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The history of educational reform and innovation is replete with good ideas or policies that fail to get implemented or that are successful in one situation but not in another. A missing ingredient in most failed cases is appreciation and use of what we call change knowledge: understanding and insight about the process of change and the key drivers that make for successful change in practice. The presence of change knowledge does not guarantee success, but its absence ensures failure.

It is not easy to rectify this deficit. Policy makers do not want to be

slowed down by knowledge of change. It takes time to address this knowledge — even though, ironically, they are eventually slowed down even more by failed implementation.

In the past 20 years, we have learned a great deal about innovative processes that work and those that don't. We are using this knowledge to bring about system change across the three levels of school and community, district and state (Barber & Fullan, 2005). In particular, eight drivers are keys to create effective and lasting change.

1. Engaging people's moral purposes.

The first overriding principle is knowledge about the why of change,

namely moral purpose. Moral purpose in educational change is about improving society through improving educational systems and thus the learning of all citizens.

In education, moral purpose involves committing to raise the bar and close the gap in student achievement — for example, increasing literacy for all, with special attention to those most disadvantaged. There is a wide gap, particularly in some countries, between groups at the bottom and those at the top. Schools need to “raise the floor” by figuring out how to speed up the learning of those who are at the bottom, those for whom the school system has been less effective.

Improving overall literacy achievement is directly associated with a

country's economic productivity. In countries where the gap between high and low student performance is reduced, citizens' health and well-being are measurably better.

In change knowledge, moral purpose is not just a goal but a process of engaging educators, community leaders, and society as a whole in the moral purpose of reform. If moral purpose is front and center, the remaining seven drivers become additional forces for enacting moral purpose.

2. Building capacity.

The second driver is building capacity, which involves policies, strategies, resources, and actions designed to increase people's collective power to move the system forward (schools, districts, states). Building capacity involves developing new knowledge, skills, and competencies; new resources (time, ideas, materials); and new shared identity and motivation to work together for greater change.

In addition to individual and collective capacity as defined by increased knowledge, resources, and motivation, organizational capacity involves improving the infrastructure. The infrastructure consists of agencies at the local, regional, and state levels that can deliver new capacity in the system, such as training, consulting, and other support.

Capacity often is the missing element, even when people agree on the need for change. For example, to improve literacy, teachers and principals must develop new skills and increased commitment in the face of inevitable obstacles (see the third driver). Similarly, in the case of new technologies, not only must educators acquire new skills and understandings, they must integrate technology into curriculum, teaching, learning, and assessing learning.

Capacity building is a collective phenomenon. Whole schools, whole

districts, and whole systems must increase their capacity as groups. Building group capacity is difficult because it involves working together in new ways.

Capacity must be evident in practice and be ongoing. Front-end training is insufficient. It does not translate into improvements in the daily cultures of how people need to work in new ways.

3. Understanding the change process.

Understanding the change process is a big driver because such understanding cuts across all elements. The process of change is also difficult and frustrating to grasp because it requires leaders to take into account factors that they would rather not have to stop and deal with. They would rather lay out the purpose and plan and get on with it. Change doesn't work that way.

Making change work requires the energy, ideas, commitment, and ownership of all those implementing improvements. The urgency of many problems, however, does not allow for long-term "ownership development." (In fact, more leisurely strategies do not produce greater ownership anyway.)

Ownership is not something available at the beginning of a change process, but something created through a quality change process. Put differently, shared vision and ownership are more the outcome of a quality change process than they are a precondition.

The change process is about establishing the condition for continuous improvement in order to persist and overcome inevitable barriers to reform. It is about innovativeness, not just innovation.

4. Developing cultures for learning.

The fourth driver, cultures for

learning, sounds general but means something specific in establishing the conditions for success. Developing a culture for learning involves a set of strategies designed for people to learn from each other (the knowledge dimension) and become collectively committed to improvement (the affective dimension).

Successful change involves learning during implementation. One of the most powerful drivers of change involves learning from peers, especially those who are further along in implementing new ideas. We can think of such learning inside the school and local community, and across schools or jurisdictions. Within the school, there is a great deal of practical research that demonstrates the necessity and power of professional learning communities (Dufour, Eaker, & Dufour, 2005).

Fred Newmann and his colleagues (Newmann, King, & Youngs, 2000) identified five components of change capacity within the school, including developing new knowledge and skills, establishing professional learning communities, building program coherence, accessing new resources, and developing principal/school leadership. Schools and their communities must develop new cultures of learning in order to improve.

