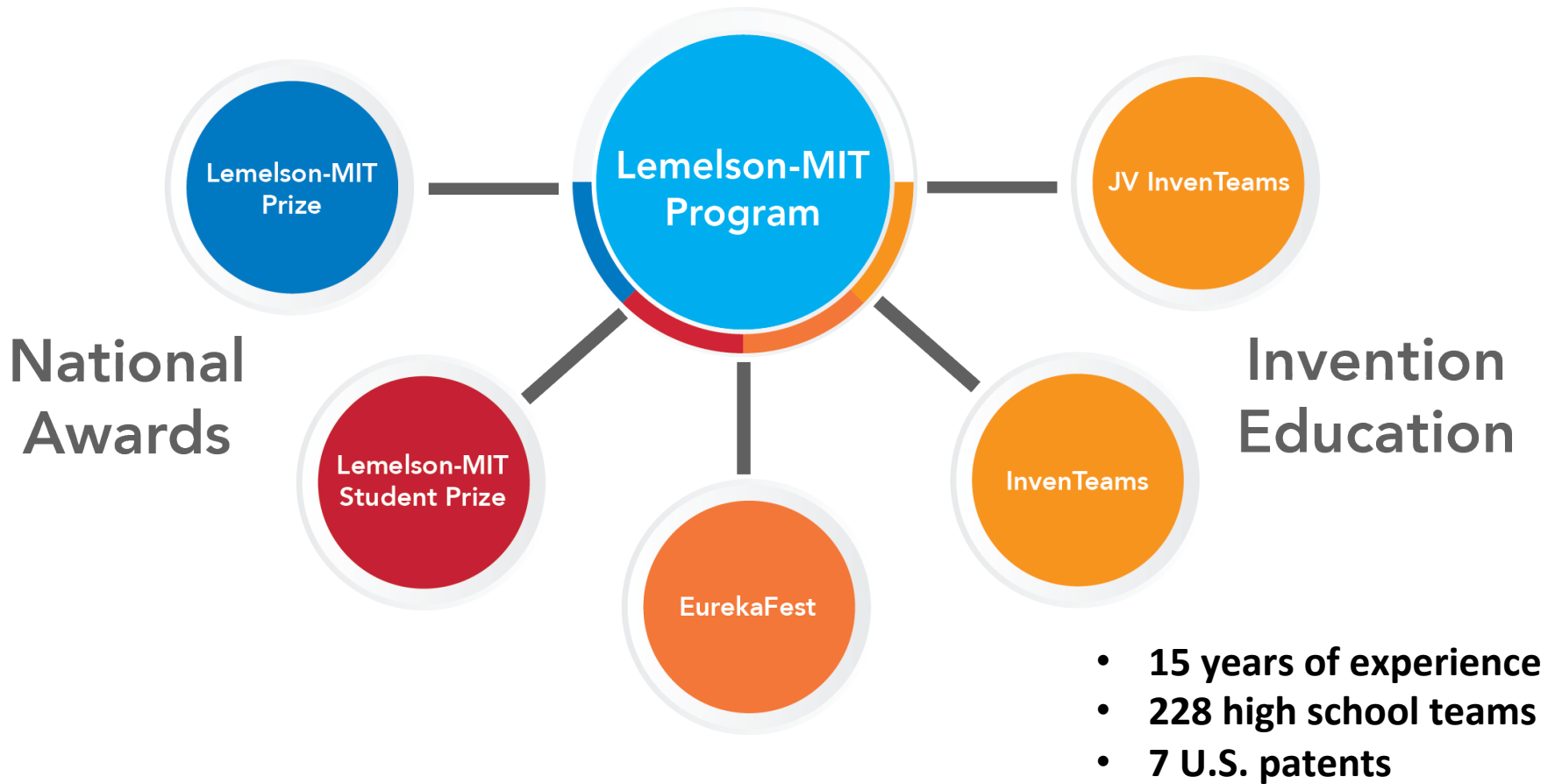
Invention Education
Webinar Series



Thursday, November 2, 2017

6:30 – 7:00 p.m. ET

Lemelson-MIT Program Overview



Presenter Don Domes

- Special Projects in STEAM and CTE for the Office of School Performance, Hillsboro Public School District, Oregon
- Member of the Board of Directors of Oregon Robotics Tournament & Outreach Program
- Retired high school CTE teacher

Lemelson-MIT Invention Education Experience

- Hillsboro High School InvenTeam (2007)
- Self-installed Automotive Heads-up Display
- Master teacher with LMIT for 9 years



Basic Safety Rules for Tool Use



Wear safety glasses.

