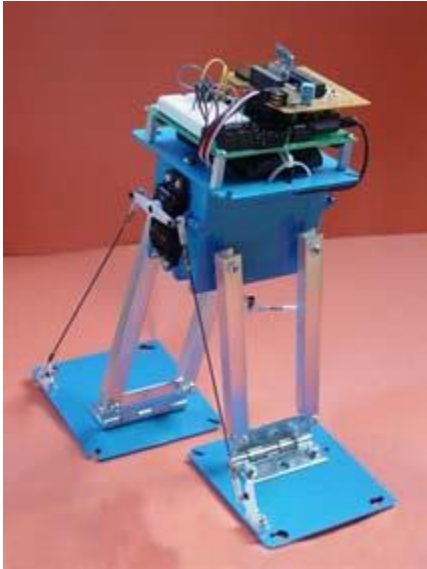# Home Center Walker uses a Board of Education

But I was in the Home Center and I couldn't help it!

You probably recognize some of the fundamental parts of this walker. The lower body is a plastic electrical outlet box or "18 cu in single gang plastic box w/nails" ($.23). The top plate and feet are 4" blank entrance covers for outlet boxes ($.78 each). Foot hinges are 2.5" narrow utility hinges (Stanley zinc 81-9060 = $2.49/2). The legs are U channel for covering the edges of 1/4" plywood (8' = $6.27). Add some servos and servo ball joint linkages from the hobby shop. Top it off with some #6 nylon bushings, various screws and nylon-insert locknuts. And, lest I forget: a Parallax Board of Education with our [Co-Processor](#) on an AppMod board.

We now have a low-cost [PCB Kit](#) you can buy to make adding our [Co-Processor](#) easy. Instead of connecting to the AppMod connector, it fits under either a Board of Education or a Parallax Toddler board. See the [Buy-a-Bot](#) page to buy the [Co-Processor](#), [Bare PCB](#), or the [complete kit](#).

This robot is loosely copied from the design of the Toddler from Parallax. "Loosely" is the operative work here. While it seemed like a great idea, this robot has a fair amount of slop in the joints. It doesn't help the balance or walking. Looking at the design of the Toddler, I'd guess it is a lot tighter in the joints. Notice however that Toddler's controller has an AppMod connector like the BoE! Hey, it looks like we could have our cake and ...

Parallax' Board of Education is a popular BASIC Stamp® based controller board that is widely used in hobby and educational robots. Walkers particularly push the fundamental limitations of a Stamp. A ramping servo controller and timers can really free up an otherwise compute bound Stamp. By using the BoE's built-in AppMod connector to add our [Co-Processor](#), we can walk and still get much of the stamp back for other things! Anyone for walking and chewing gum at the same time?

Even though this robot uses a 5 cell NiMH supply, it should still use the Co-Processor with Brownout disabled. Look at the discussion on brownout detection.
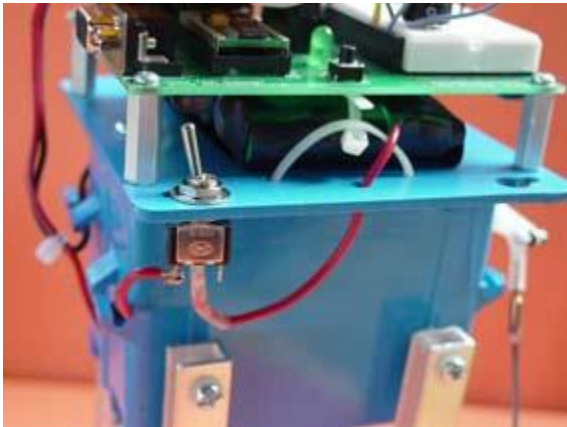
Here's the code.

<= Top View.
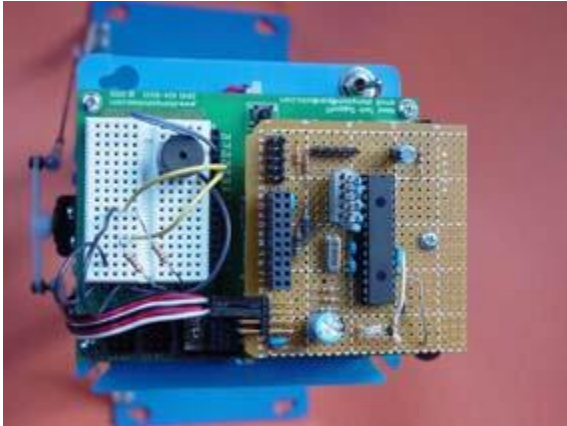
Here's the schematic (1 pp - PDF - 47 KB) of our AppMod connector Co-Processor board design shown on the left.

<= Power switch and battery.

Here are the power switch and battery. The Battery is made of 5 NiMH AA tabbed cells soldered in series and taped. The super sophisticated battery hold down is by tie wraps. Yeah, I know, one is broken in the picture. It's fixed now.

Charging the battery is done by clipping an alligator clip to the unused power switch contact from a 15 volt lab supply with a 130 ohm resistor in series. The power supply negative is grounded to a convenient point on the Co-Processor board.

<= The Foot.
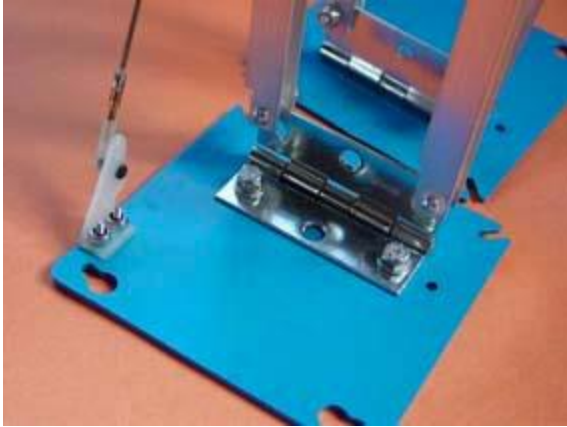
Here is a detail of the foot. It is made from a 4"x4" plastic outlet box cover and a hinge. 3/4" felt pads are on the bottom to protect hardwood floors etc.

The hinge has a fair amount of slop in it. The nylon servo linkage is also a little wobbly for my taste. Maybe later a new linkage from aluminum angle.

<= Detail of the Legs.

This is a detail of the top of a leg. The legs are aluminum channel used to cover the edge of plywood. This leg used the size for 1/4" plywood.

#6 nylon bushings with 6-32 screws are the pivots. There is a nylon-insert locknut inside the box on each screw.

Note the handy wire guide where the nail used to go for the box.

OK, now I want to see the BoE-Bot modified with a AppMod based Co-Processor board.

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