When school systems establish cultures of learning, they constantly seek and develop teachers' knowledge and skills required to create effective

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new learning experiences for students. In addition to school and community learning, a powerful new strategy is evolving which we call "lateral capacity building," involving strategies in which schools and communities learn from each other within a given district or region and beyond. Learning from others widens the pool of ideas and also enhances a greater "we-we" identity beyond one school (Fullan, 2005).

Knowledge sharing and collective identity are powerful forces for positive change, and they form a core component of our change knowledge. We need to value these aspects and know how to put them into action. Jeffrey Pfeffer and Robert Sutton reinforce this conclusion in their analysis of *The Knowing-Doing Gap* (Harvard Business School Press, 2000). They claim that we should embed more of the process of acquiring new knowledge in the actual doing of the task and less in formal training programs that are frequently ineffective (p. 27). Change knowledge has a bias for action. Developing a climate where

people learn from each other within and across units, and being preoccupied with turning good knowledge into action, is essential. Turning information into actionable knowledge is a social process. Thus, developing learning cultures is crucial. Good policies and ideas take off in learning cultures, but they go nowhere in cultures of isolation.

5. Developing cultures of evaluation.

A culture of evaluation must be coupled with a culture of learning for schools to sort out promising from not-so-promising ideas and especially to deepen the meaning of what is learned. One of the highest yield strategies for educational change recently developed is assessment for learning (not just assessment of learning). Assessment for learning incorporates:

- Accessing/gathering data on student learning;
- Disaggregating data for more detailed understanding;
- Developing action plans based on

the previous two points in order to make improvements; and

- Being able to articulate and discuss performance with parents and external groups.

When schools and school systems increase their collective capacity to engage in ongoing assessment for learning, they achieve major improvements. Several other aspects of evaluation cultures are important, including: school-based self-appraisal, meaningful use of external accountability data, and what Jim Collins (2001) found in "great" organizations, namely a commitment to "confronting the brutal facts" and establishing a culture of disciplined inquiry.

Cultures of evaluation serve external accountability as well as internal data processing purposes. They produce data on an ongoing basis that enables groups to use information for action planning as well as for external accounting (see Black, Harrison, Lee, Marshall, & Wiliam, 2003; Stiggins, 2001).

One other matter: Technology has become an enormously necessary and

POWER PRINCIPLES

To push as hard as the process will allow while increasing the chances for success, understand that:

Strategizing will help us evolve and reshape ideas and actions.

Change agents often are tempted to develop a complete strategic plan and then allocate mechanisms of accountability and support to implement it. The first lesson in the change process: The strategic plan is an innovation; it is not innovative-ness.

We need strategy and strategic ideas, but above all we need to think of the evolution of change plans as a process of shaping and reshaping ideas and actions. Henry Mintzberg, in his 2004 critique of existing

MBA programs, captures this idea precisely:

"Strategy is an interactive process, not a two-step sequence; it requires continual feedback between thought and action. ... Strategists have to be in touch; they have to know what they are strategizing about; they have to respond and react and adjust, often allowing strategies to emerge, step-by-step. In a word, they have to learn" (p. 55).

Effective change is more about strategizing, which is a process, than it is about strategy. The more that leaders practice strategizing, the more they hone their scientific and intuitive knowledge of change.

Pressure means ambitious targets. Support involves developing new competencies.

The second element of understanding change dynamics is realizing that large-scale reform requires combining and integrating pressure and support.

Social systems include a great deal of inertia, which means they require new forces to change direction. These new forces involve the judicious use of pressure and support.

Pressure means ambitious targets, transparent evaluation and monitoring, calling upon moral purpose, and the like. Support involves developing new competencies, access to new ideas, more time for learning, and collaboration.

The more that pressure and support become seamless, the more effective the change process will be at getting things

to happen. As the eight drivers of change operate in concert, pressure and support, in effect, start to get built in to the ongoing culture of interaction.

Knowledge of the implementation dip can reduce the awkwardness of the learning period.

The third aspect of understanding the change process is to understand the finding that all eventual successful change proceeds through an implementation dip (Fullan, 2001).

Since change involves grappling with new beliefs and understandings, and new skills, competencies, and behaviors, changes will not go smoothly in the early stages of implementation (even if there has been pre-

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powerful tool in our work on assessment as it makes it possible to access and analyze student achievement data on an ongoing basis, take corrective action, and share best solutions. Developing cultures of evaluation and capacity to use technology for improvement must go hand-in-hand; both are seriously underdeveloped in most systems.

6. Focusing on leadership for change.

One of the most powerful lessons for change involves leadership. Here change knowledge consists of knowing what kind of leadership is best for leading productive change. High-flying, charismatic leaders look like powerful change agents but are actually bad for business because too much revolves around the individuals themselves.

