# RC in the Classroom

PART 2: A Multiplex Easy Star Makes the Grade

Wayne Lehman

Assembly

There's something about bubble wrap. You just know that something new and good is inside. My seventh grade technology class was ready to peel off the wraps and get to the assembly of their three new Easy Star kits from Multiplex.

The day before, we had gone over the instructions and basically knew where we were headed. I had wanted my students to practice the skill of reading directions, but with the actual components in their hands, it was hard to hold them back. Multiplex' precision cutting and excellent renderings in the set of figures made assembly hassle free.
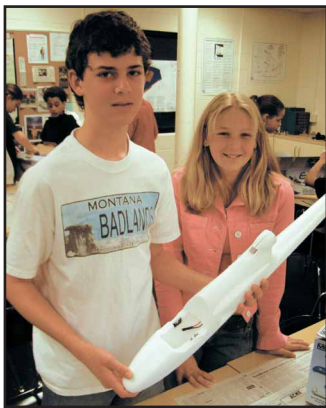
I had soldered the leads and 47nF capacitors onto the motors, so it was a simple matter of dropping them into position in the left half of the fuselage shells and routing the leads down the groove to cockpit area. First, we were instructed to spray one half of the fuselage gluing points including the motor mount with an accelerator (I used Zap) and let it dry. Just before joining, cyanoacrylate was to be applied to the other half. We found that this made an authoritative bond. We always did a trial fit because working time is about a second at best. My students were intrigued with

Wayne Lehman's seventh-grade science & technology students begin the assembly of their three Easy Star RC airplane kits from Multiplex USA. Students have completed the fuselage and tail.

the smell of the kicker and the fast action of the Zap-a-Gap Medium CA — and yes, one or two students did get to experience the joy of a joined thumb and index finger.

After mating the fuselage halves, we proceeded to mount the stabilizer and fin. Again, precision cutting by Multiplex made this a guaranteed success. After positioning the canopy clips and control horns, we were ready to dress up our models. My students studied the colorful Easy Star boxes for decal placement. While some took charge of this, others used latex hobby paint to darken the canopies. We used black, purple and blue to personalize each airplane.

The servo cutouts in the fuselage are an amazingly accurate fit for the servos that Glen Merritt at Hitec provided for us. Routing the steel control rods through the inner and outer Bowden sleeves was a cinch, and all that was needed to finish the job was to slip the prepared Z-bend through the servo arm and press the sleeve into the grooves along the body. The other end of the wire goes through a linkage connector on the control horn, where it can be adjusted with the little hex wrench in the goodies box. The two plastic sleeves press into the fuselage sides, along with an third one along the bottom for the antenna.

This group of students checks the fit of the Easy Star's wing panels to the fuselage. This model is only one propeller away from being ready to fly.

These tubes serve dual roles. Not only do they route the equipment, they reinforce the side load on the fuselage.

Assembling our Easy Stars took three class periods, which is a reasonable amount of time to give the kids some hands-on model building experience without bogging them down. Derek Ebersole, 13, commented, "I really liked building the Easy Star, and what impressed me was that everything fit together perfectly."

The only step left was affixing the supplied hook & loop material to the receiver and motor batteries, and their

appropriate locations under the canopy. I was very pleased to see that the motor battery provides the nose weight required to bring the CG perfectly in line.

The Simulator

How fortunate we are to have a simulator to familiarize novice pilots with the behavior of a flying airplane before subjecting the real craft to undue punishment. I was more than pleased to learn that Hitec RCD was making a free download available from the Internet, but wait, I thought. Could something that is free be of good quality, and will the airplanes fly anything like our Easy Stars? I didn't have to wait too long to find out. Glen Merritt from Hitec and Multiplex Modelsports USA directed me to their web page. On my first try I didn't locate the link because it isn't immediately obvious, so I will now direct you.

1. Type in **www.hitecrcd.com**
2. Select **New Product**
3. Under Radios you'll see **Flight Simulator Cable**.
4. Click that and scroll down to the link for a free download. "FMS" stands for Flight Model Simulator, developed by Roman and Michael Moller. You can read more details and instructions about this simulator on page 15 of the May 2005 issue of the AMA's *Model Aviation*.

To my elation, I found that the first airplane on the list is the Easy Star. Other choices include the Magister, Space Scooter, Twin Jet and Su 26. Once into the simulator, there are prompts to guide you, but let me at least mention that once you've selected and loaded your airplane and plugged in your transmitter using Hitec's USB Simulator Interface Cable, you do need to go across the top bar and click on **Controls**. You will then be instructed in how to calibrate your transmitter. If something is backward, you can invert its function right there on the screen.