If you are in doubt about how to use a tool, ask!

Have a plan for what you are going to do with the tool.

Be mindful of others who might enter into your workspace accidentally.

Secure the workpiece.

Have a balanced stance while using a tool.

Remove all jewelry, watches, and loose clothing before working with machinery.

Pin up long hair and wear closed-toe footwear.

Never work when you are tired or unfocused.

Leave the workspace cleaner than you found it.

Whose workstation?

Who has a workstation like this?



Set Up a Library to Stay Organized



Tool
Storage
System

Material
Storage
System



Materials Library

To Use

- Take out material to examine. Each material has a label with info.
- Read info packet for more details.
- Return material to their original location.

The System

Smooth-On

Casting Epoxies
Foams
Silicone Rubbers
Urethane Plastics
Urethane Rubbers

Woods

Hardwoods
Softwoods
Engineered
Miscellaneous

Metals

Aluminums
Steels

Polymers

Elastomers
Thermoplastics

Composites

Fabrics

EXAMPLES

S-CE-03

INFO PACKET W-H-01 W-H-02 W-H-03 W-H-04 W-H-05 W-H-06 W-H-07 W-H-08

W-H-09 W-H-10 W-H-11 W-H-12 W-S-01 W-S-02 W-S-03 W-S-04 W-S-05 W-E-01 W-E-02 W-E-03 W-E-04 W-E-05 W-E-06 W-M-01 W-M-02

M-A-01 M-A-02 M-A-03 M-A-04 M-S-01 M-S-02 M-S-03 M-S-04 C-01 C-02 F-01 F-02 F-03 F-04 F-05 F-06 F-07 F-08

P-E-01 P-E-02 P-E-03 P-E-04 P-T-01 P-T-02 P-T-03 P-T-04 P-T-05 P-T-06 P-T-07 P-T-08 P-T-09 P-T-10 BAKKON
ON BOX 01 BOX 02

BOX 03 BOX 04 BOX 05 BOX 06 BOX 07 BOX 08 BOX 09 BOX 10 BOX 11 BOX 12 BOX 13 BOX 14

Basic Materials: Clay, Cardboard, & Foam

Clay



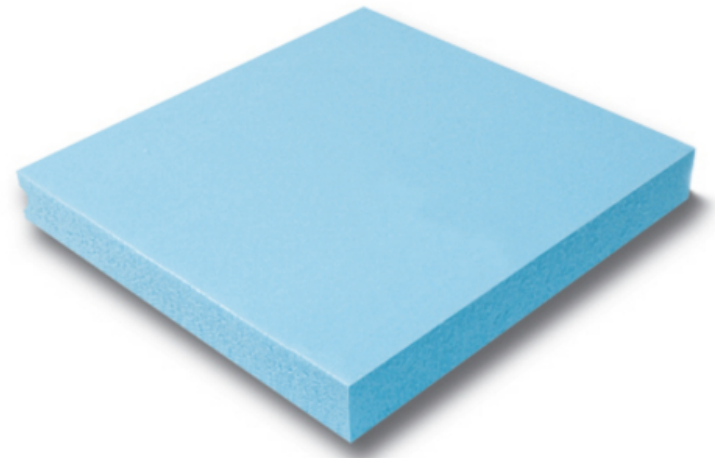
Cardboard



Foam core board



Multi-purpose foam



Clay



[JV InvenTeams Shoe Soles](#)

