Opening Computing Labs, Opening Minds
Christopher Jones
University of Oregon
Eugene, Oregon 97403
541-346-2094
jonesey@darkwing.uoregon.edu

ABSTRACT
The School of Architecture and Allied Arts at the University of Oregon consists of nine departments and programs with 5000 students, 160 faculty, and a few dozen staff.

When I came to the school in January as the school’s new computing lab manager, I was told that I was responsible for two labs consisting of 28 computers. As it turned out, students from just four of the nine departments had access to the labs I maintained on behalf of the school. Most departments maintained their own small labs or scattered quasi-lab computers, the vast majority of which were in bad shape. I offered my services as lab manager to the departments; in exchange, I asked for increased availability of the computers to students outside the department that "owned" each lab. I started out with 28 computers in two labs, and by fall I will be maintaining at least 75 computers all over the school.

My grand vision is to help change the currently divided culture in the school by illustrating that when resources are scarce, sharing computing resources among all departments makes more sense than each department trying to hoard what little it has. I hope to increase interaction among students of different departments by allowing them to work side by side on computers that they think of as belonging to the whole school, not just one department. It is a big job, and it will take time and lots of help from students, faculty, and staff, but it is worth doing.

Keywords
Computing labs, clusters, student.

1 AS IT BEGAN
In January of this year, the School of Architecture and Allied Arts at the University of Oregon created a new position within computing support: computing lab manager. My new job doubled the number of full-time computing staff at the school, which consists of nine departments and programs with 5000 students, 160 faculty, and a few dozen staff.

When I came to work on the first day, I was responsible for two computing labs consisting of 28 computers. These two labs served students in just four of the nine departments in the school, with one lab for students in three departments and one lab for a subset of students in another. There was no general-purpose computing lab available to all of the school’s students, and students from a few of the departments had no access to public computing labs in the school.

Some of the departments in the school require that students purchase their own computers. As staff at other schools have no doubt noticed, demand for labs does not decrease as student computer ownership increases; instead, increased use of and dependence on computers in general leads to higher demand for computing labs, which often provide facilities for printing, scanning, CD-burning, and other special services that are not practical for individual students to provide for themselves.

2 LABS, MORE LABS, AND QUASI-LABS
My first task, once the two labs were running smoothly, was to set up a third lab with twenty new computers. Although this new lab was sorely needed, it took some effort to find space for it and to persuade my fellow staff that it was important to open the lab to all students in the school. It was a little tricky to find space that one department would make available as a facility for students of all departments in the school. We managed to open the lab without incident, and it has been a qualified success in its first few months.

As I became more familiar with the school, I found, to my surprise, that there were labs, or lab-like computers, scattered around the school, each with various degrees of functionality. These public computers, sometimes just one public Macintosh sitting in an architecture studio, sometimes five new computers sitting unmaintained in a department study room, seemed to be logical additions to my lab management responsibilities. Since the people who maintained these lab computers either did not exist or were overworked, it was not difficult to convince them to allow me to take care of their labs. By the end of five months, I had taken a total of 57 lab computers under my wing, with about 20 more existing computers to be added later this year.
As I take over the maintenance of each lab, I standardize the software set and appearance of the computers in the lab. Besides making the computers easier to maintain for my staff, standardization contributes to the notion that all of the computers in the school's public labs are basically the same. It also makes it easier to maintain documentation that explains how to use the school's computers; we do not need separate instructions for each lab.

3 A PUBLIC UNIVERSITY AND THE SIEGE EFFECT

As I discovered in my first weeks on the job, most of the school's labs are not open to all students in the school. All computing labs, with the exception of the one new lab, are restricted to use by students in certain departments or programs. This means that some departments' students have access to well-equipped computing labs with up-to-date software and peripherals, while other students have to make do with the use of a few old computers or travel across campus to crowded computing labs run by the university's Computing Center.

The reasons for this disparity are varied, but the most important one appears to be how the labs, and the school in general, are funded. Instead of having one school-wide technology budget, departments have individual computing budgets, and they come to the computing staff individually with proposals to purchase and install software and computers. Complicating the picture is the fact that we are a state university whose funding has been cut quite sharply over the past decade. These cuts have led departments to try to conserve limited resources where they can, leading to what I call the "siege effect." Each department hunkers down as if trying to weather a storm, cutting back where it must on the resources that it provides to students. The results of the siege effect appear to be that departments hoard resources, including their computing resources, for their own students instead of sharing them. As anyone who has studied network effects can tell you, this division of resources results in less efficient allocation of technology resources to the people who need them.

The siege effect has also affected departments in ways unrelated to technology, leading to more separation and competition between departments rather than more interdepartmental cooperation. Faculty study committees have recently pointed out this separation and recommended that the school work on ways to change the school's culture, enhancing interaction among students in different departments.

