

ONTARIO LEADERSHIP STRATEGY

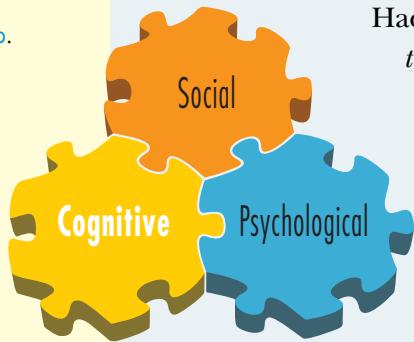
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Ideas Into Action is published by the Ministry of Education to support Ontario's school and system leaders. It provides research insights and practical strategies that are aligned with the [Ontario Leadership Framework \(OLF\)](#) and advances the central goals of [Achieving Excellence: A Renewed Vision for Education in Ontario](#).

This final issue in a three-part series of *Ideas Into Action* concludes our exploration of the Personal Leadership Resources (PLRs), which are identified in the Ontario Leadership Framework as essential to the success of school and system leaders. Earlier issues in the series include [Exploring the "Social" Personal Leadership Resources](#) and [Exploring the "Psychological" Personal Leadership Resources](#).

It is important to keep in mind that, while we have explored the PLRs individually in this series, they are ultimately parts of a cohesive whole. As school and system leaders, we draw on our social, psychological and cognitive resources simultaneously in an interactive and integrated way to enact effective leadership.

Learn more about the Ontario Leadership Strategy at www.ontario.ca/eduleadership.



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support every child
reach every student



Exploring the “Cognitive” Personal Leadership Resources (PLRs)

Problem-Solving Expertise, Role-Specific Knowledge & Systems Thinking

It is clear that some aspects of the education leader's work are unique to the role. When it comes to the Personal Leadership Resources (PLRs), we can draw comparisons with successful leadership in virtually any role in any context. Like an auto mechanic or an electrician, education leaders rely on highly specialized knowledge and problem-solving expertise. Like a therapist, their social and empathetic qualities are critical. Like an entrepreneur, they need the courage and stamina to take calculated risks and the resilience to recover from setbacks.

We can make many similar comparisons. In fact, we have introduced each issue in this three-part series on the PLRs with the writings of an astronaut – Canadian Commander Chris Hadfield. His leadership lessons illustrate how success as an astronaut depends on all the attributes represented in the PLRs and more.

Hadfield's (2013) reflections in *An Astronaut's Guide to Life on Earth* are rich with true stories that show how his internal resources were vital to the success of the space mission. They also shine a light on the complexity of the PLRs and the way in which they are interconnected and mutually reinforcing in Hadfield's role both as a leader and as a team member.

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As he points out, "People tend to think astronauts have the courage of a superhero or maybe the emotional range of a robot ... but in order to stay calm in a high- stress, high-stakes situation, all you really need is knowledge." Although this may suggest that knowledge on its own led to Hadfield's success, he also tells us that mental and emotional fortitude is "necessary to handle the pressure and stress of launch." He attributes these qualities to deliberate practice – "countless exercises designed to provide the astronaut with experience in handling every conceivable emergency, often with incomplete information and in an [unfriendly] environment."

Part A – The Personal Leadership Resources (PLRs): Essential Foundations of Effective Leadership

The argument that the traits embodied in the three categories of PLRs of the *Ontario Leadership Framework (OLF)* – social, psychological, and cognitive – are essential, as illustrated by Hadfield's narratives, is stronger than ever.

Leadership literature across many sectors confirms the importance of the PLRs. In fact, multiple studies researching leadership trends show just how important these PLRs will continue to be. Global leadership development expert Nick Petrie (2014) relates this emphasis on PLRs to the "decline of the heroic leader and the rise of collective leadership."

In his words, "The story of the last 50 years of leadership development has been the story of the individual. It began with discoveries about 'what' made a good leader and was followed by the development of practices that helped a generation of individuals move closer to that ideal. The workplace context rewarded individuals who could think through a situation analytically and then direct others to carry out well-thought-through procedures. Leadership was not easy, but the process itself was comparatively clear.

However, in the last 15 years, this model has become less effective, as the 'fit' between the challenges of the environment and the ability of the heroic individuals to solve them has started to diverge."

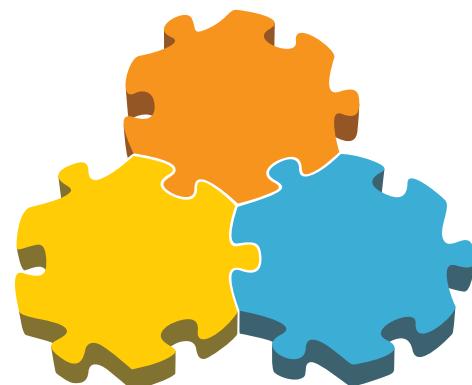
Although some still refer to these leadership qualities as "soft" skills, many experts now agree that we should more precisely refer to them as "real" skills (Godin, 2017).

PLRs Matter: The Ontario Context

In the Ontario context, “collaborative professionalism” defined in *Policy/Program, Memorandum No.159*, as “working together, sharing knowledge, skills and experience to improve achievement and well-being of both students and staff” advocates and supports the shift in leadership practice that Petrie describes. Although collaborative professionalism is a shared responsibility, educators in formal leadership roles are uniquely placed to create the necessary conditions for teaching, learning and leading (Montreuil, 2016). In particular, these are conditions that ensure that equity, student achievement and well-being are interrelated in context-specific ways such as those outlined in *What We Heard: Well-Being in Our Schools, Strength in Our Society* and in *Ontario’s Education Equity Action Plan*.

Education leaders play a key part in motivating and inspiring all those involved in the education experience of children and youth not only to succeed academically but also to develop the long-term cognitive, social, emotional, and physical development, and the development of their sense of self/spirit that will lead them to become personally successful, economically productive and actively engaged citizens. In this way every learner has the opportunity to succeed personally and academically, regardless of background, identity or personal circumstances.

Although Ontario education leaders often comment that their work is complex, intense and always challenging they also talk about how satisfying and rewarding it is for them to see the impact their leadership has on student success and well-being (Pollock, 2014). They are also quick to acknowledge how important their own PLRs are in helping them to meet the leadership challenges and opportunities in their work.





Part B – Digging Deeper: Research Perspectives

In this Part B, we bring into greater focus the following three cognitive PLRs of the Ontario Leadership Framework (OLF).

1. **Problem-Solving Expertise** comprises of:
 - understanding and interpreting problems,
 - developing solution processes,
 - identifying constraints and opportunities,
 - maintaining confidence in the face of challenging problems.
2. **Role-Specific Knowledge of Effective School and Classroom Practices that have Direct Effects on Student Learning** includes:
 - understanding school and system conditions that optimize teaching, learning and leading,
 - taking into account rational, emotional, organizational, and family conditions.
3. **Systems Thinking** refers to:
 - understanding the complex and reciprocal connections between and among different elements of the organization,
 - having foresight to engage the organization – school and/or system – in likely futures and their consequences for organizational action.

Building on the descriptions of these PLRs in *The Ontario Leadership Framework 2012 with a Discussion of the Research Foundations* (Leithwood, 2013b) and in *Strong Districts & Their Leadership* (Leithwood, 2013a) we provide an at-a-glance outline of selected research. We begin with a focus on problem-solving expertise and role-specific knowledge and conclude with systems thinking. It is important to recognize that there is much more to uncover and learn about these PLRs in the research and professional writings than we provide in this paper and so we encourage you to learn more by accessing the references and searching out others.

B-1. Problem-Solving Expertise

Problem-solving is one aspect of the education leader's role that is always challenging irrespective of our theoretical background, knowledge, and skills. Even our years of problem-solving experience may not be a reliable guide. This is largely due to the everyday realities of the education leader which typically consists of a continuous and

unrelenting number of problems that come our way in the form of questions, concerns, issues, and dilemmas.