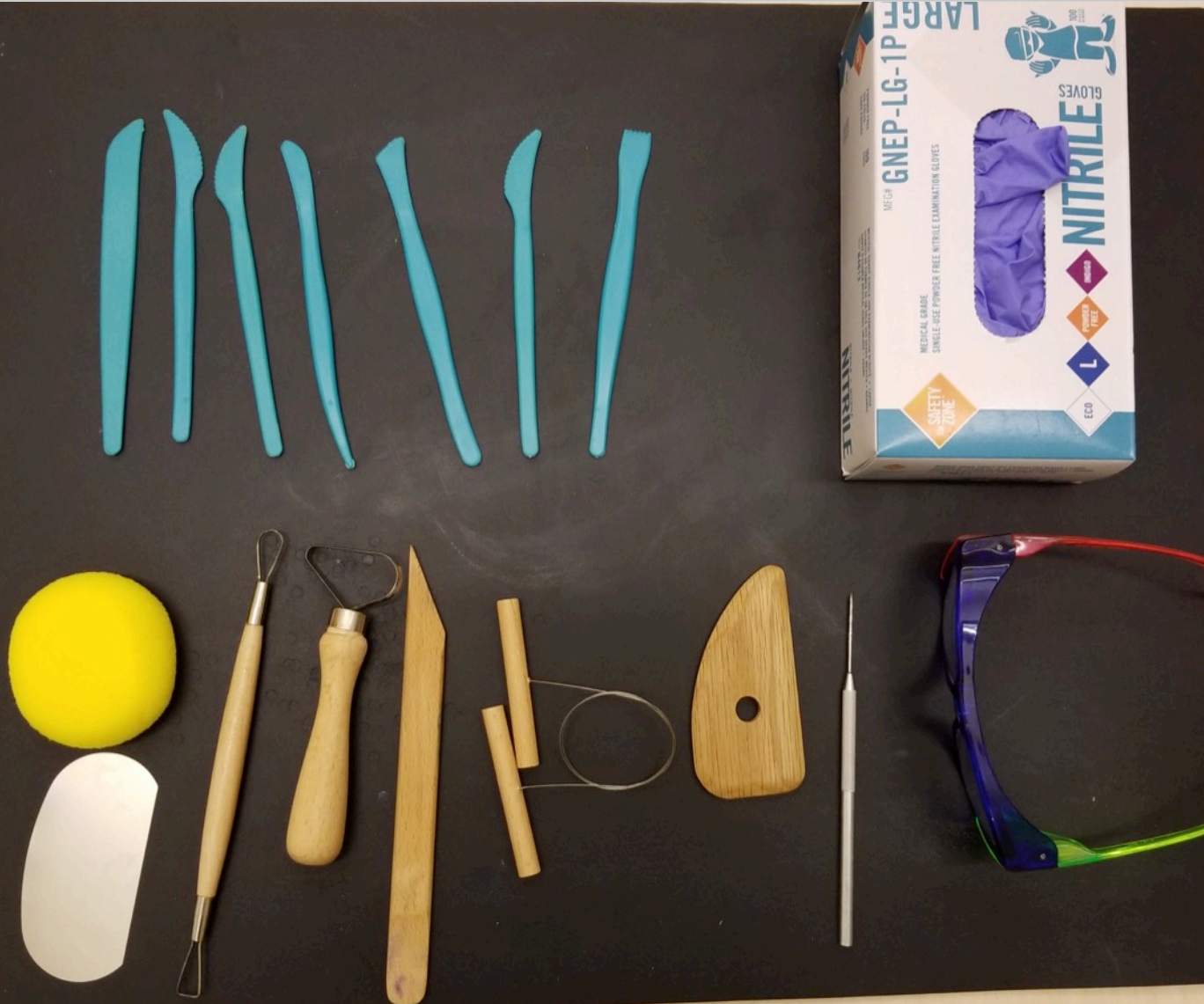


[Reynolds Advanced Materials](#)



[Making Society](#)

Tools for Working with Clay



- Safety Glasses
- Gloves
- Clay tool set made of sturdy plastic for modeling & clay
- Sculpting tool set
- Consult the art teacher in your school!

