

REVIEW: Lego Kit to Build Better 'Bots



(AP Photo/Jim Bryant) LEGO Robotics Master Builder Christopher Smith, right, a quality control expert with the NASA Space Shuttle program in Houston, TX, demonstrates his LEGO Robot, while Steve Hassenplug, a software engineer, with Landis + Gyr in Lafayette, IN., watches at the Microsoft Campus on Monday, July 24, 2006 in Redmond, WA. Smith, Hassenplug and David Schilling, group of elite LEGO Robotics, helped celebrate the August 1, 2006 launch of LEGO MINDSTORMS NXT toolset.

By PETER SVENSSON, The Associated Press
Jul 26, 2006 3:10 PM (1 day ago)

NEW YORK -

It's fun when a collection of plastic parts seems to have personality.

I put together a [robot](#) with Lego's new Mindstorms NXT kit, set it on the kitchen floor, and watched it trundle forward on its rubber wheels till it sensed an obstacle (a cabinet). It backed up, swung left, then proceeded on its new course, till it sensed the next impediment.

"It's like a little man!" said my girlfriend.

That's the charm of robotics - seeing something of ourselves, however basic, in an inanimate object.

Most robot toys, however, are designed to do only one or a couple of things, and get boring quickly. Their charm often doesn't outlive the first set of batteries.

The Lego Mindstorms kit, which first appeared in 1998, is different. It lets you design and build a wide variety of robots.

Enthusiasts, many of them adults, have used it to build robots that sort Lego bricks by color, dispense soft drinks, or climb stairs. One Dane even turned it into a low-resolution scanner that took 3 to 4 hours to scan a CD cover.

The latest version of Mindstorms, which will appear in stores Tuesday priced at \$249.99, is a complete revamp that makes it easier to build a wider variety of mechanical friends.

The basic principle is still the same: A large central "brick" houses the brain and batteries. Four sensors and three motors connect by cables to the brick. The set is rounded out with hundreds of Lego pieces from the "Technic" series, which includes wheels, struts, cogs, axles and the like.

The sensor that allowed the "little man" to avoid colliding with the cabinet was the ultrasonic one, which sends out inaudible sounds and listens for the echo. It can tell the distance to the nearest object to within an inch.

The other sensors are: a microphone that can measure sound to within the decibel; a touch sensor; and a light sensor that can shine a beam to determine the reflectivity of an object in front of it, or measure how bright a room is.

But the major improvement over the earlier Mindstorms is the new brick, which unlike the previous model has a large LCD display. With the help of four buttons, the user can create simple programs

right on the brick - that's how I told my robot to back up and turn when it noticed an obstacle.

With the older Mindstorms kit, the user had to put together the program on the computer, then transfer it to the brick using a bulky infrared transmitter. The new brick should make it much easier for the young or technically unsophisticated to make their first robots. Lego recommends the kit for age 10 and up, but younger kids may be able to appreciate it with adult help.

More complex programming still needs to be done on the computer, but the IR transmitter has been replaced with a USB cable and Bluetooth wireless. I didn't try the Bluetooth function, but it opens up the possibility of controlling a robot remotely from a Bluetooth-equipped cell-phone, should someone create such software (hint: someone will). It also means robots can communicate with each other wirelessly, which will be very useful when they unleash their plan to wipe out humanity.

For all its quality, it's possible to quibble with the kit. Not everything works the way you think it will. A simple program, suggested by the manual, that I think was supposed to make the robot start and stop when it heard a loud noise, didn't work because the sound sensor picked up the whirr of the robot's motors.

But because of the nature of the kit, little problems like that are just [engineering](#) challenges to be overcome. To get the sound program to work, a user can put together a program on the computer that would activate the robot when the sound reaches a certain level.

More annoying is the experience of again and again combing through 577 pieces to find the one specified in the building instructions. If you missed the Lego experience in your youth, think of it as assembling an IKEA bookcase with 100 pages of instructions and hundreds of pieces that look similar but are slightly different. Lego could have made things easier for the builder by more consistently color-coding the pieces.

But that's a minor objection to what is probably the smartest, coolest toy of the year, not forgetting the yet-to-launch [PlayStation 3](#). Mindstorms NXT is a great way to learn the basics of mechanics, physics and computer programming, or just goof off.

Copyright 2006 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.