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Change occurs whether it is led or not. Technology is a driving force behind educational change. The question is whether school leaders will lead in planned change for technology or allow the change to occur without their leadership.

CHANGE AND TECHNOLOGY LEADERSHIP: Two Sides of the Same Coin

Anita M. Pankake

Introduction

Our editors were most kind (or perhaps wise) in providing three guiding questions for this discussion on change and technology leadership:

1. What do technology leaders need to know about change and the change process?
2. What does the change process have to do with technology leadership?
   and,
3. What are the implications of the speed of change for technology integration?

Discouraged by the volume of issues to address within limited space available, consideration was given to addressing the three questions in the following way:

1. A lot!
2. Everything!
   and,
3. Many!

However, fearing the loss of two valued colleagues prevented me using this as a solution. And so, what follows is my attempt to give information specifically related to the questions posed. Setting up a situation in which readers become aware of the "need to know" is my overall objective. The information presented here barely scratches the surface of what is available regarding issues of change and technology leadership. Hopefully, however, readers will be persuaded in these pages that these issues are important and connected and they will want to know more.

In the meantime, some information related to each of the three areas is presented. The question regarding what technology leaders need to know about change and the change process seemed to be an important prerequisite to the discussion of anything else. As this area developed, points about the relationship of change and technology leadership surfaced. Implications of the speed of change for technology integration provided a nice framework for summarizing and attaching meaning to the material presented.

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What Technology Leaders Need to Know About Change and the Change Process—Information and Implications.

With each day what we know and what we don't know about change and the change process increases. In the last five years, the interest in change, how it happens and what keeps it from happening has been tremendous. Articles, workshops and research on change efforts are everywhere.

The success history of planned changes in education is pretty discouraging. When the number of successfully implemented changes is compared to the number of changes proposed, the resulting ratio can be truly disheartening. The track-record for the successful implementation of technological changes in education would appear to be similar to the history of planned changes in education generally. Evidence of this history is summarized in the following statements by Snider (1992). His words send a powerful message to technology leaders about why they need to know about change and the change process if the future is to differ from the past.

> "From lantern slides to language labs, from closed-circuit television to microcomputers, attempts to improve American schools with modern machines have been something less than a resounding success. Beginning with the magic lantern and the stereoscope of 1900, machines in the classroom have generated some promise, a fair amount of controversy, and a great deal of hype. During these 90-plus years, however, the basic acts of classroom teaching have changed very little despite sporadic efforts at research and reform—with and without machines." (p. 316)

As seems evident in Snider's statement, just having the technology does not assure the desired changes will occur. There is more to change than new equipment, good ideas and enthusiasm.

Whether the topic is technology, policy, programs, beliefs or most anything else, the processes of change are similar. Fullan (1991) notes that "any discussion with those involved in educational innovation and reform . . . quickly reveals that the nature of problems and many of the principles of success and failure have a great deal in common" (p. xiii). Additionally, he expresses optimism by pointing out that with our increasing knowledge about change and particularly in our examination of successful examples of change, the key feature seems to be "organized common sense".

Knowing the specifics of all of the situations in which technology leaders find or will find themselves in their attempts to bring changes to education is impossible. However, Fullan's assertions about the common features of changes wherever they occur are encouraging. And so, some important concepts from the literature on change are offered. These basics concepts should alert technology leaders of their "need to know" about change and the change process.

Change is a process not an event.

An understanding of this concept is essential to the success of any change effort. Treating change as an event is a sure way to reduce the possibilities of success. Change is a continual flow of activities; things change while we are trying to change things. There is no specific date, time, place or piece of equipment that can be marked as "the change event". This concept has been expressed in a variety of ways by a number of writers in the field (for example, see: Fullan, 1991 and Hord,

Rutherford, Huling–Austin & Hall, 1987). Unless technology leaders keep this in mind, they will model behaviors that focus on isolated events rather than continuous, inclusive processes that involve new behaviors and new beliefs, as well as, new materials and equipment.

Change as a process is nonlinear, multifaceted and a mess in the middle.