Although the problems may arise from a variety of sources including staff, students, parents and caregivers, and communities, they share the need for a differentiated and often unique problem-solving approach. Occasionally a quick answer is possible but more often than not, finding a good solution requires dedicated focus working with others over extended periods of time. Getting it right – finding an effective solution – is not easy. Therein lies the challenge of problem-solving.

"The process that precedes decision-making is problem-solving, when information is gathered, analyzed, and considered. This is deceptively difficult to get right, yet it is a key input into decision-making for major issues as well as daily ones."

~ Claudio Feser, Fernanda Mayol, & Ramesh Srinivasan, 2015

"System 1 generates impressions, feelings, and inclinations; when endorsed by System 2 these become beliefs, attitudes and intentions."

~ Daniel Kahneman, 2011

Two cognitive systems

System 1	System 2
 Fast	 Slow
 Unconscious	 Conscious
 Automatic	 Effortful
 Everyday Decisions	 Complex Decisions
 Error prone	 Reliable

Understanding our own thinking

Another aspect of problem-solving that presents a challenge is how we think. This is because the workings of the human brain are more than a little perplexing. How can we be so clever at some tasks such as assembling a piece of furniture and so hopeless at others like misplacing our eye glasses? One of the most prominent researchers to shed light on this apparent conundrum is cognitive psychologist Daniel Kahneman (2011) who, with colleague Amos Tversky (1979) found that in making decisions and judgments, the brain uses two distinct "systems" of thinking. As Kahneman points out in *Thinking, Fast and Slow*, each system has its own strengths and weaknesses.

"System 1" or "fast" thinking

We could not survive without "fast" thinking which Kahneman calls "System 1" thinking. There is simply too much data in our worlds to process in detail at any given moment. And so we rely on this "automatic" and "spontaneous" way of making decisions and taking action. We react instantly to a dangerous situation such as a fire in an effortless and sometimes emotionally charged way. And we similarly undertake many routine tasks like brushing our teeth or shopping for groceries or sending a quick text message without thinking about how to do them.

We simply perform these tasks out of habit and experience. And although System 1 thinking enables us to respond to the world efficiently, it does so in ways that we are not conscious of and do not control. In short, System 1 thinking provides us with the rules of thumb or shortcuts we need to function. Scientists refer to these shortcuts as "heuristics" which are routines we use to process the endless stream of decisions that help us navigate the world around us. Therein lies the weakness of System 1 thinking. As vitally necessary as it is, System 1 thinking does not always serve us well.

“System 2” or “slow” thinking

Situations that require deliberate consideration are the domain of what Kahneman calls “System 2” or “slow” thinking. While System 2 thinking can certainly follow rules, it is conscious, and deliberately controlled (Kahneman, 2011). We use System 2 thinking when we weigh the alternatives before making an important decision. System 2 requires effort. We should use System 2 thinking when the stakes are high, when analysis is needed and in any situation that is new or unfamiliar.

The two systems at work

Kahneman tells us that our minds naturally gravitate to System 1 thinking which determines our thoughts most of the time. System 2 thinking is often appropriate and valuable, but it has limited capacity and gets tired quickly. When it is overused, overloaded or distracted it is more difficult for us to draw on our willpower reserves (Baumeister & Tierney, 2011).

System 1 thinking is highly valuable in that much of what we do becomes routine and predictable. We rely on our automatic minds most of the time. In fact, we depend on them more when we need to move more quickly, when emotions are high, and when we feel stressed. This often results in poor decision-making.

The fast mind can also lead us to filter out important information and have “blind spots.” Among these blind spots are cognitive biases which are psychological tendencies that cause the human brain to draw incorrect conclusions. These biases arise from the fact that the heuristics that are useful in the context of System 1 thinking are also inexact and imprecise and may over-simplify decision-making.

Heuristics and cognitive biases

The early work of Tversky and Kahneman in the 1970s identified three common heuristics – anchoring, availability and representativeness – and the cognitive biases that result. Each of these biases which emerge from inferences we draw about people and situations demonstrates the risk we face when System 1 kicks in before the more rational and logical System 2 is engaged.

A commonly cited example which Kahneman uses to illustrate this shortcoming in our thinking is the “bat and ball” arithmetic problem:

“A bat and ball cost \$1.10.

The bat costs \$1.00 more than the ball. How much does the ball cost?

Read more about decision fatigue and strategies for addressing it in [Ideas Into Action: Exploring the “Psychological” Personal Leadership Resources](#).

- **Anchoring** is when we make incorrect estimates due to previously heard quantities; e.g., 50 kph seems fast when driving at 30 kph but slow if we are exiting a 100 kph zone.
- **Availability** is the ease with which a particular idea can be brought to mind; e.g., we choose train travel over flying after hearing reports of an increase in plane crashes even if there is no increase in their occurrence.
- **Representativeness** occurs when we make judgments based on how similar a person, a place or a thing is to previous associations; e.g., assigning an occupation to a person based on outward appearances.

The vast majority of people respond quickly and confidently, insisting the ball costs 10 cents. This answer is intuitive and wrong. Do the math and you will see: If the ball costs 10 cents, then the total cost will be \$1.20 – 10 cents for the ball and \$1.10 for the bat – not \$1.10. And so the correct answer is 5 cents.

Differentiating our thinking to match the problem

What becomes evident in understanding the two thinking systems is that we draw on them differently depending on the kind of problem that needs to be solved.

Technical problems and adaptive challenges

Leadership experts Ron Heifetz and Marty Linsky (2002) draw a comparison between two types of problems: technical and adaptive. Understanding the distinction is foundational to the problem-solving that we do.

Technical problems are those issues that we can solve through the knowledge of experts. The problems may be complex, such as a printer that is not working but specialists know exactly how to fix them. Solving them requires using existing knowledge and skill drawn from experience in solving problems others have experienced.

Adaptive problems or challenges on the other hand are those that experts can't solve. The solutions lie not in practical and procedural answers, but rather in people themselves. To illustrate, Heifetz and Linsky (2004) use the example of the mechanic who can fix our car's brake linings, but who can't stop our 80-year-old father from riding the brake pedal because he's afraid of driving too fast.

The key difference between the two is that knowledge required for addressing technical problems is currently available. It may still be difficult to implement, but much is known about the problem and possible solutions.

Adaptive challenges by comparison extend beyond our current capacity or repertoire of possible solutions. Focus, effort, learning, and time are needed to narrow the gap between problem and solution.

Wicked problems

While adaptive challenges may be "hard" to solve, Rotman professor Jennifer Riel (2012) describes yet another category of problems that is even more challenging. It is the "wicked" problem first identified by Horst Rittel and Melvin Webber (1973) in the 1960s.

Identifying and eliminating embedded systemic barriers and discriminatory institutional and instructional practices that negatively impact the achievement and well-being of students and lead to inequitable outcomes is one of the adaptive challenges identified in [Ontario's Education Equity Action Plan](#). Its solution involves people working together to "strengthen cultures of respect for equity in our schools, as places of learning and as places of work, with the assurance of intentionality, accountability, and equity across the education system."

Here's how to tell if you have a wicked problem:

- The causes are not just complex but are deeply ambiguous.
- It doesn't fit neatly into any category you've encountered before.
- Attempts at devising a solution change the understanding of the problem.
- There is no clear stopping rule; it's difficult to tell when the problem is "solved" and what the solution may look like when you reach it.

~ Jennifer Riel cited in
Roger Martin, 2007

"Our students come from and practice many different faiths, and attend many different places of worship, including temples, synagogues, churches, gurdwaras, and mosques. They may also engage their spirituality in community centres, forests, fields, or in their homes. For some, their faith is reflected in their manner of dress, the symbols they carry, or in their silent prayers. Some of our students do not follow any faith.

Our students are differently abled, early learners, adolescents and adults, and they come to us with various degrees of mental, physical and/or spiritual health and well-being. They speak many languages and possess unique talents and skills, and they all have hopes and dreams."

