Issues Related to Making the Most of the One (or few) Computer Classroom

Teaching Strategies

- Re-thinking how you teach
- Organizing lessons and classroom activities for group work

How well you are able to make use of the single computer in your classroom has much to do with your instructional strategies and how you organize to teach your curriculum. As is often noted, integration of technology requires you to *re-think* how you teach.

A single classroom computer can be used effectively as a presentation tool, a tool for generation or production of student work, a cooperative learning tool, and an in-class information resource. While many teachers are very familiar with how the computer can be used to present audio/visual information to an entire class (see "Display Issues" below), other uses require a bit more investigation.

For example, in order for a single computer to be used by students to create work, you will need to organize both your class and the class activity so that small groups of students can use the computer while other groups of students work on non-computer components of the activity. Organizing a lesson or unit in this fashion requires forethought and planning; and this can be rather daunting in your first attempt. Nevertheless, with practice most teachers find that the benefits of technology integration — such as increased student motivation, improved interaction with content, development of cooperative learning skills, just to name a few — are worth the time it takes to modify existing curriculum activities.

Computer Placement and Portability

- Classroom computers locked to media carts
- Securing the carts

Where is your classroom computer? If it is on your desk, then how easy will it be for groups of students to access it? If it is securely fastened to a table in the back of the classroom, then what if you want to use it to display something (e.g., images from a CD-ROM) to the entire class? What if you want to borrow a computer from the teacher next door so that you can have *two* computers in your class for a particular activity? Could you do this? Clearly, computer placement and portability has a practical impact on how you are able to use your classroom computer(s).

In most schools, **portability** and **security** are equally important, yet competing, issues. Computers which are not permanently affixed to tables or desks often "walk" during nights, weekends, and holidays. On the other hand, locked down computers often result in computers that cannot be used in a wide variety of ways. The solution that many schools have found is to affix classroom computers to small media carts. The same sort of device that can lock a computer to a table can also lock it to a media cart. This cart can be moved around the room (or into the room next door, up the hall, etc.) where needed. If you have a network in your school, remember to get a long cable so that the computer cart can be located a reasonable distance (6 feet or so? Find out what's legal in your school.) from the network "jack." The same thing goes for a phone cable if you are using a modem on your classroom computer.

Since a media cart is not altogether an immobile object (and that's the idea, right?), it is important for there to be a way to lock down the cart to an immobile object — such as the building wall. We have seen some schools do this via a bicycle chain and a large eyelet affixed to the wall. Some particularly security-conscious schools require that the media carts be wheeled into a lockable closet or very secure room in the school in the evenings (and especially during school vacations).

A small — just big enough for the computer, monitor, and maybe a small printer — media cart costs very little ($100 - $200) and this cost is well worth the added flexibility it provides to the classroom teacher.

Display issues

- Using a TV as a computer monitor
- Do you need an LCD panel?

It doesn't take much to realize that 30 children cannot easily view a single, 9" computer monitor. So, how is it possible to turn that little display into something that a whole class can see? Teachers address this issue by using various devices to take the video output from the computer and either project it or display it on their classroom TV.

By far the less expensive — and generally more viewable — option is to display the computer output on a TV. This is usually the same TV that you use to show videos for your class. The key device that you will need is something generically called a "scan converter." This small box plugs into your computer where the monitor connects. It takes computer output and sends it to both the TV (which you connect to the scan converter) and the computer monitor. Some computers which do not have external monitors (such as some Macintoshes and many laptops) will need a "card" installed in the computer. Check with the manufacture of the scan converter if you are not sure.

Scan converters generally cost between $150 and $200. If you need an extra card for your computer, this can cost around $100 (but remember, you might not need this!). That's it. You do not need other devices such as overhead projectors, screens, etc. It is **not** necessary to have one scan converter in every classroom! Rather, teachers in a school can share one or a few of these devices just as teachers in many schools share VCRs. Connecting the scan converter to the computer is a simple matter of plugging in cables, and thus the device can be easily moved.

