The building principal has been identified as one of the key figures in any successful educational change. This is no less true in incorporating technology into the school environment. Principals, if they are to effectively serve as leaders of their buildings, must also be able to effectively lead by sharing the vision and demonstrating with technology.

The Principal as the Technology Leader

Ken Stanage

Is your building getting new computers or other related technology? Would you like to be a leader, riding the technology wave that is rolling across the educational landscape? Are you a principal who understands curriculum and instruction, but would just as soon leave the technology to someone else? If you answered yes to any of these questions, read on!

If your building is getting new computers or related technology, this article will help you lead the effort to use these new tools productively. If you want to ride the technology wave instead of floundering in the surf, this article can show you how. If you feel competent with curriculum and instruction, but shy away from technology, this article can help you utilize your curriculum and instructional expertise toward a leadership role in technology.

I will identify four key skill areas that principals must address if they are to become technology leaders. Additionally, I will offer suggestions for developing each of these skills.

Taking the leadership role in technology-oriented activities is paradoxical. On the one hand everyone acknowledges a strong leader. On the other hand, quality individuals do not like to be told what to do. Quality individuals like to have a say in not only the way things are done, but what the final outcomes ought to look like. Finding a leader who can manage this paradox is not always possible. However, there are things that an individual can do to foster the characteristics needed for this type of leadership. That is what this article is all about. In this article I will identify the characteristics of principals who are strong leaders in implementing and maintaining technology initiatives.

There are four key skills that are characteristics of all strong building level technology leaders. These four skills are: 1) Making learning the leader's primary objective, 2) Creating a learning organization, 3) Managing both the technology effort

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and the human development effort, and 4) Understanding the leader's role as designer. These four skill areas overlap and contain a number of interrelated constructs that make the leader's role a systemic phenomenon. Each of these skills will be examined to create a picture of the principal as a technology leader.

Making learning the leader's primary objective

All leaders must be learners. In technology efforts, this aspect of leadership is even more important. What is the most rapidly changing part of any organization? It is always technology. New hardware, new software, new networking capabilities, new projection and presentation techniques, are just a few of the myriad of technological changes that occur constantly. The leader cannot be expected to master every piece of hardware or software that exists in the building. He or *she can, however, learn to master the hardware and software related directly to his or her work.* Make no mistake about this: an administrator who is constantly encouraging others to use technology and is supportive of all technology efforts within the system, while at the same time, avoids any changes in her own behavior regarding technology, is sabotaging her own efforts. Technology and its uses must be an integral part of the leader's plan for personal mastery (Senge, 1990). Failure to do so will endanger all future technology efforts in the district.

Creating a learning organization

Following closely behind the skill a leader must have as a technology learner, is the skill the leader must have in creating a learning organization. The leader's skills in technology may be appreciated and even admired by the staff but if the leader ignores the learning culture of the building they will find themselves leading a very short parade. Creating a learning organization is somewhat of a misnomer. An organization cannot learn. The people within the organization must do the learning. Creating a learning organization means that the leader must be skilled in cultivating the culture of the building so that learning becomes a high priority. The idea of continuous improvement goes hand-in-hand with organizational learning (Fields, 1993). The leader must develop skills in surfacing current mental models, demonstrating present practice, and describe the vision that illustrates the best practice.

Surfacing individuals' mental models is difficult and "touchy," but it must be done. Mental models can be thought of as perspectives, frames, or even paradigms through which individuals filter information (Senge, 1994). The mental model colors all experiences, memories, and facts with the subjective reality of the individual (Fullan, 1991). The leader's task is to help people cut through these perspectives using data, information, and experiences.

Assessing current reality is tough. Everyone talks about the "bottom line" but no one likes to do much about it. Schools are notoriously bad at avoiding current reality (Schneider & Houston, 1993). The preference has always been to blame poor performance on the system and let it go at that. The problems that reside in the system are never examined. The leader who wants to be effective must examine current reality and do whatever is necessary to get people to feel okay about examining test scores, observation data, survey results, etc. Anything the leader can do to supply data that reflect the objective reality is helpful. The key is to do it at a rate and in such a way that is tolerated by the staff (Conner, 1992).

Finally, the leader must provide a vision that reaches to the future and pulls current reality into it (Lynch & Kordis, 1988). The leader's skill at painting an accurate picture of current reality must be balanced with a similarly accurate picture of where the leader sees the organization moving. This vision should be shared by all. Sharing the vision, means that every

person should be able to see their own subjective vision within the organization's vision. The simple vision of all children learning is a powerful one. If acted upon by the leader regarding the teacher's personal mental models, current reality, and a vision for the organization, these forces will coalesce into a powerful mission. This mission should form the core of any technology effort.

Managing both the technology effort and the human development effort

When leading a technology-oriented venture the leader must keep two change efforts in mind. These two change efforts are: 1) the technology effort, and 2) the human development effort.