~ [What We Heard: Well-Being in Our Schools, Strength in Our Society, \(2017\)](#)

As Riel points out there are few rules to guide us in addressing wicked problems because they may change as we work on solving them. This is because wicked problems are unique and without precedent. They are often intertwined with other problems and involve multiple stakeholders who may be in disagreement about what the problem is. They have no clearly identifiable solution, and may not even yield what can clearly be identified as a "right" or "wrong" answer. Although we cannot actually "solve" wicked problems we can hope to "tame" them.

B-2. Role-Specific Knowledge of Effective School and Classroom Practices that have Direct Effects on Student Learning

This second PLR in the cognitive category refers to the knowledge that leaders need in order to influence teaching, learning and leading in their schools. Some experts argue, "Without an understanding of the knowledge necessary for teachers to teach well – content knowledge, general pedagogical knowledge, content-specific pedagogical knowledge, curricular knowledge and knowledge of learners – school leaders will be unable to perform essential school improvement functions such as monitoring instruction and supporting teacher development (Spillane & Seashore-Louis, 2002)."

Others claim that successful leadership is "contingent" and will depend on many factors related to context including the "specific features of the circumstances and settings in which they work and the people with whom they are working (Leithwood, 2013)."

In spite of these seemingly conflicting views, there is agreement among practitioners and researchers alike that there is foundational knowledge all education leaders need to have and be able to apply in their work. With this in mind, the following section outlines the views of selected education leadership experts whose perspectives suggest priority areas of knowledge that leaders need to understand deeply and bring to life in their leadership practice.

Knowledge of culturally relevant and responsive pedagogy

We begin with the knowledge leaders need to respond effectively to the rapidly increasing diversity among learners and continuously

"One can easily say that being a principal equity champion is a 'labour of love.' So much of what a school leader does requires clear vision and a moral compass that is carefully and regularly calibrated. In following one's moral compass, the decisions made by a principal equity champion can and will at times conflict with the morals and pedagogical thinking of others. Despite their individual beliefs, predispositions and practices, school leaders must carefully navigate legislation and district school board policy to ensure that they are providing equitable and inclusive working environments for all."

*~ Ontario Principals' Council
Protective Services Team, 2014*

"Inclusion is not bringing people into what already exists; it is making a new space, a better space for everyone."

~ George Dei, 2006

A whole-school approach is an evidence-informed practice which engages all key learning areas, all grades and the wider community. Students and adults in the school and the wider community develop awareness and understanding of the factors that contribute to safe, inclusive, caring and accepting school climates.

Learn more in [Promoting a Positive School Climate: A Resource for Schools](#).

shifting demographics in Ontario's schools and communities. This is knowledge that is essential to leaders fulfilling their commitment and obligation to ensure that schools are inclusive, welcoming of diversity and provide environments where well-being is a priority.

This knowledge underpins the work they do with their staffs to strengthen inclusive and culturally responsive and relevant teaching, curriculum, assessment and resources.

Muhammad Khalifa et al (2016) report that it was over two decades ago when "culturally relevant" (Ladson-Billings, 1995) and "culturally responsive" (Gay, 1994) pedagogies entered the discourse on education and reform. For Ladson-Billings culturally "relevant" pedagogy rests on three criteria; i.e., students must:

1. Experience academic success.
2. Develop and/or maintain cultural competence.
3. Develop a critical consciousness through which they challenge the status quo of the current social order.

Culturally "responsive" pedagogy further acknowledges that all students learn in ways that are connected to background, language, family structure and social or cultural identity. According to Gay, its tenets should extend beyond educators in the classroom to formal school leaders who must have a similar mandate with respect to the entire school culture and climate.

Leadership professor James Ryan (2006, 2012) refers to this leadership stance as "inclusive." He describes it as a process consisting of "an array of practices, procedures, understandings, and values that persist over time." For Ryan the knowledge leaders need to lead for inclusion involves the "what" and the "how" of bringing "diverse students, families, educators, and community members together to create schools based on acceptance, belonging and community." His conceptual framework for inclusive leadership incorporates advocating for inclusion, professional learning, developing critical consciousness, nurturing dialogue, emphasizing student learning and classroom practice, adopting inclusive decision- and policy-making strategies, and incorporating whole school approaches."

Education equity experts Jeff Kugler and Nicole West-Burns (2010) add to this portrayal of inclusive leadership. Their framework for "culturally responsive and relevant pedagogy" sheds light on what this looks like in leadership practice. It calls on leaders and their staffs to examine their thoughts, beliefs, attitudes and actions in seven areas: classroom climate and instruction, school climate, student voice and space, family/caregiver, school and community relations, school

leadership, community connection, and professional learning. In essence, this framework promotes a whole school approach in which all aspects of school life are considered from curriculum and school climate to teaching practices, policies and procedures.

“What does it mean to make a ‘connection’ to another and to think about the strong connections we have with the children in our care?” Dr. Jean Clinton (2013) argues that it is “in our hearts and minds that we are likely to feel connected to those we spend our days with.” And she cautions, “Routinely, we may find ourselves spending more time on Correcting and Directing, leaving little time for Connecting” and asks, “On a daily basis, what is your C:D:C Ratio?”

Learn more about positive child and youth development and well-being in [In Conversation: An Interview with Dr. Lise Bisnaire, Dr. Jean Clinton, and Dr. Bruce Ferguson, Understanding the Whole Child and Youth – A Key to Learning](#)

“Making deliberate efforts toward understanding the lives of students without presuming or stereotyping is essential for supporting well-being.”

~ Frank Deer, 2017

To learn about Hattie’s perspectives on teaching, learning and leading, read [In Conversation: An Interview with John Hattie, Know Thy Impact: Teaching, Learning and Leading](#).

Knowledge of the learner

At the heart of the education leader’s role in promoting culturally responsive and relevant school environments is the whole learner. As Kugler and West-Burns point out, school leaders “must inspire teachers to develop a deep knowledge, not just of content, but of students as individual learners. In this way educators integrate the lived experiences of students into the daily learning of the classroom.”

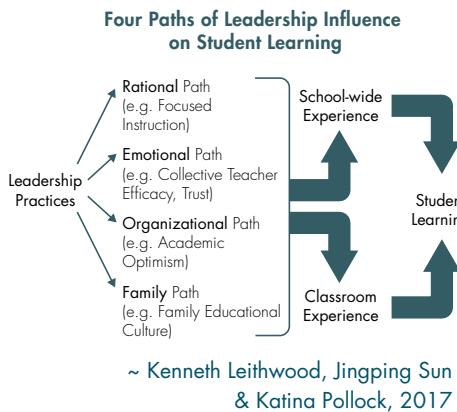
Researchers Shelly Brown-Jeffy and Jewel Cooper (2012) tell us that teaching the whole child includes concepts of skill development in a cultural context, home-school-community collaboration, learning outcomes, supportive learning community, and empowerment. To this Ontario Education Advisor Jean Clinton (2017), adds that learners need to develop “identity, belonging, safety, engagement, relationships, focus on self and spirit, healthy living mind and body, mastery, regulation, positivity, and meaning.”

Professor Frank Deer (2017) also points to identity as key to the cultural well-being of students. As he puts it, “With Canada being composed of, in part, scores of First Nation Communities, numerous Métis settlements in vast territories of Inuit homelands, it is incumbent on school officials to acknowledge place and nationhood. Becoming accustomed to acknowledging this when interacting with students may be essential. For instance, I am not Aboriginal, I am Kanienkehá:ka.”

Internationally acclaimed educator and researcher John Hattie (2009), in his landmark book *Visible Learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement*, confirms that knowledge of the whole learner is the essence of the relationship that educators have with their students. Hattie (2017) continues to collect and aggregate meta-analyses to build on the *Visible Learning* database. Among his new findings Hattie identifies “teacher credibility” as having a “massive impact on the subsequent learning that happens in the classroom.” The three core aspects that are important to students’ judgements about teacher credibility are trusting relationships, competence, and passion (Killian, 2017). Building relationships with students requires that educators show they care about their students as both people and learners. One important way they demonstrate

this care is by ensuring that they recognize the experiences of the student in the classroom and in the school.