4 MY VISION, OR: CHANGING THE WORLD ONE PUBLIC COMPUTER AT A TIME

My idealistic vision is to help change the currently divided culture in the school by illustrating that when resources are scarce, sharing computing resources among all departments makes more sense and provides greater benefits to everyone than each department trying to hoard what little it has. I have noticed lines of students waiting to use computers in one department's lab while another department's lab sat mostly idle. While this unequal availability of resources may be reasonable at certain times (just before a class is to be held in the empty lab, for example), it is an inefficient use of our resources to have one overflowing lab and one empty lab as a regular occurrence. Some departmental labs are the only ones with software or hardware that students in other labs occasionally need to use; I find myself making exceptions to the rules to let students into other departments' labs for legitimate academic purposes.

Technology can solve software problems to some extent, both by distributing our existing software licenses more efficiently, and by allowing us to monitor usage to determine how well our software expenditures are matching students' needs. Sassafras Software's KeyServer allows lab managers to install software on every lab computer in the school but limit simultaneous users of it to the number of licenses a department has purchased for its lab. As an added benefit, KeyServer's log files can help departments allocate their software budgets efficiently in the future by tracking usage levels on each piece of software.

Some things cannot be shared as easily, however. If there is only one slide scanner in public labs in the whole school, for example, students must be able to access the lab in which the scanner is installed in order to use it. Until all students have access to this lab, there will be students who would like to scan who will have to find a more difficult way to do so or simply go without.

By combining resources among departments and opening labs to all students, I hope not only to increase the usefulness of lab computers to all students in the school, but to increase interaction among students of different departments by allowing them to work side by side on computers that they think of as belonging to the whole school, not just to one department.

It is a big job, and it will take time and lots of help from faculty and staff in the departments, but I believe that it is worth doing and that it will improve the students' experience in the school.

5 HOW TO DO IT YOURSELF

Lest this paper be solely a story about one person's attempt at improving the culture of a school from the bottom, this section includes a step-by-step how-to guide for idealists who may want to try to effect similar changes in their workplaces. This guide should be useful not just for lab managers, but for anyone trying to provide quality service with limited resources.

5.1 Step 1: Build a reputation

People will rarely react kindly to someone who bursts into their comfortable routine, spouting fire and telling them How It's Going To Be. Do not make the mistake of trying to impose your will on the system from the first day. The current system is the way it is for many reasons; if you take some time to learn about it from all of the stakeholders involved, you will find good, bad, and tolerable elements.

Building a reputation takes time. Spend that time providing good customer service, talking to people about the history of technology in your organization, and learning who the key players are. Ideally, by the time you are ready to start presenting your ideas for improvement, people will have begun to know and trust you.

5.2 Step 2: Break down technological barriers

When you want to start making big changes, you will have to convince a few key decision-makers that your way is The Right
Way, or at least A Better Way. When at last you convince them, you should be ready to seize your opportunities. Line up the technological resources you will need to turn your vision into reality. Implement and test them as much as possible before your plans are approved. Don't be caught flat-footed when a previously stubborn colleague suddenly changes his mind and gives you an opportunity to go ahead with a project.

5.3 Step 3: New projects: Draw lines in the sand
New projects are a good place to bring your vision to life, since there are usually fewer precedents to overcome. My first line in the sand was making the new computing lab open to all students in the school. As you replace technology, upgrade systems, and renovate facilities, always keep your vision in mind and try to figure out how to apply it to the changes being planned.

5.4 Step 4: Be patient and persistent
It can take a long time to change a system. Keep the general principles of your vision in mind whenever opportunities for changes arise. Over time, technological and other changes will give you a chance to influence the course of events. There will be periods of frenzied activity, but there will also be frustrating times when you feel as if you are going nowhere. Use those periods to continue providing good customer service and building relationships, and bide your time until the next opportunity.

5.5 Step 5: Be prepared to be wrong
The law of unintended consequences dictates that you will not foresee all of the effects of your changes. Systems, especially systems that you have adopted rather than created yourself, are usually more complex than you realize. For example, you may not know about the sudden rush on the printers at the end of each semester or the yearly budget renewal process if you have been working in a new position for only a few months. Be prepared to work around unforeseen problems and even to return to the old way of doing things if necessary.

6 CONCLUSION
Six months is not long enough to transform anything, let alone the culture of an entire school. It often takes a year or more simply to learn enough about your work environment to be able to recommend sensible changes. If you are brought in to fix a system that is limping along, and the changes you need to make are clear to you or even made explicit for you, you should apply your expertise to make the most drastically needed changes as soon as it is practical to do so.

You will need the support of decision-makers in your department in order to turn your vision into reality, and gaining that support can take time. Be patient and persistent, always keep your vision in mind, and make sure that you are ready to act when you are given the opportunity.