Leadership, to be effective, must spread throughout the organization. Collins (2001) found that charismatic leaders were negatively associated with sustainability. Leaders of the so-called "great" organizations were characterized by "deep personal humility" and

"intense professional will." Collins talks about the importance of leadership that "builds enduring greatness" in the organization, rather than focusing on short-term results.

The main mark of a school principal at the end of his or her tenure is not just that individual's impact on student achievement, but rather how many leaders are left behind who can go even further. Henry Mintzberg (2004) makes the same point: "Successful managing is not about one's own success but about fostering success in others" (p. 16) ... "While managers have to make decisions, far more important, especially in large networked organizations of knowledge works, is what they do to enhance decision-making capabilities of others" (p. 38).

Change knowledge, then, means seeking leaders who represent innovativeness — the capacity to develop leadership in others on an ongoing basis. We need to produce a critical mass of leaders who have change knowledge. Such leaders produce and feed on other leadership through the

system. There is no other driver as essential as leadership for sustainable reform.

7. Fostering coherence making.

When innovation runs amok, even if driven by moral purpose, the result is overload and fragmentation. To a certain extent, this is normal in complex systems.

Change knowledge is required to render overload into greater coherence. Creating coherence is a never-ending proposition that involves alignment, connecting the dots, being clear about how the big picture fits together. Above all, coherence making involves investing in capacity building so that cultures of learning and evaluation through the proliferation of leadership can create their own coherence on the ground.

Change knowledge is not about developing the greatest number of innovations, but rather about achieving new patterns of coherence that enable people to focus more deeply on how strategies for effective learning interconnect.

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implementation preparation). This applies to any individual, but is much more complex when many people simultaneously are involved.

Knowing about the implementation dip helps in working with change initiatives. First, it has brought out into the open the fact that all changes worth their salt involve a somewhat awkward learning period. Second, such knowledge has resulted in us being able to reduce the period of awkwardness. By being aware of the problem, we are able to use strategies (support, training, etc.) that reduce the implementation dip from (in the case of school change) three years to

half that time. This obviously depends on the starting conditions and complexity of the change, but the point is that without knowledge of the implementation dip, problems persist and people give up without giving the idea a chance.

Shorter implementation dips are more tolerable, and once gains start to be made earlier, motivation increases. Note that motivation is increasing (or not) during the implementation process. This is a sign of a quality (or poor) change process.

The next two elements of understanding the change process — the fear of change, and technical vs. adaptive challenges — delve deeper into the implementation dip.

Mastering implementation is necessary to overcome the fear of change.

The fear of change is classical change knowledge. People need to know that at the beginning of the change process, the losses are specific and tangible (it is clear what is being left behind), but gains are theoretical and distant. This is so by definition. One cannot realize the gains without mastering implementation, and this takes time. In addition, those making changes don't necessarily have confidence that the gains will be attained. It is a theoretical proposition.

Stewart Black and Hal Gregersen (2002) talk about "brain barriers," such as the failure to move in new directions

even when the direction is clear. The clearer the new vision, the more immobilized people become. Why?

Their answer: "The clearer the new vision, the easier it is for people to see all the specific ways in which they will be incompetent and look stupid. Many prefer to be competent at the [old] wrong thing than incompetent at the [new] right thing" (p. 70).

In other words, an additional element of change process knowledge involves realizing that clear, even inspiring, visions are insufficient. People need the right combinations of pressure and support to become adept and comfortable with "the new right way."

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8. Cultivating trilevel development.

The eighth and final driver lies in the realization that we are talking about system transformation at three levels. We are not talking just about changing individuals, but also about changing systems — what we call the trilevel model.

Here is a trilevel lens on a problem:

- What has to happen at the school and community level?
- What has to happen at the district level?
- What has to happen at the state level?

We need to change individuals, but also to change contexts. We need to develop better individuals while we simultaneously develop better organizations and systems. Such work is easier said than done and involves what we have recently called developing “system thinkers in action” (Fullan, 2005).

For our purposes, we need only say “beware of the individualistic bias”

where the tacit assumption is that if we change enough individuals, then the system will change. In such cases, change won't happen. We need to change systems at the same time. To change individuals and systems simultaneously, we must provide more “learning in context” — that is, learning in the actual situations we want to change. Mintzberg (2004) focuses on this when he says,

“Leadership is as much about doing in order to think as thinking in order to do” (p. 10). ... “We need programs designed to educate practicing managers in context” (p. 193). ... “Leadership has to be learned ... not just by doing it, but by being able to gain conceptual insight while doing it” (p. 200).

In any case, trilevel development involves focusing on all three levels of the system and their interrelationships, and giving people wider learning opportunities within these contexts as a route to changing the very contexts within which people work.