Not only do technology leaders need to understand that change is a process and not an event, they must further recognize that this process is not always predictable. While some planning and predicting are possible and needed it is also important to recognize that some ambiguity is normal; some things cannot be predicted—no matter how much planning is done. This need to understand the systemic, as well as, attempt the systematic in working with change is critical. Conner (1993) has some good advice for technology leaders as they initiate and move to implement changes: "Change is not a discrete event that occurs by linear progression; rather it unfolds on many different levels simultaneously. Instead of relying on hard and fast rules that can get you into trouble, acknowledge the complexity of change by focusing on the patterns and principles for your direction" (p. 10).

Change is not always viewed as progress and not everyone will be as excited about a particular change as the initiator.

Realizing this may be one of the most important change concepts for technology leaders to learn and use. It may also be one of the most difficult to accept. Ordinarily individuals propose changes that are intended to make things "better". Planned changes are based on what someone thinks is good or valued. The complication, of course, is that not everyone thinks the same way. What may be important and useful to one person may be viewed as a waste of time and money to another. The technology leader must understand that while change is inevitable, whether or not that change is progress is a very individualized value judgment. Assuming that everyone views all technological achievements as progress is silly and may even prove disastrous to change efforts. Not all change is progress. Remembering this will be important for technology leaders. This will help them keep a balance between their own enthusiasm and the doubts of others. This initial balance may help tip the scales in their favor in the long run.

Users must see a need for change or it will not occur.

This concept relates directly to the previous one. Not only must changes be viewed as progress, they must also be seen as needed. When people are happy (or at least satisfied) with the way things are, they will not invest the time energy and effort to change. In fact, why should they? From their perspective, "things are fine". Their recommendation may have a familiar ring, i.e., "If it ain't broke, don't fix it!" While the initiator may view a change as needed—others may not; and, until they do, not much will happen. Harvey (1990) recommends that change initiators make sure that what they are proposing is really needed. He advises making serious effort to honestly answer two questions: "Is there really a need for this program or proposal? Can you demonstrate that need clearly?" (p. 54) Further, he suggests that written statements be developed to address the question: "What facts show the need for this change?" (p. 55) Harvey's advice will help technology leaders demonstrate the need for a change and therefore make it more likely to be pursued.

The change must make life easier, not harder for the changees.

Change agents have often been frustrated with others because of their resistance to proposed changes. If not careful, there will be rush to label these individuals as "hold-outs" or "blockers" of progress. However, what they may be resisting is not the basic intent of the change, but the consequences of pursuing it. According to Conner (1993), "Change management is perception management. . . To gain commitment to move from the present state to the desired state, managers must be willing to honor (with action) employee perceptions of reality" (p. 103). The realities of those who must implement the change may be quite different than the reality of the change initiator. Technology leaders must remember that it is easier to see the merits of a change if you can also see the pay-off for doing it. Harvey (1990) suggests, "It is natural and indeed, sane to resist doing something until there is a clear payoff for doing it." This payoff needs to be evident for those who have to do the changing, not just for those who are proposing that things be changed. When technology leaders acknowledge the viewpoints of others it goes a long way in helping people see them as understanding and not just demanding.

Change costs.

The costs of change are varied, but there are always costs. Fullan (1991) identifies it as, Change is resources hungry! The costs for change often are in real dollars, but not always. Change can also cost in terms of time or energy, or the loss of a valued colleague or a move from a home, etc. Change involves giving up some things to get some other things—hopefully new and improved. Change not only costs initially, but it continues to cost. In fact, the costs may increase in order to maintain or continue to improve. Technology leaders know how this upward spiral works. For example, often new technologies brought into an organization (classroom, school, etc.) create new demands for even more technologies; or, when new technologies are adopted to increase efficiency and "save time" the result is often increased responsibilities and demands that take the "saved" time and more to accomplish. However, the most important cost to recognize is what it costs an individual to move from the known to the unknown. According to Conner (1993), "Managing effective transitions does not allow for dealing with a single reality; it involves managing multiple realities as seen through various people's fears, hopes, and aspirations—their frames of reference (p. 103). Because change happens one person at a time the cost of losing the known is a very individual matter. Therefore, technology leaders need to work with individuals to help each person see the cost-benefits for them in changing. The cost of losing the known is the price that must be paid for changing.

Change does not occur in isolation.