A more expensive option is to use an LCD panel and an overhead projector. This LCD panel is connected to the computer just as one would connect a scan converter (no steps saved here). Then, the LCD panel is placed on an overhead projector and the computer output is projected. In a properly darkened room with a very bright overhead projector and a good projection screen, this works very well and the image produced can be somewhat superior to a scan converter's. In a light room with the projectors *most* schools have, this option works very poorly. Furthermore, a good LCD panel and projector costs between $3,000 and $4,000. Ouch. Some schools are moving to devices called "video projectors" which sort of combine the LCD panel and the overhead projector. These work rather well in not-so-dark classrooms. Unfortunately, even an average video projector costs around $4,000 with the better ones costing twice that.

Technically, an LCD panel or projector is no easier to use than a scan converter. Video quality from the better (i.e., $200 range) scan converters approaches that from an LCD panel or projector. Given the cost, many schools opt for the scan converter.

Minimum software

- What software do you *really* need on the single classroom computer?

Many people believe that the more software you have, the better. Fine; those people probably also believe that 20 pairs of shoes are better than 3 pairs. The point is that it is always fun to have a wide variety of software applications to choose from and there's no denying that certain computer functions can only be performed with special purpose software. But what do *most* teachers have available on or for (e.g., via a network server) their single classroom computer? What software has the *average* technology-using teacher taken time to learn, and what software gets used most often in classrooms across the country? Here's a quick list...

- *Word processor* — ideally one with is part of a word processor, spreadsheet, database package such as ClarisWorks or Microsoft Office. Beware of word processors that are so simple that they cannot save or read files to other word processor formats.
- *Spreadsheet* — again, ideally one that's part of a package such as ClarisWorks or Office. In this case, most teachers find that the "easier" spreadsheet programs work best for them.
- *CD-ROM encyclopedia* — something like Microsoft Encarta, Grolliers, Comptons, etc.
- *Presentation manager* — Microsoft Powerpoint is particularly popular, and it comes with most versions of Microsoft Office (which has the word processor, spreadsheet, etc.). The slide show function in ClarisWorks is similar to Powerpoint. Also in this vein is *Hyperstudio*. Hyperstudio is much more than just a presentation manager, but when used this way to make slide shows of student work the *child-friendly* features of the program really shine.
- *WWW Browser* — Netscape, Microsoft Explorer, or the AOL Browser (if you have an AOL account). Naturally, this only really makes sense if you have an Internet connection on your classroom computer.
- *Email program* — again, as with the WWW browser this only makes sense if your computer is connected to the Internet or at least your school's local area network.

Most teachers add to this list some number of content-specific programs. This is where programs specifically designed to "teach" content or other skills come into play. Included in this type of software would be those programs which focus on simulations, drill and practice, critical thinking, and cooperative learning. Which program you choose has everything to do with content area, grade level, instructional strategy and a whole host of teaching and learning issues. This is why *in the beginning* many teachers choose to focus on learning and using basic, universal, applications such as those bulleted above.

Additional Resources

Above, we presented some of the broad (and not-so-broad) issues related to teacher use of one or just a few classroom computers. Naturally the question that many teachers would have next relates to finding specific curriculum unit ideas for the one-computer-classroom. In fact this is where the *real* fun lies. Fortunately, for those who want to see what other teachers have done, there are many informational resources available which provide lesson and unit ideas. Here are just a few to get started...

Great Teaching in the One Computer Classroom, David Dockterman; Tom Snyder Productions, 800-342-0236, www.teachtsp.com

Instructional Strategies for the One Classroom Computer, Glenda Scales and Sally Laughon; www.edtech.vt.edu/edtech/laughon/1compnotes.html

Doing Lots With One Classroom Computer, Judy Salpeter and Susan McLester; FamilyPC, www.isop.ucla.edu/teachers/Articles/family-pc-lots_with_little.html

Productivity in the Classroom, Microsoft and Scholastic, www.microsoft.com/education . Also more classroom tips can be found at www.microsoft.com/education/curric/activity/