The technology effort must include not only the hardware, software, and network plans but also take into consideration the human development factors. Technicians can tell the leader how to choose what type of hardware and network to use; if the leader can describe what is to be accomplished with the system. Teachers and software vendors can point the leader to sufficient software titles to install in any system; if the leader knows what is to be accomplished with the software. In many cases the missing ingredient in both situations is knowledge. Often, the leader does not understand what the hardware and software will be used for, specifically. This is not a problem if the leader's philosophy and the technology infrastructure in the building are compatible.

If the leader's philosophy regarding technology is that technology is to be used for drill-and-practice instruction only, or that teachers will only use technology to write letters and to submit grades, the technology infrastructure will be considerably different than in a system where the leader sees technology as a tool to augment all human capabilities. I favor the use of technology as an augmenting tool and believe that school leaders have the obligation to use the technology to assist organizational learning through the augmenting of teams and individuals. It is for this reason that the second effort is so important: leadership in human development.

If the leader ignores his or her own learning, fails to cultivate the learning organization, and decides to limit the use of technology into easily controlled boxes (drill-and-practice, grades, etc.) he or she, will not see a need to worry about human development. The human development effort is the most important aspect of any change plan and requires the leader to have skills as a designer.

Understanding the leader's role as designer

Trying to infuse human development into a system that requires no development whatsoever is a futile activity. Organizations have a way of shedding all the baggage that is not assessed, valued, or scrutinized (Morrisey, 1992). If learning is not valued by the leader nor encouraged and expected from the staff at the outset of an initiative, it will do little good to expect it later. This aspect of the change process must be planned and designed from the beginning (Boar, 1993). However, may not be enough. If the organization is designed to take orders it may not be enabled to ask questions. If the organization is designed to be reactive it may not understand the language of a proactive leader (Covey, 1992). These issues call for the leader to redesign the organization on the fly and to make sure that these opportunities are designed into new plans (Bridges, 1991).

The leader as designer is a multifaceted phenomenon. One aspect has to do with the leader's familiarity with all kinds of technology and education integration. The principal must be a master of the change process, technology planning, staff development, curriculum, and learning principles. The principal who leads technology efforts must additionally have access to people who understand technology issues regarding safety and security, hardware infrastructures, and technical support needs. Finally, the principal who is striving to be a technology leader must honor the ethical considerations concerning copyright laws and other hardware and software issues.

IDEAS YOU CAN USE
Ideas For Making Learning the Leader's Primary Objective

1. Always be on the lookout for new software to learn and let the teachers know you are learning it.
2. Select a software title and request volunteers to learn how to use it.
3. Confront yourself:
   a) Complete a leadership style inventory,
   b) Complete a learning styles inventory,
   c) Examine the results closely and confront your own current reality,
   d) Set goals or modify your learning plans to fit your style,
   e) modify your leadership style to fit the personnel or situation.
4. Make a public proclamation that you are now committed to learning.
5. Read. Begin with the references in this article and expand. If you don't understand a book, read it anyway. A year later, pick it up again and you'll be pleasantly surprised.
6. Realize that effective, long term learning is not an overnight experience. It takes time but you can be encouraged by the fact that sudden breakthroughs occurs with more frequency as you read and study for longer periods of time.
7. Turn the television off or put it where you can't see or hear it. Learning must be a real priority for you, not merely a show for your staff.

Ideas For Creating A Learning Organization

1. Read Peter Senge's, *Fifth Discipline*, (1990), Chris Argyris, *Knowledge for Action* (1993), Nancy Dixon's, *Organizational Learning Cycles* (1994), and Kline and Saunders, *Ten Steps to a Learning Organization* (1993).
2. Create a learning climate in your building by:
   a) Modeling your personal and professional willingness to confront current reality.
   b) Finding ways and using opportunity to confront the staff with current reality.
   c) Making another public proclamation that the building is now safe for thinking and everyone is free to take intelligence risks. Furthering the new belief in that everyone is capable of learning anything and that every situation can be improved.
   d) Reinforce the staff that supports the reframing efforts.
   e) Be consciously consistent. The perception that you are treating people different will kill you.
   f) If you have a tendency to use verbal put downs or habitually interrupt others before they have finished speaking, stop it. You may need to practice some behavior modification if you have a problem of this nature.
   g) Do something silly to promote the positive climate, but don't communicate that being positive is silly.
   h) Paradoxically, be spontaneous. Plan positive rewards and events, but keep them from being routine.
   i) Finally, examine yourself and how you respond to new ideas and opinions contrary to your own. If you find yourself constantly arguing or disagreeing, your search is over for the creativity blocker: it's you.

Ideas For Managing Both the Technology Effort and the Human Development Effort

Managing Technology and People

1. Have a vision.
2. Allow the vision to evolve.
3. Plan around the vision.
4. Cultivate others to co-create a vision when they are ready.
5. Never buy just what you need. Always buy more.
6. Don't measure the results of using technology until people know how to use it.
7. Measure what the technology effects.
8. Practice the 80/20 rule: Spend 80% of your technology budget on identified needs. Spend 20% of your technology budget on exploration AI, developmental, and what if, technology.
9. Do not argue about platform or operating systems. Purchase what you are allowed to and go from there.
10. Never refer to older computers as obsolete. Patrons and Board Members do not like to hear about the computers purchased three years ago as being obsolete. Use them to write, for accounting, or other areas where the technology is limited to a simple program or function.