Each of the previous points leads to this one. In Rifkin's Entropy (1980) he writes, "Everything in this world is connected with everything else in a delicate and complex web of interrelationships" (p. 226). Thinking small and isolated may be the worst behavior the technology leader can demonstrate. On the other hand, an argument could be made that thinking too globally and not paying attention to details may be the worst. But perhaps it is not doing both that is the real problem. Seeing the big picture and the small picture simultaneously is necessary if changes are to succeed. Seeing things and not people, seeing people as separate from each other or their work, not realizing the impact that making changes in one part of the system can have on all other parts of the same system and associated systems, not understanding that changes at home are reflected in some way at work, and on and on, can be the sources of failure for change initiatives. Technology leaders must see the connectedness of changes and they must see to it that people stay connected during changes.

Change will occur whether it is led or not.

Change is part of existing—we can't not change! Changes can be planned or unplanned. Those which are planned require leadership and even those that are unplanned may call leaders to action as a result of their unplanned consequences. Leadership by its very definition involves change; and change needs leadership. Change and leadership are, in fact, two sides of the same coin. However, just because it can be done doesn't mean that it always should be done. Leaders must do more than just influence because they can. Leaders need vision and values guiding and influencing them as they are guiding and influencing others. Technology leaders are no exception.

Fullan (1991) asserts, ". . . implementation is the essence of change. . ." (p. 10) and, that, "It is one thing to know the events and situations that cause change or prevent change from happening; it is an entirely different question to know what to do about it" (p. 9). Likewise, Conner (1993) points out that, "Effective leaders are capable of reframing the thinking of those whom they guide, enabling them to see that significant changes are not only imperative but achievable. Yet the challenges facing these leaders go beyond determining 'what' needs to be done differently. They must also address 'how' to execute these decisions in a manner that has the greatest possibility for success. Leaders must keep in mind that the accuracy of decisions alone can never compensate for poor implementation" (p. 9).

The title of Conner's book, *Managing at the Speed of Change* (1993), hints at the technology leader's "need to know" about both the how and why of change. Technologies are changing rapidly—at a frightening pace to many. However, just because the technologies are changing rapidly this does not mean that their levels of use will occur at the same speed. In fact, the history of technological changes in education (particularly in classrooms) speaks to the need for technology leaders to become skilled change facilitators if integration of technology is to occur. In fact, as reported by Panasonic and AASA (1995), "Even districts that have drafted technology plans often have proposed only piecemeal approaches. They have installed a computer here or there for specific or limited purposes. Rarely have they established cohesive, sustainable systems." (p. 1)

What are the Implications of the Speed of Change for Technology Integration?

Frustrated and disappointed are feelings experienced by technology advocates and resistors alike when it comes to the speed of change for technology integration in schools. On the one hand, the advocates can't understand why the tools and their resulting consequences are not embraced and employed immediately. On the other hand, the resistors are saying "slow down—I haven't mastered the innovations you brought in last year, last month or last week. How can you expect me to worry about next week, next month or next year!" Add to this the history of integrating technology into education. Numerous disappointments have been experienced over the years—TV, Radio, programmed learning, language labs. The results for both advocates and resistors have been lots of promises with little pay off. According to Snider (1992):

> "With almost mechanical regularity since 1900, a series of new machines has appeared in the classroom and has been chronicled, albeit in footnotes, in the history of American education. Decade after decade these inventions are brought to school. Each deal with communication in one way or another, and each is supported by a cult of enthusiasts claiming that this particular machine is 'the most important development since movable type'. . . Some of these inventions were in the classroom for only a short time before disappearing without a trace." (p. 318).

Still, according to Falk and Carlson (1992) ". . . there is research to indicate that these interactive multimedia tools can enhance learning in the areas of acquisition of content, development of skills, efficiency of learning and satisfaction with instruction (p. 96). They go on to point out that the reasons for this lack of use and resulting minimal impact are many. Lack of financial resources and teachers' lack of knowledge are among them.

> As if an echo, Panasonic and the American Association of School Administrators (1995) identify the two major reasons that school systems have not done well in their technology applications as lack of experiences/knowledge and resources. First, they point out that educators have been so overwhelmed by the task of delivering knowledge that few have actually had personal experience with technology's advanced capabilities. This lack of experience prevents seeing the technology to teaching to learning connections. Secondly, they note that technology requires major infusions of capital—an unusual part of school district budgets. And when money is spent on technology, the communities would rather that it go directly to student instruction than on infrastructure that is so needed to support technology.