THE IMPORTANCE OF CHANGE KNOWLEDGE

Enough research on implementation has been done in the past 35 years for us to say that if you don't know the eight guiding principles/drivers of change (in the sense of being able to use them for insight and action), even the best ideas will not take hold. Without change knowledge, you get failure.

To achieve the goal, we must develop leaders who have greater change knowledge and who can, in turn, develop leadership in others. These developments do not involve just identifying and memorizing the knowledge base. Knowing is insufficient; only knowing-by-doing, reflecting, and re-doing will move us forward.

Once people grasp the nature of change knowledge and appreciate its centrality to success, we have a chance of developing it further in practice. We must go beyond superficial

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It is necessary to identify the distinction between technical problems and adaptive challenges.

The fifth element comes from Ron Heifetz and Marty Linsky's (2002) distinction between technical problems and adaptive challenges.

Technical problems are those in which current knowledge is sufficient to address the problem. Technical problems are still difficult, and people will experience the usual implementation dip, but they are solvable in terms of what we know.

Adaptive challenges are more complex, and the solutions go beyond what we know. Heifetz and Linsky (2002) identify these properties of adaptive challenges:

- Adaptive challenges demand a response beyond our current repertoire.
- Adaptive work to narrow the gap between our aspirations and current reality requires difficult learning.
- The people with the problem are the problem — and the solution.
- Adaptive work generates disequilibrium and avoidance.
- Adaptive work takes time.

Most of the big moral purpose goals we aspire to these days tend to be adaptive challenges. Change knowledge, then, involves strategizing with Heifetz's five assumptions in mind to set up a more realistic change process.

Engaging others in change requires persistence to over-

come the inevitable challenges.

The final aspect of understanding change as a process is a kind of retrospective overlay of the previous five components.

Engaging others in the process of change requires persistence in order to overcome the inevitable challenges — to keep going despite setbacks — but it also involves adaptation and problem solving through being flexible enough to incorporate new ideas into strategizing.

Both focus and flexibility are needed.

The concept that captures persistence and flexibility is resilience. Because change is complex, difficult, and frustrating, the change process requires

pushing ahead without being rigid, regrouping despite setbacks, and not being discouraged when progress is slow.

Persistence and resilience are important because people often start with grand intentions and aspirations, but gradually lower them over time in the face of obstacles. In the end, then, they achieve very little. Armed with change knowledge, education leaders should approach the change process with a commitment to maintain or even increase high standards and aspirations. Obstacles should be seen as problems to be resolved to achieve high targets rather than reasons for consciously or unconsciously lowering aspirations. ■

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just was not available for you. Every first-year teacher is on her or his own, no matter what the administrative offices say. And the first three years of any job, including teaching, are the absolute roughest. Is it any wonder that teacher retention is becoming a major problem?

Imagine if professional growth within the school system was encouraged and valued.

Imagine a job in which you could sit down with someone in the school system who was aware of the big picture and knew what kinds of growth the school system was planning. Wouldn't it be wonderful to be seen as an asset to be nurtured and developed, rather than as a body to fill a slot?

I look back on my own career and the changes I have made in the last few years. My personal thoughts of possible

change came as a result of achieving National Board Certification. Completing that process made me see myself differently and made me want to contribute in a different way. But there was no opportunity available for me to

process those thoughts with anyone else. I was odd, someone to be a little worried about.

When the chance came to go to the National Board

and work for two years as a Teacher in Residence, I jumped at it. And that job did give me different ways to contribute, to my own life and skill set, and to the general body of education resources available to teachers.

But when I came back, no one said, "How can we use what you have learned?" or "How can you use what you have learned?" I wouldn't even have cared if they had said, in a purely economic sense, "We paid for you to work there for two years — you owe us." It isn't that I was ignored; it was that what I had learned was ignored. And I felt very frustrated. So I looked and looked for another line of work within the system until I found the new technology job I currently have. And that was one of the most gratifying things in the interview I had for the new job I have taken. The people I now work for actually saw that I had a great deal to offer and were willing to let me work in a new and different capacity.

At this time, teaching is viewed correctly by many young people as a no-growth profession. But that perception could easily change if school systems saw their teachers and other personnel as people who have multiple skills and talents to offer. Many teachers would like to know how to grow within the education field but are not sure how to go about it. Many teachers could use help to develop paths of professional change and would welcome guidance.

Christie talks all the time about how she has to "grow her business." Well, we in the schools should start thinking about growing ours as well, or we will lose the best ones coming in, as well as some of the best we already have.

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knowledge of the key concepts and move toward a deeper commitment to developing knowledge, skills, and beliefs related to being change agents in collaboration with others.

When leaders and other participants have opportunities to learn more deeply in context, they have a chance of transforming the contexts that constrain them.

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