Knowledge about school and classroom conditions



The ministry's [K-12 School Effectiveness Framework \(2013\)](#) provides schools with a powerful tool they can use as part of the school assessment process. The framework is grounded in evidence-informed practice and research, and supports educators in their ongoing pursuit of student achievement and well-being. It also serves as a resource for informed pedagogy and school improvement planning.

Although indirect, school leaders exert a powerful influence on the conditions that support outcomes related to equity, student achievement and well-being. Kenneth Leithwood (2013b) points to knowledge of those conditions that impact teaching, learning and leading as an important aspect of what leaders need to know. In *How School Leaders Contribute to Student Success: The Four Paths*, Leithwood, et al (2017) argue that education leaders must have a deep understanding of the variables along four “paths” that evidence shows lead most directly to improved student learning and well-being:

1. **The rational path** is concerned with the knowledge and skills of school staffs about curriculum, teaching and learning, and operates at both the classroom and school levels.
2. **The emotional path** revolves around teacher emotions such as job satisfaction and trust in colleagues, parents, caregivers, and students and their consequences for classroom practice and student learning and well-being.
3. **The organizational path** is about school structure, culture, policies and procedures which collectively represent teachers' working conditions and in turn influence their emotions.
4. **The family path** concerns educators' ability to positively influence the home environment.

Domain-specific content knowledge

Leaders also need to have a core body of domain-specific knowledge. Viviane Robinson et al (2009) who conducted the best evidence synthesis that resulted in *School Leadership and Student Outcomes: Identifying What Works* tell us that “we must take care not to suggest which areas are most important because the task-embedded nature of leadership means that different emphases are required for different tasks.”

Instead of being explicit about the areas of content knowledge that leaders must have, researchers Mary Kay Stein and Barbara Nelson (2003) suggest that they should have current and in-depth knowledge of at least one curriculum area. This includes subject matter, pedagogical knowledge related to how students build their knowledge of the subject, and effective methods of presenting subject content to students to further their learning. Their underlying assumption is that principals who have depth of knowledge in one curriculum area,

will appreciate the depth of knowledge required to lead improvement of teaching and learning in other areas.

B-3. Systems Thinking

Although “systems thinking,” as conceived by Peter Senge (1990) in *The Fifth Discipline: The Art and Practice of the Learning Organization* is not new, it is a discipline that continues to have relevance in this age of innovation, connectivity and design thinking (Vassallo, 2016). In education settings where schools and districts are complex systems with many “moving parts” systems thinking has never been more pertinent.

Systems thinking is the fifth discipline that integrates the other four disciplines:

- **Personal mastery** moves beyond competence to a genuine sense of calling, constantly deepening our vision.
- **Mental models** comprise our own assumptions and generalizations which we must keep open to scrutiny.
- **Building shared vision** has us moving forward not because we are told to but because we want to.
- **Team learning** requires that we act together and develop our capacities as a team, rather than have individual interests distract us.

~ Adapted from Peter Senge, 1990

The fifth discipline

Senge popularized the concept of systems thinking as “the fifth discipline” which integrates the four disciplines of personal mastery, mental models, shared vision and team learning. For Senge, systems thinking is a “discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshots.” Success in solving an adaptive challenge, a problem that involves the actions of many groups or individuals, or is deeply connected to or affected by our overall environment, or that has been recurring for a period of time, can only be achieved by looking at the whole.

Systems thinkers “in action”

Over a decade ago, Michael Fullan (2005), one of six Leadership Advisors to the Ontario government, wrote in *Leadership and Sustainability: System Thinkers in Action* that “philosophically Senge is on the right track.” Even so, Fullan worried that systems thinking had not gone far enough and had remained a theory rather than a practice. He argued that advances in systems theory can only be made by “leaders at all levels of the system who proactively and naturally take into account and interact with larger parts of the system.”

For Fullan, systems thinking at the time had essentially “squandered its potential” because it had “stayed at the level of *thinking* [his emphasis].” In his view, it was “system thinkers in action,” not “armchair system thinkers” that were needed to move systems thinking into practice in education contexts. To illustrate he proposed an eight-part framework that set out a vision for a “new kind of leadership” in which “people interact with others to promote system awareness through their actions and conversations.”

Commitment to the concept of the “whole learner” which is intrinsic to [Achieving Excellence: A Renewed Vision for Education in Ontario](#) provides a real-life example of systems thinking in action. A primary focus on the whole learner denotes a holistic vision of education in which achievement, equity and well-being are seamlessly integrated in the school experience for all children and youth.

“Systemness is not simply about aligning our activities and focus at a system level, it is about system coherence – it involves a *mindset* change. ‘Systemness’ means that you develop experiences in people where they start to identify with the bigger part of the system itself.”

~ Michael Fullan,
cited in Handa, 2015

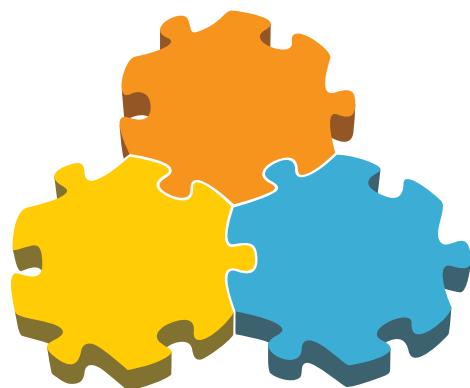
This framework inspired leaders to pursue moral purpose, to think beyond their own contexts, to engage with others, and to foster leadership in others. Coherence-making emerged as a catchphrase that signalled the importance of co-dependent relationships, deep pedagogy and learning cultures, and dual commitment to short-term and long-term results. It fostered innovation while taking into account the need to preserve energy and motivation.

Systemness and coherence-making – the next phase

In the years since 2005, Fullan has persisted in his advocacy for systems thinking more often referring to it as coherence-making. The tenets of the framework he set out in 2005 hold true today. He now speaks of “systemness” (Handa, 2015) to describe the end state that is the goal of all systems thinking, a state where there is harmonization among all parts of the system, everyone working towards the same vision and doing their part to make it work.

Recently, with the release of *Coherence: The Right Drivers in Action for Schools, Districts, and Systems*, co-authored with Joanne Quinn (2016b), Fullan shines new light on coherence-making. Fullan and Quinn (2016a) define it as a continuous process of making and remaking meaning in our own minds and in our cultures. Coherence-making is “the shared depth of understanding about the nature of the work.”

Capacity building, collaboration, pedagogy, and systemness provide the basis of their “Coherence Framework,” an action strategy for whole system improvement that consists of four essential components: focusing direction, cultivating collaborative cultures, deepening learning, and securing accountability. Fullan and Quinn (2016a) emphasize that the framework is not linear. Instead, each of the four components serve the other three. “Actions in one have an impact on the others” thereby fostering systems thinking in action.





Part C – Developing the Cognitive Personal Leadership Resources (PLRs): Ten Proven Strategies

In this Part C, we highlight ten proven strategies to strengthen our cognitive PLRs. These strategies draw on both research and professional practice, and add to the personal PLR “toolkit” that we have been assembling in this three-part series of *Ideas into Action*.

Learning about these strategies is an important first step, but bringing them into our own personal experience and leadership practice takes motivation, commitment, time, effort, and the support of others. Try them on your own and with colleagues.

Take time to refer to the original research sources, cited throughout and listed in the References on pages 45-48 to gain a deeper understanding of the strategies. Keep in mind that, while these strategies were selected specifically for their relevance to the cognitive resources, they are also relevant to all the PLRs and the effective enactment of the practices in the OLF.

C-1. Think Better

“Thinking is the ultimate human resource...

No matter how good we become, we should always want to be better.”

~ Edward De Bono, 1999

De Bono’s words are a reminder that we need to be aware of how we think and how we can become better thinkers. De Bono, a leading authority on creative thinking believes that “emotions, information, logic, hope and creativity all crowd in on us.”