Cuban (1993), on the other hand, set forth a quite different explanation for why so few technologies have appeared so seldom in the daily existence of schools and classrooms. He acknowledges the usual excuses of not enough money, teacher resistance, and lack of support from the administration. He calls these "plausible, but ultimately superficial". Instead, he asserts that the reasons are related to school as organizations—that they are substantially different than other organizations, businesses and industries. His two reasons as to why schools have been less vulnerable to technologies than other institutions are: (1) ". . . certain cultural beliefs about what teaching is, how learning occurs, what knowledge is proper in schools, and the teacher–student (not student–machine) relationship dominate popular view of proper schooling"; and, (2) ". . . the age-graded school, an organizational invention of the late nineteenth century, has profoundly shaped what teachers do and do not do in classrooms, including the persistent adaptation of innovation to fit the contours of these age-graded settings" (p. 186). Cuban's identified influences will require changes in the organizational culture of schools and schooling to allow technology integration to occur. Changing the culture of an organization is complex and requires skilled and patient leadership.

Unfortunately, according to Panasonic and AASA (1995), "Most school systems do not know how to get information about the available technology, how to integrate it into practice, or how to pay for it. Nor do they generally use technology to guide organizational decisions, link instructional and administrative systems, connect to other professionals, or collect and retrieve information effectively" (p. 1). Some of this can be attributed to the sad history of successful change implementation in education. And, this less than stellar record of success is due in large part to a lack of knowledge and skills about change and the change process.

Whether it's money, training or a different organizational culture, changes well be needed if technology integration is to occur, Snider (1992) predicts ". . . that there will be more and more machines in the classroom. Technology will prevail. The problem that lies ahead will be—as it always has been—direction and control: direction of education in terms of its goals and purposes and control of technology in terms of its application." (p. 323) Technology leaders must become skilled in the change process if the organizational culture of schools is to be modified to make technology a part of the system rather than an intrusion in it. They will need to become and help others become what Conner (1993) calls resilient managers—those who have the capacity to absorb a great deal of change with little of no

demonstrated dysfunctional behavior. According to Conner (1993) resilient managers are successful with change because "Instead of viewing change as a mysterious event, we approach it as an understandable process that can be managed. This allows people to avoid feeling victimized during transition; it promotes confidence that change can be planned and skillfully executed." (p. 7) He goes on to say that ". . . winners enhance their resilience in part by approaching change as an understandable process with phases that can be anticipated and managed. They view change as an unfolding continuum and demonstrate a high tolerance for its ambiguity. They plan and execute movement architecturally from the present state through a transition phase to the desired goal. And their plans include pain-management strategies to help people disengage from the status quo as well as desirable and accessible remedies to attract them to the desired change." (p. 103).

Summary

Science, technology and change form a continuous link and have done so for centuries. Science (in it's broadest definition) produces discovery i.e., new information. New information empowers the development of new technologies (or tools) to use. New tools initiate changes (social, economic, intellectual, political). These changes can , in turn, generate new behaviors and new questions. The resulting changes influence everyone and require and/or produce new information. At this point, the cycle begins again—science to technology to changes. Much like the "Energizer Bunny", it just keeps going, and going, and . . . Rifkin (1980) writes, "Things don't just "exist" as some kind of isolated fixed stock. This static view of the world has been replaced by the view that everything in the world is always in the process of becoming. Even nonliving phenomena are continually changing . . . There is nothing smooth about the ebb and flow of the becoming process. It moves along in jumps and spurts" (p. 227).

Things may change but the process will not likely do so. Snider notes that "At this time, we do not know whether technology will be used to do more efficiently and more rapidly that which has always been done or to do totally new things. "However, he continues with, "Most important, technology must be used to educate people who can think for themselves, people who will not be servants of the machine in the classroom."

Technology leaders must know about change and the change process if the power of technology to reform and restructure is to be released. Technology leadership is change leadership. Technology leaders need to remember that the only thing that is ever really going to change schools is people. Therefore, they should focus on the people—the technology will progress on its own—it is people who need and want leadership to help them with both change and technology.

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