President's Corner
How to Succeed in Technology (While Trying Really Hard)
By Greg Skalka, President, Under the Computer Hood User Group
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www.uchug.org
president (at) uchug.org

You may be able to succeed in some things without really trying but dealing with technology is not typically one of them. While our modern lives are awash in new tech, we must often struggle to cope with it. New innovations bring the potential for much good for our world and our individual lives, but they can also have unanticipated negative consequences for our planet, our society and ourselves. On a personal level, our everyday interactions with technology can help us get ahead, save us time, connect us, isolate us, cost us resources and drive us crazy, often all at the same time. New technology usually means change, and how we deal with the changes will determine our success.

Technology is simply putting science to practical use to solve our problems. We have been using technology since the dawn of humankind. Stone tools and fire-starting methods are just early forms of technology. We as a species have evolved, along with our society and our technology, each evolving at different rates. Our tech has changed, from hand axes to locomotives to smart phones, while our social system has gone from tribes to countries to a global community. We have physically changed as well, with less physical effort required in our daily lives, more leisure time and a greater abundance of food resulting in a rising obesity problem in the developed world. Each of these aspects has influenced the others, though it is unlikely we will evolve pointed fingers to better press on smart phone screens, as our tech and cultural changes are coming far faster than our human bodies can adapt.

We often get the latest tech gadgets to fill a need, enhance our lives, save time or money or simply keep up with others. Anything new is usually different from what we are used to, requiring some learning and adaptation. Even when we think we have mastered our technology, we can find that success is fleeting. More and more devices are programmable and are frequently connected to the Internet - often the device you have today behaves differently after tomorrow's updates. Setting up your devices can be challenging, and when things don't work, or stop working, where do you go for help?

As an engineer, I should have a front-row seat on the technology express we are all riding on. I've been educated in engineering principles and work daily to advance the capabilities of the equipment and networks our phones and computers use to communicate. Most of the time my work is rather unglamorous: creating spreadsheets, writing reports, probing uncooperative hardware. While I am closer than most to the origins of our new tech, I too am often confounded by

devices that don't work as promised, dismayed when they fail and feel apprehension over where all these things are taking us as a society.

I've often been successful in solving my own problems with new devices and software, as well as maintaining and repairing my stuff. A lot of people look to me for help with their tech problems, and I am depended on to be the family IT (information technology) person, as well as appliance repairman, auto mechanic, handyman, plumber, electrician, gardener and tech installer.

With all these responsibilities, it is rare that I don't have a long list of household problems to solve. Successful resolutions usually require resources in both time (on my part) and money, and there is typically a trade-off involved. More of my time (in labor, research and experimentation) can be traded away by allocating more money to the tasks (hiring services to install, debug or repair, or spending more on insurance or service contracts). I could spend all my time maintaining and repairing everything I can myself, but then when would I get to enjoy the benefits of all this tech? I could easily farm out all the set up and upkeep for stuff in our lives, but would I be able to afford it, and would I become dependent and unable to determine if I were being taken advantage of or controlled?

Somehow, we all must come up with a balance for this if we are to be successful users of technology. Paying for everything is easy, if you have the money. Attempting to solve your inevitable tech problems yourself is harder but has advantages. Here are a few of my thoughts on how to successfully coexist (and hopefully thrive) with today's (and tomorrow's) technology and solve your own tech problems.

Knowledge is Important. No one knows what is best for you or your family better than yourself - not expert reviewers (who may be biased), not governments (which can change) and not companies (whose interests are in making money, not what may be best for you). Unfortunately, you must often be knowledgeable in many fields to effectively evaluate which tech solution is best for you (between product types, between product brands, or even between low tech and high tech). Knowing the background and history of things, as well as how things (or devices) work can help tremendously when your stuff doesn't seem to work. Even if you are not going to debug and repair things yourself, having a basic knowledge of the parts in and functions of the problem device (computer, phone, car, appliance) is helpful in being able to evaluate if you are getting honest and cost-effective support services.

Being an Expert is Good but Having More General Knowledge Might be Better. Expertise is something gained by study and experience in a field, which takes time. Taking the time to gain more expertise in certain tech aspects can be very helpful. Becoming an expert in computer hardware, networking, computer security or home automation might be worth the effort right now, as these are currently hot topics. Hot topics can change as technology changes, however.

Over the years I have gained some expertise in carburetors, floppy disks and parallel port (printer) interfaces, but now that knowledge and experience is less useful to me. Spending at least some time becoming a generalist might bring longer lasting rewards. One field I'd recommend learning more about is physics, which relates to almost everything we call high tech, from the orbits of GPS satellites to the operation of semiconductor devices.

That does not mean that learning new skills and emphasizing particular topics is not important. I fear we, as a society, may be abandoning some hands-on skills in favor of more on-line and virtual pursuits. While I don't follow them much myself, the increase in popularity of TV shows dealing with home remodeling (HGTV) and cooking (Food Network) means people still have an interest in creating things themselves, which is good. Knowing how to play music on Pandora or through your Amazon Echo is not the same as knowing how to play a musical instrument. Knowing how to get food delivered through GrubHub is not the same as knowing how to cook.