Plus-minus-interesting (PMI)

Of the many protocols that De Bono (1994) created as a “teacher of thinking,” Plus-Minus-Interesting (PMI) is most often connected to critical thinking. The “P” or “Plus” suggests that something is a good idea, decision or choice. The “M” or “Minus” proposes that something will not work or why it is an unwise idea. The “I” represents “Interesting” and refers to ideas that are neither plus or minus but may be useful considerations when decisions or choices are made. The PMI method helps people engaged in problem-solving to consider the “evidence” from all sides before making a commitment to a decision.

Plus	Minus	Interesting

- List all the pluses (P) or good points associated with each option.
- List all the minuses (M) or bad points.
- List all the interesting (I) points.

“...practice is the only thing that will allow us to apply Holmes’s methodology in real life...We need to train ourselves mentally for those emotional moments, for those times when the deck is stacked as high against us as it will ever be. It’s easy to forget how quickly our minds grasp for familiar pathways when given little time to think or when otherwise pressured. But it is up to us to determine what those pathways will be.”

~ Maria Konnikova, 2013

Use the “scientific method of the mind”

In *Mastermind: How to Think Like Sherlock Holmes*, Maria Konnikova (2013) offers a way of thinking that draws on the insights of Conan Doyle’s Sherlock Holmes. For Konnikova, Holmes’s thinking is the epitome of System 2 thinking whereas Watson’s is System 1 thinking. Konnikova believes that we can become better thinkers by moving from quick-to-judge “System Watson thinking” to measured “System Holmes thinking.”

In short, this is thinking that comes down to one simple formula, which Konnikova calls “the scientific method of the mind.” It consists of the following five components:

1. **Understand and frame the problem.** Draw on a broad base of knowledge and past experience. Know yourself and your environment. What are you bringing to the situation and how do you assess it before beginning the observational process?
2. **Observe to see the full picture.** Know what and how to observe. What details do you focus on or omit?
3. **Create or imagine a hypothesis.** Base it on your knowledge and observations.
4. **Test the hypothesis.** Deduce, investigating all lines of inquiry. Draw inferences based on observations. See if the results match your hypothesis.
5. **Repeat.** Keep in mind that times change as do circumstances. Learn from your failures and successes. Revise and retest your hypotheses.

Konnikova cautions that this approach requires mindfulness, motivation and aspiration supplemented with “practice, practice, practice.”

Keep a decision diary

To speed up the learning and put the scientific method of problem-solving into practice, Konnikova advises that we “physically write things down.” For every choice, solution, decision, she recommends that we record the process in a single place. List the observations. Include thoughts, inferences, potential lines of inquiry, things that intrigue us. Take the further step and record what we ended up doing. Then when we have compiled a dozen or more entries, review them all, in one sitting and look for habitual patterns and learn from them. A decision diary helps to prevent “hindsight bias” which occurs when we look backward in time and see events are more predictable than they were at the time a decision was made.

Become an integrative thinker

"I think of integrative thinking as a form of technology – a thinking technology – that can help us expand the frontier of possibility." Learn more about Roger Martin's views about integrative thinking in [In Conversation: An Interview with Roger Martin, Leadership and Integrative Thinking.](#)

Roger Martin and co-author Jennifer Riel (2017) recommend this process for integrative thinking:

1. **Articulate the models.** Understand the problem and opposing models more deeply.
2. **Expand the models.** Define the points of tension, assumptions, and cause and effect forces.
3. **Explore the possibilities.** Play with the pathways for integration.
4. **Assess the prototypes.** Test and refine the possibilities.

Roger Martin (2007), influential business thinker and former Dean of the Rotman School of Business made popular the concept of "integrative thinking." In his research, Martin found that most of the successful leaders he interviewed shared one unique trait, "the ability to hold two diametrically opposed ideas in their heads." They were "integrative thinkers" who do not settle for one alternative or the other. As Martin points out, "You will never hear an integrative thinker say 'keep it simple.'"

In general terms, integrative thinking means "constructively using the tension between opposing models to generate a creative resolution in the form of a new model which contains elements of the existing models, but is superior to each." Martin believes, that integrative thinking "isn't just an ability you're born with – it's something you can hone." For him, it's a "habit of thought" that we can consciously develop to arrive at solutions that would otherwise not be evident. The key to success in becoming an adept integrative thinker he says, is "practice."

C-2. Solve the Right Problem

"The quality of the problem that is found is a forerunner of the quality of the solution that is retained."

~ Jacob Getzels, 1982

These wise words from the late Jacob Getzels, whose research redefined measures of intelligence, are words we often ignore when faced with pressure to move quickly into solution mode. The risk in thinking fast is that we may be addressing the symptoms of a problem instead of the cause. Becoming adept at solving problems requires that we first become skilled at "problem-finding."

Problem-finding is simple enough ... or is it? We know we have a problem when student achievement and well-being outcomes aren't as good as we expected. But that doesn't tell us much about why or what to do about them. In fact, as Jacob Getzels (1979) cautioned almost four decades ago, we need to be concerned with correctly formulating the problem, which he calls "the problem of the problem." This, he says, is because "the way the problem is posed is the way the problem will be resolved."

Although there is no single route to follow to ensure that we are solving the right problem, the following are some approaches that can lead to good results.

Apply “Root Cause Analysis”

Root Cause Analysis (RCA) is a widely-used method that helps people find out why a problem occurred in the first place. It seeks to identify the origin of a problem using a specific set of steps to find the primary cause of the problem in order to agree on what steps to take to prevent it from happening again. RCA assumes that systems and events are interrelated. An action in one area triggers an action in another, and another, and so on.

By tracing back these actions, we can discover where the problem started and how it grew into its current condition. The three basic types of causes are physical, human and organizational. RCA looks at all three types of causes. It involves investigating the patterns of negative effects, finding hidden flaws in the system, and discovering specific actions that contributed to the problem.

RCA has five identifiable steps:

A Toyota example using the 5 Whys:

1. **Why did the robot stop?**
The circuit was overloaded, causing a fuse to blow.
2. **Why is the circuit overloaded?** There was insufficient lubrication on the bearings, so they locked up.
3. **Why was there insufficient lubrication on the bearings?**
The oil pump on the robot is not circulating sufficient oil.
4. **Why is the pump not circulating sufficient oil?**
The pump intake is clogged with metal shavings.
5. **Why is the intake clogged with metal shavings?**
Because there is no filter on the pump.

Typically, we might stop at step 1 and replace the fuse, but it isn't until step 5 that we arrive at a permanent solution.

~ Courtney Seiter, 2015

1. **Define the Problem.** What is happening? What are specific symptoms?
2. **Collect Data.** What proof is there that the problem exists? For how long? With what impact?
3. **Identify Possible Causal Factors.** What led to the problem? What are related problems?
4. **Identify the Root Cause(s).** What is the real reason the problem occurred?
5. **Recommend and Implement Solutions.** What can prevent the problem from recurring? How will the solution be implemented? Who will be responsible? What are the risks?

Use the “5 Whys” approach

Another effective problem-finding approach is the “5 Whys” protocol which was developed and fine-tuned at Toyota in the 1950s and remains in use today (Seiter, 2015). It’s called “5 Whys” because, in the face of any problem, asking “why” five times and taking responses into account with each successive “why,” the nature of the problem and often its solution become evident.

Experience shows that it often takes five “why” questions to get to that place. In general, the 5 Whys protocol produces better results when performed by a team rather than by a single individual. The more points of view we can gather around a problem, the more creatively and thoroughly we can apply the 5 Whys to arrive at genuine causes.

The 5 Whys and school improvement planning

Education leaders Rachel Curtis and Elizabeth City (2009), identify the 5 Whys protocol as a useful tool in school improvement planning and implementation. They caution that Why 3 and Why 4 can be a difficult part for those who are new to the protocol and who are not used to digging deeply into the core issues of a problem. They tell us that people are often both annoyed and amused with the protocol since it “pushes the discourse and analysis beyond the usual surface-level conversation.”

