

API DESIGN & PROJECT MODULES

part of *ROS from Scratch*
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OVERVIEW

- Designing an API for middle schoolers
- Additional features to consider in the future
- Developing lessons based on programming with robots
- What can be added to make better teaching tools

DESIGNING AN API FOR MIDDLE SCHOOLERS

- Fit the existing programming model
 - Motors forward v. Motors forward for X seconds
- Expose building blocks that are extremely simple
- Provide context and understandable units
 - percent of full power for motors

ADDITIONAL FEATURES TO CONSIDER IN THE FUTURE

- Build ways to automatically calibrate and define ranges for light sensors
- Label the scale for all motor control blocks
- Expose more dimensions of sensor data
 - ARTags
 - Separate bump sensors
- Move the robot control blocks into their own category

DEVELOPING LESSONS BASED ON PROGRAMMING WITH ROBOTS

- Introduce Scratch and basic motion of the Robot and Cat
- Teach students basic Sensing and Conditional statements
 - Variables and Numeric + Boolean operations included
- Expand on Control Structures and talk about Loops
- Give students larger assignments like Line Following and Enclosure Escape

WHAT CAN BE ADDED TO MAKE BETTER TEACHING TOOLS

- The modules developed are in no way stand alone lessons but rather a curriculum plan that provides a backbone for teachers to build on.
- Necessary Additions:
 - Assessment models and criteria
 - Extensive teacher resources including trouble shooting support
 - Reference material for students

[http://code.google.com/p/brown-ros-pkg/wiki/
ROSScratchProjectModules](http://code.google.com/p/brown-ros-pkg/wiki/ROSScratchProjectModules)