Amazing Lego Machine
Agenda

• Introductions
• Hardware/software
• Hands-on activities
  1) Display and Sound
  2) Build Car - two options
  3) Move Steering block, Stop for Pedestrians
  4) Sensors
• Resources/Professional Development
• Cost and funding
• FIRST Robotics
Hardware - Software

- Lego Mindstorms EV3 - EV3
Hands-on activity 1

- Very short demo - software, display and sound
- 1 - Display and sound
Hands-on activity 2

• Very short Demo - Move Steering
• 2a - Build option 1 - “Baker’s dozen” car
  or
• 2b - Build option 2 - Riley-Rover
• 2c - Move Steering block
Challenge Activity

• Don’t run over the Pedestrians
Hands-on activity 3

- Very short demo on Sensors, Switch and loop
- 3a - Touch Sensor
- 3b - See and Say - color sensor - loose
Professional Development

Carnegie Mellon Robotics Academy

Carnegie EV3 curriculum

Tufts Center for Engineering Education

Educational Robots for Absolute Beginners
Resources

- Lego Engineering
- Damien Kee's site
- Stem Robotics
- Udemy EV3 free course
- STEM Centric
- Dr. Graeme's tutorials
- NXT Step - Mindstorms blog
- SLIDER - NSF project
- Artbotics
- Rowan CS4HS Robotics page

STEM by Design by Barbara Bratzel
Cost

Lego site - shop=>middle school

EV3 Education base set: $339.95 (per kit)

Education EV3 software: $399.95 (site license)

EV3 Expansion set: $99.95 (optional)

2 students per kit. Need a computer.
Funding

- Home and School Associations - start with one or two robots as a club - prove worth
- Town Educational Foundations
- Business partners grants
- Grants and other sources of funding from Lego site
FIRST Robotics

- For Inspiration and Recognition of Science and Technology
- Mission: “To transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology leaders”
- Founded by Dean Kamen
- Teams design, build and program their robot to compete against other teams using a sports model
FIRST Robotics

- Jr. FLL - Junior FIRST Lego League (K-3)
- FLL - FIRST Lego League (4-8)
- FTC - FIRST Tech Challenge (9-12)
- FRC - FIRST Robotics Competition (9-12)