With this in mind they advise us to:

- Keep people focused on things they have influence over whether at a school or system level. The goal is to identify actionable causes and this means action within a specific context.
- Persevere, as identifying something actionable usually turns up between Whys 4 and 5.
- Stick with the approach because after using it once or twice, people often have fun with it and begin to use the 5 Whys in regular conversation.

Reframe the problem

Leadership consultant Thomas Wedell-Wedellsborg (2017) offers a proviso to methods such as RCA and the 5 Whys for scenarios which cause people to dig deeper into a problem they have already defined. Instead, he recommends “reframing” the problem. He uses the following “slow elevator problem” to illustrate this approach:

“Imagine this: You are the owner of an office building, and your tenants are complaining about the elevator. It’s old and slow, and they have to wait a lot. Several tenants are threatening to break their leases if you don’t fix the problem.”

He explains that most people, when asked, quickly identify solutions that make similar assumptions about the elevator, that it is slow and needs to be faster. Their solutions include “replace the elevator” or, “install a stronger motor.” However, when he asks building managers, they reframe the problem and focus on the “wait” as the problem. Their solutions centre on making the wait feel shorter by playing music or putting up mirrors. Wedell-Wedellsborg’s message here is that “problems are multi-causal and can be addressed in many ways.”

“You won’t know which problems can benefit from being reframed until you try.”
~ Thomas Wedell-Wedellsborg, 2017

He believes that this approach can be taught and offers the following seven practices for effective reframing:

1. **Establish legitimacy for reframing.** Explain what it is, how it differs from merely diagnosing a problem and how it can potentially create better results.
2. **Bring outsiders into the discussion.** He advises us to, “Expect input, not solutions.”
3. **Get people’s definitions in writing.** Gather them in advance of a discussion.
4. **Ask what’s missing.** Find out what has not been captured or mentioned.
5. **Consider and generate categories of problems.** Examples include incentives, expectations, and attitudes.
6. **Analyze positive exceptions.** When did the problem not arise? What differed?
7. **Pay attention to the objectives of the parties involved.** Clarify and challenge them.

C-3. Mitigate the Impact of Bias

“Our brains are wired for quick judgements, equipped with back roads and shortcuts that simplify the task of taking in and evaluating the countless inputs that our environment throws at us every second.”

~ Maria Konnikova, 2013

“Our way of looking at the world is tough to change and our biases are remarkably sticky. But tough and sticky doesn’t mean unchangeable and immutable.”

~ Maria Konnikova, 2013

Konnikova’s words remind us that we should not take too lightly the complexity of our thinking. This, she explains is “because of our brain’s structure, its habitual modes of thought and operation, the way in which we have learned over time to look at and evaluate the world, and the biases and heuristics that shape our intuitive, immediate perception of reality.”

As we learned earlier in this paper, the story of two thinking systems that Daniel Kahneman (2011) tells, explains why this is so. It is this reality about the workings of our minds that clarifies why we are prone to developing biases that have an impact not only on our problem-solving and decision-making but also on judgments we form about situations and people.

Researchers tell us that we can’t consciously force ourselves to stop these biases from forming, but as Konnikova suggests, “we can learn to understand our minds.” We can “try our best to set the starting point back to a more neutral one.”

The term “implicit bias” is often used interchangeably with the term “unconscious” bias.

~ Cheryl Staats et al, 2016

“An understanding of unconscious bias is an invitation to a new level of engagement about diversity issues. It requires awareness, introspection, authenticity, humility, and compassion. And most of all, it requires communication and a willingness to act.”

~ Howard Ross, 2008

“Bias is a natural phenomenon in that our brains are constantly forming automatic associations as a way to better and more efficiently understand the world around us. No one is a ‘bad’ person for harboring implicit biases; these are normal human processes that occur on an unconscious level. Some implicit biases are even positive in nature.”

~ Cheryl Staats et al, 2016

Understand the nature of bias

Staats et al (2016) argue that understanding bias is a first step in reducing its impact. Bias can be explicit or implicit, concepts which are related but distinct. Explicit bias reflects the attitudes or beliefs that one endorses at a conscious level. Implicit bias which is a product of System 1 or “fast” thinking arises outside of conscious awareness and so does not necessarily align with our openly-held beliefs or even reflect stances we would explicitly endorse.

What do we know about implicit bias?

In many forms, implicit bias is a healthy human adaptation. It is among the mental tools that help us to mindlessly navigate our routines each day (Badger, 2016). We also know that we can take steps to reduce the impact of unwanted and negative implicit biases by gradually unlearning and replacing them with new associations (Dasgupta, 2013).

Recognize our own implicit biases

Learning about our own unconscious biases is an essential step we need to take to avoid those spontaneous and impulsive reactions that keep us from making objective and thorough judgements and decisions.

Take the Implicit Association Test (IAT)

One reliable approach in identifying our unconscious biases is Harvard’s [Implicit Association Test \(IAT\)](#). The IAT is an instrument that has been developed and rigorously tested to measure the distance between our conscious and unconscious attitudes. Decades of IAT testing have shown it is an effective tool in measuring our unconscious prejudice. Among its findings the IAT confirms that we all have implicit biases, that we are unaware of them, that we differ in levels of implicit bias, and that implicit biases predict behaviour (Choudhury, 2015).

Address unwanted and negative implicit biases

In Ontario we live in one of the most diverse jurisdictions in the world, and we acknowledge the urgency in identifying and eliminating discriminatory practices, systemic barriers and bias from districts, schools and classrooms. We also recognize that there is evidence to support the argument that “implicit bias can be overcome with rational deliberation (Yudkin et al, 2016).” Choudhury explains that this “requires both learning and unlearning about others and

"To overcome the systemic problems of racism and discrimination, we must notice ourselves moment to moment. We must accept our flaws and biases, while recognizing the need to change."

~ Shakil Choudhury, 2015

"If I love you, I have to make you conscious of the things you don't see."

~ James Baldwin, cited in Sarah Fiarman, 2016b

"School leaders need to create learning environments where all learners can bring their full selves to school. In our experience, that means making it possible for people to talk about the range of identities they hold..."

~ Glenn Singleton & Curtis Linton, 2006

ourselves." The following are some ways – and there are many more – that we can use to challenge the associations we have in our minds and lessen the effects of our biases.

Build diverse relationships

To offset an implicit preference for a certain group, form relationships across lines of difference such as race, gender, language, religion, and politics. Increase contact with groups of people outside of one's demographic with the goal of trying to benefit from their perspectives. Seek out opportunities to contradict stereotypes typically associated with particular categories; for example, individuals across generations from Baby Boomers and Gen Xers to Millennials and Gen Zers. Taking the perspective of others has shown promise because considering contrasting viewpoints and recognizing multiple perspectives can reduce automatic biases. We also become bolder because we know who among our networks will tell us where we are going astray and we'll listen because we trust them (City & Dolly, 2017).

Counter stereotypic associations

Experts (Staats et al, 2016) recommend that we consider carefully what gets into our minds in the first place. This might mean, for example, going out of our way to watch television programs and movies that portray people in ways that counter views we might hold about them. Take note and each time, mentally counter that association with one that opposes it.

Be open to confronting implicit bias

Sarah Fiarman (2016a) draws on her experience as a school principal and from her background as a member of a mixed-race, mixed-religion family and argues passionately that we eliminate the stigma around talking about bias. In her words, "If we as leaders, want to disrupt the status quo of unequal outcomes in schools, we have to start with a deep look at inequities in schools – and for White leaders like me, this includes examining our own role in perpetuating them."

Her passion about our need to confront bias is so strong that Fiarman devotes an entire chapter to naming and addressing implicit bias in *Becoming a School Principal*. In it she proposes concrete steps that education leaders can take to mitigate implicit bias. She acknowledges that this can only happen in a culture of trust that has been established through countless small and purposeful interactions over time. This includes knowing how to listen, knowing when to speak, and owning up to our own biases.

