



# Taking control of repairing your computer

By Eric A. Taub  
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Lemonade and computer keyboards do not mix. I learned that the hard way a few weeks ago, when my stepdaughter accidentally spilled some onto her iBook laptop. Over the phone, I told her how to remove the keyboard and blot up the mess.

But even after the lemonade dried, the iBook didn't work properly. The spill had precipitated a virtual stroke: the laptop could no longer connect to the outside Internet world, its screen was dim, and when Stacey tried to type, evryling cme out lke tis.

A local repair shop said a new keyboard would cost \$200 installed, and it would take two weeks.

Googling "iBook keyboard repair," I found a Web site selling parts to help people fix their own computers. The next morning, I received a new keyboard, and 10 minutes later, I had it installed — at half the cost and with virtually no downtime.

While personal computers rival the brain's neural complexity, you do not need to be a neurosurgeon to fix one. Many parts can be easily replaced at home for a fraction of what a professional would charge.

According to Paul Reynolds, the electronics editor for Consumer Reports, consumers should not bother fixing a PC when the cost equals about half the price of a new machine. And that number is easy to reach. Having a shop replace a laptop's L.C.D. screen, for example, can easily run up to \$600. Doing it yourself might cost \$200, and a few hours of research and labor.

From adding memory to replacing a motherboard, repair tasks often require little more than patience, organization and a couple of small screwdrivers. There is a downside to doing it yourself. If you guess wrong and replace a part that is not causing the problem, you will have wasted time and perhaps money. But many hardware problems are fairly easy to diagnose.

If you have no idea where to start, the Web has many sites and discussion boards where others with similar problems are eager to analyze, discuss and instruct you.

For example, had I contacted the Laptop Guy, an online repair company, I would have been told that once liquid hits a computer, you should not turn it on. "That's like dropping a hair dryer in the sink," said Todd Feit, the owner.

Most fix-it-yourself sites concentrate on laptop problems for an obvious reason: given that laptops are thrown around in airports and backpacks, they are much more likely to break. And fixing a laptop is more challenging than repairing a desktop. Not only are parts packed in more tightly, but each manufacturer has its own design.

You often have to look beyond the symptoms to identify the underlying causes of a problem, said Morris Rosenthal, a computer consultant who has a repair section on his Foner Books site.

One good strategy for any repair: take digital photographs of all the disassembly steps to try to ensure that you won't have any stray pieces left after you put the laptop back together.

Keeping track of the screws is especially important. Use one that's too small and parts will not hold. Use one that is too big and you could easily short out the new logic board that you just installed. One way to account for all the screws is to tape and label each one on a piece of paper on which you have outlined the computer's shape.

Some items are very easy to replace. Manufacturers have long allowed consumers to replace their own RAM chips without voiding the warranty. And changing out a malfunctioning or too-small hard drive for a new one often requires little more than unplugging a cable and unscrewing the drive from the computer's chassis.

L.C.D. screens are one of the more difficult components to replace. Some are glued to bezels and contain a number of screws and screw covers. To the novice, it may not always be clear whether it's the L.C.D. that is causing the problem. However, if an external monitor works when plugged into the laptop, then the screen is most likely at fault.

Once you have decided to take the self-repair route, illustrated guides are a must. Fortunately, they are readily available on the Web. On his site, Mr. Rosenthal, the computer consultant, offers several flow charts that help isolate the likely problem and also has take-apart guides for popular laptop models.

Online discussion groups are another good source for diagrams. For Macintosh computers, iFixit and PowerbookMedic.com offer free, extensive repair guides for a host of problems, with detailed photographs showing how to perform the work.

Even with all the help, is there an easy way to figure out if you will be up for the job? According to Mr. Rosenthal, there is. "I tell people if you cut yourself changing a light bulb, then you should not try fixing your computer."