

Approach 1: Teachers

1. Teachers are being asked to use technology in the classroom and to make sure they have everything they need. In most cases, recommendations will begin with hardware and software issues / requirements. But to out right recommend something, in this case, is not an easy answer. All things being equal, I recommend teachers receive *six* things: *access, encouragement, inspiration, organization, underpinnings, and sometimes youth.*

Here's what I mean.



Access

Without constant access to computers and networks, teachers cannot be expected to learn and practice the new skills necessary to exploit the educational possibilities of the new technologies. This means access at any *time*, whether during the school day, or at home in the evening, and/or on weekends; from any *place*, including the classroom, the library, the study hall, the office (at home or school), and their living room. If we look at professions that have successfully adopted the new technologies, we see this kind of universal access.

Access also means that a teacher can turn to their desk, to her briefcase, wherever they are working, and get to the information they need and the communication their desires. Access does not mean availability down the hall, or in the lab at certain hours; the last decade has proven that this kind of limited access separated from the daily flow of the teacher's work results in little growth.

Without access for a teacher, it's a waste of time to go any further -- the rest of this list is fruitless unless access is established first.

Encouragement

Few teachers grew up with computers and high-speed Internet access. Most need considerable encouragement to learn the new skills and practice the novel educational techniques that information technology makes possible. They need encouragement from many sources: *their department chairs, their principals, state and local education leaders, their students, the local school board, and their fellows in the profession.* This encouragement can take the form of an expectation by a supervisor that the teacher add a technology-using lesson plan this semester; it can appear as a laptop with wireless connection provided by school officials; it can arise from a technology workshop conducted by the local or state teacher's association.

Encouragement can also mean fostering a spirit of experimentation, permission to try new ways of teaching, patience to be satisfied with small steps forward, and willingness to let people learn from their mistakes. Rewarding and recognizing those who incorporate technology, the very beginners as well as the pioneers, goes a long way to encourage others to try new things.

And school leaders that model the effective use of technology in their own personal work -- from the department chair to the principal to the curriculum supervisor to the dean to the superintendent -- can serve as a lighthouse to guide the rest of the team through the waters of the new media.

Inspiration

Access and encouragement, while necessary conditions for growth, are seldom sufficient to get people moving. Teachers need to be inspired to try something new. They need to see examples of other teachers in their subject, or grade-teaching better through technology. In general, everyone enjoys watching demonstrations of new tools and techniques that are directly relevant to what they teach. And they enjoy even more a chance to try these things out for themselves, hands-on and with friendly support.

There are many ways to get new ideas flowing through teachers' minds:

- district technology showcase that features fellow teachers demonstrating (and not simply talking about) ways they have applied new technologies to their classrooms.
- visit to the Apple™ Learning Interchange, or the WebQuest® page, or the Math Forum to suggest methods and show practical examples in a variety of levels and topics.



<http://ali.apple.com/>
<http://webquest.sdsu.edu/>
<http://mathforum.org/>

- participation in state and regional conferences that include technology workshops.
- weekly visit to the Power to Learn web site.



<http://powertolearn.com>

Organization

Many teachers spend most of their day out of contact with their colleagues. But research proves that technology implementation works better when teachers form groups that support each other through the process of inspiration, experimentation, and adaptation. Fellow faculty are often the best source of new ideas, of help in getting started, and of assistance in times of trouble. It's a lot easier to ask a close colleague -- who perhaps has just been through it himself -- for help getting through that little glitch that is driving you crazy. An organization of peers, whether formally appointed or loosely assembled, is almost essential to making good use of new technology in teaching.

The group -- we might call it a community of practice -- and the help it offers, need not be in the same building, or even the same state. The Web offers an opportunity for teachers to form self-help groups among geographically diverse but job-alike folks. Through chat and instant messenger, email and discussion forums, teachers can help each other discover new ideas and escape from sticky situations. And when the professional colleague groups are coupled with competent technical support help, it's much more likely that people find the courage to experiment and the support to carry through even the tough issues that arise.

Underpinnings

Behind each of the wonderful examples of technology innovation in school sits a collection of cables, connections, computers, and competence that were carefully planned and diligently managed; as well as servers, systems, and support that are reliable and efficient. These are the necessary underpinnings of a teacher's successful use of technology in the classroom. They are the infrastructure that although seldom seen and understood nevertheless makes possible the new educational capabilities.



How many of these capabilities underpin the technology in your school?

- A connection to the Internet that is fast, reliable, always available, and freely open for the teacher's use.
- Email for each teacher, student, and staff in the school, with a directory service, and access from outside the school.
- File servers with plenty of room to store student and teacher projects, and with easy but protected access from school and home.
- Wireless network access throughout the school.
- Hard-wired Ethernet connections as necessary throughout the school.
- Enough printers, conveniently located, for teachers and students.
- A staff that keeps these hardware and software infrastructures running smoothly.
- Web servers available for student and teacher web site publishing, including HTML, mail, and video.
- Access to appropriate administrative and logistical information, from home and school.

- Effective and quick systems for repair and replacement of hardware and software.
- Standard, up-to-date productivity software available at all stations.
- Specialized production software for video, audio, graphics, web, and multimedia projects.
- Digital resources for teaching available through the network (maps, references, image collections)

Youth

Learning a new skill or subject calls for a youthful spirit, one that is not afraid of the discomfort of ignorance, but curious about new discoveries. An attitude of wonder and willingness to be surprised helps the teacher to be open to inspiration from unknown sources, and leads her to make those experiments with technology that can lead to new ways of teaching and learning. A child-like sense of play helps a teacher to take advantage of the access, encouragement, inspiration, organization, and underpinnings that are provided for them.

Just as it's tough to make a word in English (or Spanish) without a vowel, it's tough for teachers to advance in their use of technology in the absence of these *six* conditions.

Thus, teaching teachers how to use technology, as a more effective tool is imperative. There are many considerations:

- expectations in the school
- environment in which you teach (poorer or more affluent areas)
- discussions with other teachers (or districts) that have effectively rolled out a similar program

All things considered, one could incorporate all (or at least majority) of the things listed above, but there are some things to answer in order to get to those points:

1. *Minimum required tools that no teacher should without;*
2. *Additional general tools that enable any teacher to make full use of the new technologies;*

Basic tools specific and essential to certain grade levels or subjects.