Name it and talk about it

Read *Ideas Into Action, Exploring Five Core Leadership Capacities: Engaging in Courageous Conversations* to learn more about having learning-focused conversations.

Learning new associations will not be as easy as when they were first created. Naming bias in ourselves and others is a high-impact approach for increasing awareness. It is also one of the most challenging and requires trusting one another enough to give honest feedback and engage in courageous conversations.

One way Fiarman recommends is to normalize talking about bias by providing time in workplace settings to learn about and discuss implicit bias. As a starting point she says that it's important to get a sense of each individual's comfort level and skills. Questions that can help include:

- How comfortable am I discussing topics related to equity and inequity with students?
- What steps can I take to improve my comfort level?
- What skills can I bring to facilitating dialogue around this topic?
- What skills must I acquire to get better – and what steps can I take to acquire them?

Another approach is to engage staff in discussions about how to raise questions and what questions to ask that will help each other see their own potential biases:

- What makes you think that? What leads you to that conclusion?
- Would this decision be different if the family/child were of a different race or background?
- What decision would you make if this were your own child?

C-4. Strengthen Problem-Solving Know-How

"A leader must never view a problem as a distraction, but rather as a strategic enabler for continuous improvement and opportunities previously unseen."

~ Llopis, 2013

As business strategist, Glenn Llopis points out, effective leaders approach problems through a lens of opportunity. "They have the patience to step back and see the problem at hand through broadened observation. They see around, beneath and beyond the problem itself. They see well beyond the obvious."

In an education context, researchers describe successful problem-solving as the capacity to discern the limitations that impinge on the focus problem and then understand them in sufficient depth to craft a solution that takes them into account. According to Robinson

et al (2009), “leaders need to be able and willing to take on board all the factors relevant to a problem and to make decisions that balance *all* authors’ [their emphasis] relevant considerations ... To do this, they must have the ability to understand the interests of different stakeholders without being captured by any one of them, to see the big picture, and to put students’ interests first.”

Expert principals “bring a richer, task-specific knowledge to problems. By better understanding constraints and the principles behind them, they are better positioned to see possibilities for integrating them.”

~ Viviane Robinson et al, 2009

Social interaction is a crucial feature of the context in which problem-solving expertise is learned and practiced. A second crucial feature of the context is the nature of the problems used as vehicles for developing expertise ... such problems must be approximately identical or similar to real problems of practice and perceived as authentic by the learners.

~ Adapted from Ken Leithwood & Rosanne Steinbach, 1995

Knowing what leaders who are expert problem solvers are more likely to do is foundational to strengthening one’s own problem-solving expertise. In *Expert Problem-Solving: Evidence from School and District Leaders*, Ken Leithwood and Rosanne Steinbach (1995) report on their research which examined the thinking and problem-solving processes of groups of “expert and typical” principals. Their findings which have been confirmed in subsequent research shed light on the problem-solving of expert principals and can serve as models for other leaders.

In problem interpretation, expert principals are more likely to:

- explicitly check their own assumptions about the problem;
- actively seek the interpretations of others;
- relate the problem to the wider mission of the school;
- give a clear statement of their own interpretation of the problem, with reasons;
- be concerned to develop goals that are widely shared;
- anticipate obstacles and how they can be overcome.

In leading the problem-solving process, expert principals are more likely to:

- carefully plan a collaborative problem-solving process;
- openly disclose their own views without foreclosing or restraining the views of others;
- explicitly lead face-to-face meeting processes such as summarizing and synthesizing views;
- experience and express little or no negative emotion and frustration.

Develop capacity to address common barriers to making better decisions

Becoming familiar with and then applying evidence-informed frameworks for decision-making is another approach to enhancing problem-solving. Decision-making experts Dan Heath and Chip Heath (2013) have developed such a framework which they say was developed to counter flawed decision-making processes.

They agree that our cognitive biases make us prone to jumping to conclusions. As a result they say we give too much weight to the information that is right in front of us, while neglecting to take into account information that is not at hand. Kahneman labeled this the WYSIATI tendency; i.e., “what you see is all there is.” Their framework is designed to help us avoid making choices based on what naturally comes to our attention.

Begin by recognizing four decision-making “villains”

Heath and Heath identify four common phases usually associated with decision-making and suggest there is a “villain” that afflicts each phase:

- **Phase 1:** We encounter a choice. **The villain:** Narrow framing limits the options we consider.
- **Phase 2:** We analyze our options. **The villain:** Confirmation bias leads us to seek information that endorses our initial assumptions.
- **Phase 3:** We make a choice. **The villain:** Short-term emotion tempts us to make choices that are bad in the long term.
- **Phase 4:** We live with the choice. **The villain:** Overconfidence causes us to put too much faith in our predictions.

Take steps to counteract the four decision-making “villains”

To offset the influence of the four villains, Heath and Heath lay out a four-step decision-making process designed to offset the influence of the four villains. They refer to this as WRAP, a mnemonic that represents each step: W-Widen, R-Reality-test, A- Attain, and P-Prepare and prompts us to remember the four verbs. Although it is sequential in design, they tell us that it doesn’t have to be rigidly followed in order.

- **Widen** your options for every decision. Find others who have already solved the problem and learn from their lessons.
- **Reality-test** your decisions. Ask disconfirming questions.
- **Attain** distance before deciding. Use 10/10/10 analysis (Welch, 2009), to provide distance. How will you feel about your decisions 10 minutes from now, 10 months from now and 10 years from now?
- **Prepare** to be wrong. Bookend the future. Prepare for bad outcomes (pre-mortem) and for good ones (pre-parade).

They tell us “to trust the process” since the more we follow it, the better we will get. And with enough practice it can become second nature.

“We can’t deactivate our biases, but...we can counteract them with the right discipline.”

~ Dan Heath & Chip Heath, 2013

“Perhaps the most powerful question for resolving personal decisions is ‘What would I tell my best friend to do?’”

~ Dan Heath & Chip Heath, 2013

A pre-mortem is the hypothetical opposite of a post-mortem. Before a project starts, say, “We’re looking in a crystal ball, and this project has failed; it’s a fiasco. Now, everybody, take two minutes and write down all the reasons why you think the project has failed.” All reasons are noted and used to inform ways to strengthen the project plans.

~ Adapted from Gary Klein, 2007

C-5. Connect to Promote “Knowledge Flow”

“Effective leaders understand the value and role of knowledge creation. They make it a priority and set about establishing and reinforcing habits of knowledge exchange among organization members.”

~ Michael Fullan, 2001

Almost two decades ago, Michael Fullan (2001) drew our attention to the importance of knowledge building and sharing in *Leading in a Culture of Change*. At the time, he challenged us to prevent notions about knowledge work from becoming “buzzwords for the new millennium.” He advised us to learn about and understand the role of knowledge in organizational performance and to take steps to make knowledge sharing a “cultural value.” This would entail recognizing that “information only becomes valuable in a *social context* [his emphasis].”

Now, almost 20 years later, we recognize that as educators working in isolation we cannot effectively address the teaching, learning and leading challenges facing us today. In fact, there is no longer a debate about the importance of establishing organizational cultures where educators collaborate in meaningful ways to build and share knowledge to bring about improved student achievement, equity, and well-being.

As people begin sharing ideas and information about issues they see as important, the sharing itself creates the learning culture. Fullan refers to this interaction as a “not-so-straightforward chicken-and-egg question of the causal relationship between collaborative work cultures and knowledge sharing.” In other words, “establishing knowledge sharing practices is as much a route to creating collaborative cultures as it is a product of the latter.”

How then do leaders engage themselves and others in productive knowledge work and at the same time build and strengthen collaborative learning cultures?

Orchestrate the integration of tacit and explicit knowledge

Researchers Ikujiro Nonaka and Hirotaka Takeuchi (1995) have shown that an important dimension of knowledge work is the interface of explicit and tacit knowledge. In their view knowledge is primarily tacit. The challenge for leaders is to choreograph the complex interactions inside and outside an organization and transform them into collaborations that convert tacit knowledge into explicit knowledge on a continuous basis.