Now you're ready to fly, but wait! That Easy Star is going nowhere on the runway. Go up to the bar to select **Simulation** and choose **Hand Launch**. Now you're flying. I was amazed at how realistic this simple simulator is. The throws are trainer gentle, and if you try a loop from level flight, you'll only get a nice stall. Cut the throttle at altitude and you're in for a lengthy glide, all very much like the behavior of the real deal.

After several flights, I was excited at the potential of this tool for helping to give my students the experience they needed and the skills for flight.

The next morning, I could feel their anticipation as my students walked into the lab. The Easy Star came up bright and clear on the screen, and after a quick demonstration, they were off and flying. The first session was to familiarize ourselves with how everything worked. We had some fun selecting different landscapes and perspectives (The little model port in the Swiss Alps is absolutely gorgeous). There is a chase camera option, but as this is unrealistic, I insisted that we fly with the fixed camera. Selecting a winch launch catapults the Easy Star to a speck in the sky. Landing, as always, proved to be a challenge.

After two more practice sessions, it was time to put my pilots to the test. I made up a skills routine with points awarded as follows:

Immediate Landing		Right and Left Turns, Landing	
On grass	5 pts	On grass	10 pts
On grass	10 pts	On grass	20 pts
On grass	20 pts	On grass	30 pts
0 points for crashes or not landing within 1 minute.			

Not everyone enjoyed the pressure, but most students thrived on the challenge and competition. By this time, different skill levels were emerging. Several were becoming quite competent, others were struggling but improving, and there were a couple who felt like giving up.

After we had all spent some time at the computer station, I asked my students what they liked about the simulator and what was difficult for them. Here are some quotes.

Ruby DeOleo, 13, "It's cool just controlling the plane, but everything is difficult, especially turning."

Claire Anderson, 13, "I like it. It is really helping me. It's annoying how you can't always see the ground and runway."

Mollie Lehman, 13, "The simulator is fun. I like how it makes it real-ish."

In a couple of days, I was to learn how "real-ish" my students' simulator experience would prove to be. It was time to charge up the batteries and head for the field.

In my next and final installment, my entire seventh grade technology group will be flying their Easy Stars! **HM**
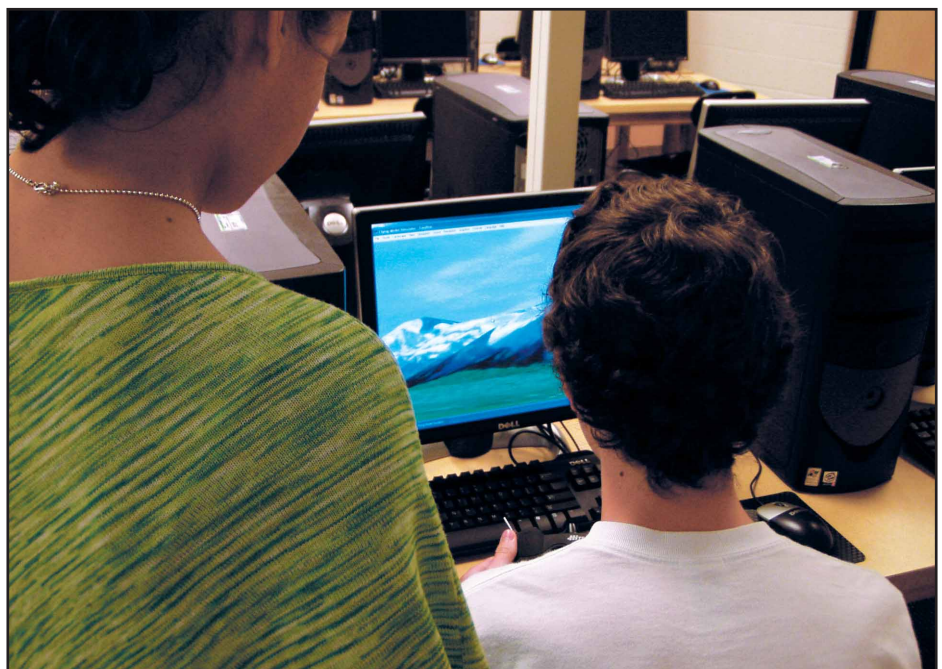
Multiplex simulator is a free download, and works perfectly with Hitec's transmitter interface cable. Students showed natural aptitude for commanding their virtual models. The real test comes next month.