Having a Backup Plan is Helpful. For activities you feel are important, having a backup approach is crucial. This applies not only to the backup of data on a computer hard drive to avoid loss due to hardware failure or an attack by ransomware, but also to a "backup" of the computing function itself. One of the best investments I've made in my wife's computing resources is in her own laptop. Though she seldom uses it, preferring her desktop PC, it really took the pressure off me when her primary computer suddenly failed to boot up recently. She was able to reluctantly switch to her laptop for work and home computing needs, giving me the time to investigate her desktop machine's troubles and get it running again. Had I been in a rush get her back on line again, I might have resorted to simply buying her a new PC, an unnecessary additional expense.

I have bought several relatively low-cost, on-sale items over the years as alternates or back-ups to things I already have. These include routers, Ethernet switches, cables (Ethernet, USB, power, etc.), battery chargers and USB drives. These can help you quickly isolate the cause of problems and perhaps get you running again, at least temporarily. It is always good to have more than one way of doing things, in case your primary means suddenly fails. It costs nothing to have multiple browsers available on your computer, in case accessing a web site becomes a problem. If you can't get your email to download on your PC, can you access it on your smart phone? If your Wi-Fi does not work, can your wired PC still access the Internet? These kinds of substitutions can help isolate the cause of problems with little cost or risk.

Even with a little extra cost, some redundancy in the things that are important to you can be justified. Having a second TV might keep you from missing that big game. A cheap second car (or a bicycle) can be an alternative to missing work when your car won't start. Keeping a spare phone charger or USB battery pack

at work or in the car can be a lifesaver when your smart phone battery is low or fails to hold a charge.

A Logical Outlook and the Application of the Scientific Method Can Help Solve Problems. In helping you solve a problem with their product, a company's tech support department may have a script to follow in directing you on what to check and in what order. You won't have this advantage if you perform your own troubleshooting, but a little logic and thoughtful consideration can help. Following the scientific method will always keep you on the right track. First, ask a question (typically, why does this thing not work?), then research (what may be the cause?). Next, come up with a hypothesis (a possible cause for the failure), and develop an experiment to test for that cause, recording what you did and the result. You can repeat this as necessary until the problem is solved.

Typically, you will want to try the most likely and easy to test reasons for failure (reboot, cycle power, verify power connections, verify cable connections, verify all system inputs are good, etc.) before moving on to more complicated, unlikely or expensive things to try. Even if you can't resolve it yourself, keeping a written record of what you have tried, and the detailed results will be helpful if you do finally need to talk with tech support.

Solving Problems Requires Practice. Just as with playing a sport or a musical instrument, you only become good at solving problems if you practice it. Some tech problems will turn out to be easy to solve, while others may require more experience, knowledge and perhaps effort. Understand that there are going to be some problems that may seem (or may be) unsolvable. Always try the easy and low-cost / low risk debug steps before calling in the experts / tech support, so you can build up that experience and confidence in your debugging skills.

Persistence Usually Pays Off. If at first you don't succeed, try, try again. This proverb certainly applies to resolving tech issues. My win/loss record for solving problems is pretty good, and it is improved by my not accepting a loss at times, but instead keeping the issue open. I have a few problems I continue to pursue a solution to, just not very actively currently. I've found an acceptable work-around or alternative to the issues, and while I do intend to continue to seek solutions, I am free to work on more pressing activities in the short term. One example is the problem I started having with my network hard drive a few months ago. I found it turned off a few times, and when restarted, it would not boot, but instead gave an error indication. Later it would boot and is currently running, but I apparently can't access the drive. I have the data backed up on an external USB hard drive, so getting the network drive working right now is not critical. Hopefully I will find time to continue debugging on it soon.

In most cases my persistence has paid off more quickly. Recently my father had a problem going to web pages on his Windows 7 desktop computer. His Internet Explorer web browser could bring up web pages but clicking on links in those

pages was ineffective. I reviewed all the browser settings, and found no way to repair or reinstall IE, which I believed was the problem. To prove this, I proposed testing another browser. My father agreed to try using Chrome, which I attempted to install using IE, the only browser on his PC. Unfortunately, the Chrome browser installation is accessed from a link on a Google web page, which I could not get to work with IE. I finally tried installing Firefox, which did not require going through a web page link to install, and it had no trouble with links in web pages. I then used Firefox to install Chrome, and my dad was then happy on the Internet again.

Knowing Where to Get Answers is Important. When the problem is with a product or service, the manufacturer or provider is the first place to look (especially if it is still under warranty). Technology user groups can be a great place to get help with general problems and learn new things. For more specific issues, a user forum or web site (like CNET) can answer questions and provide helpful hints and tutorials. Of course, your search engine can bring helpful information from all over the Internet. I once needed to replace the rechargeable battery in my electric toothbrush and was able to find replacement parts and disassembly videos through a web search. This does not help much, however, if your problem is in getting on the web.