Cardboard

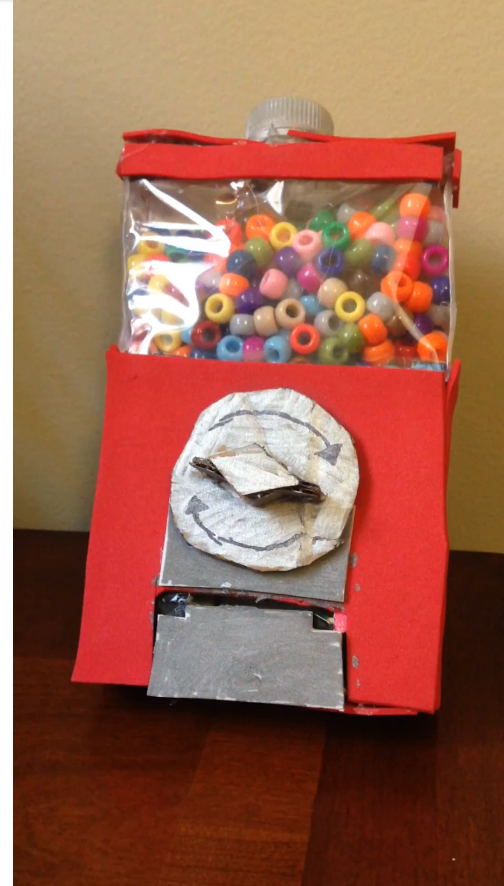
- Treasure Box
- Display board for tools
- Toolboxes
- Cell Phone Stand-make your own!
- For more ideas, check out [Make.Do](https://www.make.do/)



Cardboard Creations



Dragon
made by an MIT
undergraduate
student



Gumball machine
made by Sebastian,
a 11-year old inventor

Cardboard



- Safety glasses
- Scissors
- Utility knife
- Rotary cutter
- Hot glue gun
- glue
- Tapes
- Cutting board



Foam Creations

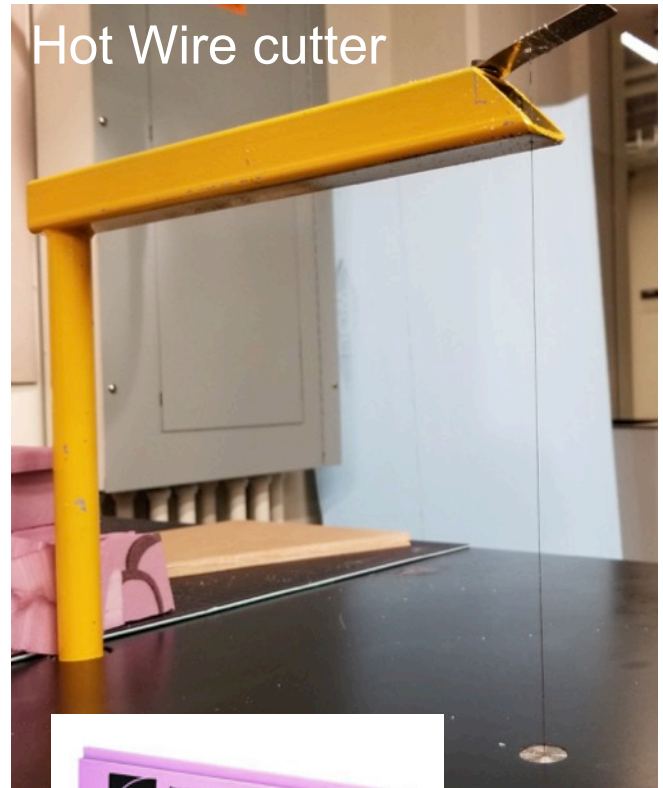


Mouse Trap Car

Airplane



Foam



Check out Josh Ramos' videos on YouTube for working with various types of foam:

https://www.youtube.com/watch?v=bF2zZ9s8_kY

<https://www.youtube.com/watch?v=2c1bArlGA-8>

Lemelson-MIT Resources

- Lemelson-MIT Program
<http://lemelson.mit.edu/>
- InvenTeams National Grants Initiative
<http://lemelson.mit.edu/inventeams>
- JV InvenTeams Curriculum Materials
<http://lemelson.mit.edu/jv-inventeams>
- Inventor Archive
<http://lemelson.mit.edu/search-inventors>

Other Resources

[Science Fair Central](#)

[Instructables](#)

[Caine's Arcade](#)

[HowToons](#)

Books on tools and materials:

[Field Guide to Tools: How to Identify and Use Virtually Every Tool at the Hardware Store](#)

[Exploring Materials: Creative Design For Everyday Objects](#)

[Materials and Design: The Art and Science of Material Selection in Product Design](#)

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THANK YOU!

Contact Us at
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Invention Education
Webinar Series

