Robot Revolution Educational Opportunities

Robot Revolution, supported by Google.org with additional major support from The Boeing Company, features engaging educational resources that meet today's learning needs. Created by the Museum's Center for the Advancement of Science Education (CASE), the *Robot Revolution* pre- and post-visit lessons and field trip worksheet are linked to what students are learning in the classroom.

The exhibit is designed to increase student interest and involvement in science, technology, engineering and math (STEM) topics, particularly the field of robotics. Students in kindergarten through 12th grade will learn 21st century skills and STEM content as they envision their own role in creating and using technology.

Robot Revolution is aligned with Next Generation Science Standards, including:
- Science and engineering practices like developing and using models, constructing explanations and designing solutions.
- Crosscutting concepts like cause and effect, systems and system models, and structure and function.
- Disciplinary core ideas like engineering design (ETS1) and waves and their applications in technologies for information transfer (PS4).

As part of its partnership with MSI, Google.org funds access for local high-needs schools to visit the Museum and *Robot Revolution*.

To enhance a *Robot Revolution* field trip, teachers can use free classroom lessons before and after their visit.

What is a Robot?: Students unveil their personal interactions with robots and understand how robots assist with real-life scenarios.

Robot Brains: Explore the intricacies of robotic programming through an activity where students act as robots and programmers.

Robot Bodies: Discover how robotic "hands" are shaped in different ways depending on their intended function.

Robot Senses: Explore how robot sensors can either mimic human sensors or do things that humans can't do.

Robots and Society: Learn about how different peoples' values and perspectives shape how robots are developed and used.

Additional Educational Resources

General Resources
- Institute of Electrical and Electronics Engineers Robotics Newsletter

http://spectrum.ieee.org/static/newsletters-signup
- LEGO Engineering
  http://www.legoengineering.com/
- NASA Robotics
  http://robotics.nasa.gov
- National Robotics Week
  http://www.nationalroboticsweek.org/index.php
- PBS Design Squad
  http://pbskids.org/designsquad

Programming Resources
- Hour of Code
  http://code.org/
- Raspberry Pi Programming
  http://www.raspberrypi.org/
- RobotC Programming
  http://www.robotc.net/
- Scratch Programming
  https://scratch.mit.edu/
- Online community for Scratch educators
  http://scratched.gse.harvard.edu/

Robotics Kits
- Cubelets Robotics
  http://www.modrobotics.com/education/#lesson-plans
- TI-83 calculator robots
  http://www.smallrobot.com/robot-kit.html
- SmartBot phone robot kit
  http://www.overdriverobotics.com/

Programming Related iPad Apps
- Daisy the Dinosaur
  http://www.daisythedinosaur.com/
- Hopscotch
  https://www.gethopscotch.com/
- Cargo-Bot
  http://twolivesleft.com/CargoBot/

Robotics Competitions
- Best Robotics, Inc.
  http://best.eng.auburn.edu/
- Bot Ball
  http://www.botball.org/
- FIRST LEGO League
  http://www.firstlegoleague.org/
- MATE Underwater Robotics
  http://www.marinetech.org/rov-competition/
- Robofest
  http://www.robofest.net/

- US First Robotics
  http://www.usfirst.org/
- Vex Robotics Competition
  http://www.vexrobotics.com/competition/

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