Resolving Human Development Conflicts

Go for the breakthrough solution. Get out of the "win–win" mode of thinking where both sides concede and really view it as "lose–lose". Go for the elegant solutions: one that gives everyone what they want and enhances the organization at the same time.

Achieving an Elegant Solution

Achieving elegance is really a matter of "reframing" people's perspective on the situation causing the problem. What is needed is a leader who is skilled at helping people understand the resolution perspective. The resolution perspective is understanding which of the four perspectives you are using to view a situation. The resolution perspective is also useful when surfacing other peoples' mental models, so that they too, can see which perspectives they are using to view the situation. The five perspectives are:

1. Consensus Perspective
   People in this perspective are looking at the things they can agree on. The attitude is 70/100. We can agree on 70% of the issue but support 100% of the groups solution. Guiding question: Ask, what can we agree to?
2. Political Perspective
   People in this perspective are protecting personal or collective rights and are interested in power. The attitude is often all or none. We will not agree on anything that effects us in unpredictable ways. Small concessions are often made, while the larger issues are often stumbling blocks. Guiding question: Ask, what can be changed in the group's positions to make it more acceptable to others?
3. Empirical Perspective
   People in this perspective see themselves as being scientifically correct. That is, the empirical perspective is believing that one possesses the objective evidence to support a position and that all other positions will be of lower quality. People viewing situations from an empirical perspective may concede part of their position but will rarely support the conclusion. Guiding question: Ask, what quantitative data supports the group's position?
4. The Ideological Perspective
   People in this perspective are on a crusade. They believe like the holder of the empirical perspective that they are right, but for a different reason. These people

believe that they are right because their faith tells them they are right. Often the ideologist supports assertions with "empirical data" in an attempt to legitimize their faith. You must be careful with ideological perspectives. Ideologists are usually on two missions: 1) They are out to convince the world that their faith is correct and true, and 2) They are out to convince themselves that their faith is correct and true. Guiding questions: Ask what modifications do we need to make in the group's position to make it palatable to people's beliefs? Is this a belief issue?
5. The Rational Perspective
   People in this perspective are single minded. These people are find out what the best solution is and do it. This is obviously the perspective that holds the most promise for unfettered problem solving. Leaders who can get the group focused on what works are in an excellent position to move ahead. Guiding questions: Ask, what do we need to do right now? What do we need to do next? What is going to work?

Managing the numerous conflicts and complex situations that arise with people interacting with technology requires the leader to understand the various perspectives people bring to the table. The leaders success will depend on developing skills in using questions and thought ladders to broaden and change perspectives.

Ideas For Understanding the Leader's Role as Designer

By designer, I am referring to the leader's role as the shaper of the building technology use and the leader's ability as a change agent.

Shaping Technology

Understand curriculum and match it to the technology. The limited research on instructional technology and student learning indicates that instructional technology shows clear benefits for: 1) simulating outcomes too dangerous or expensive to experience in life, and 2) literature review and data collection.

Do not ignore drill-and-practice software that enhances declarative knowledge. Select quality drill-and-practice software that supports worthwhile declarative knowledge. Multimedia is a great tool when used appropriately. It should never replace writing. Multimedia should encourage writing. The combining of graphic, sound, text, and motion are both thrilling and informative for students and teachers.

Multimedia has great potential for students and teachers to build products that enhance learning. The difficulty is in the steep learning curve of the technology that must be mastered. Teachers and students must deal with both course content and the nuts and bolts of the technology to be used. Is the time spent learning the nuts and bolts justified? It can be, if the technology is used appropriately.

Change Agent

Following are some general principles taken from the research regarding the literature on successful organizational change. They have been arranged sequentially:

In one to two years:
1. Be visionary and share the vision.
2. Be concrete/sequential in planning and implementation during the initial changes.
3. Be very directive in the beginning.
4. Produce something quickly.
5. Build trust.
6. Celebrate progress that is measured.

In three to four years:
7. As people begin to share the vision, become less concrete sequential.

8. Begin meaningful dialogues by discussing mental models and current reality.
9. Be less directive and more facilitative.
10. Agree on outcomes and find people to design processes.
11. Be wary of setbacks (usually caused by jumping from step 1 to step 8!)

Conclusions

The information in this article is intended to assist principals in becoming technology leaders in their buildings. The "What to do," section of this article contains suggestions and activities that principals can utilize to reach this goal. Becoming a technology leader is a difficult and time consuming endeavor. Mark Twain said, "A man who carries a cat by the tail learns something he can learn in no other way." Unfortunately, this homely is true concerning your tutelage as a technology leader as well. There will be times when there is no guidance available and the school of hard knocks is the only teacher in town. The key is perseverance. I am confident that if you strive to learn continuously, foster organizational learning in your building, experiment and utilize technology appropriately, and become a student of the change process, you will successfully ride the technology wave and overcome the difficulties that lie ahead in your quest toward technology leadership.

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