

## Student Troubleshooters in an Elementary School?

By David Guernsey, El Gabilan Elementary School

Are you being snowed under by the number of minor problems with your school's computers that you are having to troubleshoot? Ever think about using students to do the initial troubleshooting? "But I work in an elementary school," you say. You can also have student troubleshooters. I started a program with fifth and sixth graders as student troubleshooters at El Gabilan Elementary School in Salinas last year, and it worked well.

The vast majority of the computers in the school are Macintosh of one vintage or another. Many of them are getting old and seem to have more and more problems. Because of this, the program I developed is based on Macintosh computers. A similar program could probably be developed for schools with PC computers. In addition, I have found that many of the principles of troubleshooting transfer pretty easily between platforms.

The first and a most important thing is to get the right students to be your student troubleshooters. These students need to be able to think in a logical manner and work independently. They need to be able to consider possible causes of a problem and eliminate them in a logical sequence; most probable to least probable. Even more important, the students who work as troubleshooters need to be able to miss class from time to time without getting behind in their studies. I also require that the students maintain their grades, keep up with their homework and assignments, and not be discipline problems.

The teams at El Gabilan School are made up of one sixth grade student and one fifth grade student who work together. The fifth grade students from one school year usually become the sixth grade students for the next year. This helps with training and puts an experienced person on each team. At the start of the school year I ask the fifth and sixth grade teachers for the name of one student from each of their class who meets the criteria to be a troubleshooter, and I let the sixth grade teachers know who were fifth grade troubleshooters the year before. I explain that I don't want these names right away, but I would like them to begin to consider who might be a candidate for the position. About a month into the school year I ask the teachers to provide me with the names so that I can begin to train the student troubleshooters. If a teacher does not have a student who meets the criteria, I will ask the other teachers at that grade level for a second student. I also tell the teachers that a student can be removed from the program if necessary. If the student does not continue to maintain high enough grades, has discipline problems, is not doing assigned homework, or has other problems with school work he/she can be removed from the program. The students are also made aware that these things can cause their removal from the program.

As soon as I have the names of the students, I coordinate with the classroom teachers involved to find a time that is convenient for everybody to have weekly training sessions. I ask the teachers to consider all the factors; test schedules, lesson presentations, reading groups, etc., that might affect a time for this training. I generally limit training sessions to 45 minutes or less to keep students from being overwhelmed by the volume of material and to help keep them from losing interest.

The first training session is a general introduction to troubleshooting. In this session the meaning of troubleshooting is defined and the students receive an overview of what they will be expected to do. At this point the students are asked if this is what they thought they would be doing and if they want to continue. If any of the students do not want to continue they are excused and the teachers are asked to nominate another student. I have created a notebook with check-off sheets, TCP/IP addresses for each computer at the school, and other information for the student troubleshooters. I also provide the students with both a CD and a 3.5 inch floppy disk containing the program OT Tools which I find very useful in troubleshooting network connections.

Since the most prevalent computer related problem at the school seems to be problems with

the printers, this is the next training session. We start with the most obvious of causes of a printer problem; the printer is not plugged into the power. From there we work through other printer problems. For example: not connected to the computer, out of paper, out of ink or toner, paused print queue, etc. After checking all of these more obvious things, we check to see if the proper driver for the printer has been installed. I also go over how to make sure the computer knows which printer it is using. I provide my student troubleshooters with a check-off sheet in a page protector and a marker that they can use to check-off each thing as it is eliminated as a cause of the problem.

The next most common problem at El Gabilan Schools seems to be Internet connectivity. Consequently, this is the subject of the next training session, one which the students really enjoy. In this session I go over the topology (wiring diagram) of the school network so the students understand how a signal gets routed from the Monterey County Office of Education (our Internet Service Provider (ISP)) to an individual computer in the school. With this knowledge in hand, we go on to the assignment of TCP/IP addresses and which TCP/IP is assigned to each computer in the school. Once the student troubleshooters are able to check to see if a TCP/IP address has been assigned to a computer and if it is the correct address, then the students learn to use the OT Tools program to check connectivity of the computer. They learn to use the "ping" function of this program to see if the computer can see its own Ethernet card, the school's router, and the ISP.

The next topic on the training schedule is the problem that Macintosh computers seem to have with corrupted extensions. I teach the students how to shut off the extensions and then to turn them back on selectively until they isolate the corrupted extension. For the newer Macintosh computers this means teaching the student troubleshooters how to use "Extensions Manager", but for the older computers I have to teach them how to go into the hard drive folder and move extensions from the active to the "disabled" folder.

After these beginnings, I begin to add troubleshooting of other problems to the students' training and experience. I go to such things as the clock not maintaining the correct time, or no video on start-up. This is most often caused by a bad battery, so I begin to teach the student troubleshooters to do some minor repairs. We usually start with changing a battery. As their comfort level and experience increases I have them helping with installing memory, Ethernet cards, and other minor repairs.

I have found that if I progress slowly in training, teaching only small bits at each session, fifth and sixth grade students can become effective and valuable helpers in maintaining the computers in the school. They not only help the school, but they are also learning a valuable skill to use later in their lives. Giving the students the chance to learn and apply new skills has proven effective and beneficial to El Gabilan Elementary School in Salinas, California. I am sure it can ease your stress and help reduce the never ending list of computers with problems at your school too.

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