“...knowledge sharing fuels relationships...

~ Fullan, 2001

Explicit knowledge or “know what” (Brown & Duguid, 1998) is knowledge that can be readily shared through words, numbers and other symbols.

Tacit knowledge is described by some as “know-how” and by others as “grounded in experience (St. Germain & Quinn, 2005).” Compared with explicit knowledge, it is much less easily defined, articulated and shared.

Engage in “true” collaboration

Learn more about approaches for establishing collaborative learning cultures in [Ideas Into Action: Exploring Five Core Leadership Capacities Promoting Collaborative Learning Cultures: Putting the Promise into Practice.](#)

Avoid “coblaboration” which has three defining characteristics:

1. A chaotic pattern of conversation that does not advance much;
2. Huge time wasted on minor issues;
3. Groupthink; i.e., when people agree too easily and thoughtlessly on something.

~ David Perkins, 2003

Harvard professor David Perkins (2003) tells us that collaboration can take many forms from two-person partnerships such as mentoring relationships to teamwork and networks. He distinguishes between true collaboration and the many ways that people work together. Working on complementary jobs in the same workplace, consulting with another person about a problem or challenge, participating in a community of practice, do not constitute the “joint venture” that fits his definition of “true collaboration.”

For Perkins, true collaboration occurs “when people strive together toward the same outcome in ways that directly share the work, thinking, and responsibility … This is what collaboration refers to in its root meaning – co-labour, working together, not just side by side. Sustained fruitful collaboration on matters that call for thinking is perhaps the purest expression of organizational intelligence.”

Recognize the complexity of “knowledge flow”

Perkins uses a weather metaphor to illustrate the intricacy of knowledge work. Knowledge weather, he says, is made up of “knowledge flows.” To give us a better sense of how “small-scale conversations” of individuals in organizations can yield “large-scale effects” he identifies five features of the flow of knowledge in communities and organizations.

1. **Generating knowledge** through investigation, experimentation and bringing in knowledge and/or people who have it.
2. **Communicating knowledge** by working together; e.g., in pairs and teams, mentoring and coaching, formal learning, print resource materials, and various media.
3. **Integrating knowledge** from diverse sources in a particular decision, solution, plan or vision.
4. **Acting on knowledge** by carrying out a plan, realizing a vision and executing a decision.
5. **Taking into account explicit and tacit knowledge** and their influence on generating, communicating, integrating, and acting on knowledge.

Become “knowledge influencers”

Education leader Steven Reid (2013a, 2013b) examined how leaders of high performing districts in Ontario influence knowledge creation and mobilization. His findings shed light on ways that education leaders as “knowledge influencers” enable and promote the exchange of tacit and explicit knowledge thereby building

“For the mobilization of knowledge to occur, staff from all levels of the system participate in collaborative inquiry processes. Central to this model involves knowledge influencers in promoting relationships and the difficult task of challenging individual and collective filters.”

~ Steven Reid, 2013a

the habit of knowledge integration in school and district contexts. Some examples are:

- “Inquiry” that includes analyzing data, reflecting on instructional and leadership practices, developing next steps, and monitoring the progress of students, schools, and districts;
- “Learning beyond the regular working environment of school and district boundaries” to enable knowledge “influencers” – those who are in formal and informal leadership roles in a school – to apply their off-site learning and improve teaching and learning;
- “Collaboration and knowledge sharing” that is intentionally planned and expected to foster positive and productive exchanges of information and development of trusting relationships;
- “Intentional focus” on specific areas of improvement that translates into preserving the energies and internal resources of staff by delving deeply into a few selected areas and “choosing to fail” in others.

Build high-performing teams to support knowledge work

Ideal team players typically:

- Circulate actively,
- Engage others in short, high-energy conversations,
- Are democratic with their time, communicating with everyone equally and ensuring everyone can contribute,
- Are not necessarily extroverts but feel comfortable approaching others,
- Listen as much as or more than they talk and model “energized but engaged listening,”
- Connect their teammates with one another and spread ideas around, and
- Are appropriately exploratory, seeking ideas outside the group but not at the expense of group engagement.

~ Alex Pentland, 2012, 2014

Researchers are providing us with new insights about the characteristics of high-performing teams that we can put to practical use as leaders. Computer scientist Alex Pentland (2012) has demystified the chemistry of high-performing groups. In his research he used social physics to show how the flow of ideas between people through “social learning” ends up shaping all we do in organizations and in society as a whole.

This idea flow is noteworthy because the spread and combination of new ideas – knowledge work – is what propels change and improvement.

Pentland found that patterns of communication are the most important predictors of a team's success. He identifies three key elements of communication which he argues are more important than all other factors combined including individual intelligence, personality, skills and the type of task being undertaken:

1. “Energy” measured by number and nature of team member exchanges;
2. “Engagement” reflected in distribution of energy among team members;
3. “Exploration” reflected in communication that members engage in outside their team.

C-6. Question to Open Minds

"I've become convinced that questioning is more important today than it was yesterday – and will be even more important tomorrow – in helping us figure out what matters, where opportunity lies, and how to get there. We're all hungry for answers. But first, we need to learn to ask the right questions."

~ Warren Berger, 2014a

Warren Berger, author of *A More Beautiful Question*, describes himself as a “questionologist.” In his multi-year study into the value of inquiry, Berger consulted some of the world’s leading innovators, decision-makers, neurologists, linguists and even comedians who are known to be “masters of the art of asking questions.” He tells us that in centres of innovation such as Silicon Valley, there is a saying these days that, “questions are the new answers.” Berger points out that evidence about the importance of questioning abounds and dates back to the time of Socrates.

In present times, we can look to the example of innovation leaders at Apple and Google who make their mark by “questioning everything.” And although research shows that questioning is a skill we have as children but neglect as we mature, he argues that we can reawaken our inquiry stance by learning some basic approaches to formulating insightful and impactful questions. This has motivated Berger and other advocates of good questioning to help us develop and improve our questioning through evidence-informed strategies for doing so.

Ask essential questions

While there is no questioning formula that we should all follow, there is much to be learned from experts whose questions have been found to be effective in their contexts.

Use Berger’s three-part “why-what if-how” model

Although Berger (2016) agrees that there is no single pathway to follow in any inquiry, he noted a common theme among master questioners he studied: “Ambitious, catalytic questioning tends to follow a logical progression, one that often starts with stepping back and seeing things differently and ends with taking action on a particular question.”

- Begin with “why?” when confronted with a less than ideal situation.
- “What if?” stirs the imagination and can result in new possibilities.
- “How?” focuses on implementing the chosen solution.

“A beautiful question is an ambitious yet actionable question that can begin to shift the way we perceive or think about something – and that might serve as a catalyst to bring about change.”

~ Warren Berger, 2014a

"I would urge you to resist the temptation to have answers at the ready and to spend more time thinking about the right questions to ask. The simple truth is that an answer can only be as good as the question asked."

~ Jim Ryan, speaking at the 2016 graduation ceremony of the Harvard Graduate School of Education

"The best teachers all have at least one thing in common: they ask great questions. They ask questions that force students to move beyond simple answers that test their reasoning, that spark curiosity, and that generate new insights. They ask questions that inspire students to think, and to think deeply."

~ Jim Ryan, 2017

"A culture of inquiry starts at the top."

~ Warren Berger, 2014b

Appreciative Inquiry (AI) is both a philosophy and an approach for motivating change through a questioning process that focuses on exploring and amplifying individual and organizational strengths.

Learn more about AI in [In Conversation: Healthy Relationships: The Foundation of a Positive School Climate – An interview with Megan Tschannen-Moran](#) and in [Ideas into Action, Exploring the "Social" Personal Leadership Resources](#).

To these questions Berger adds the "How might we?" (HMW) question which he credits to innovator Min Basadur (1995). Basadur explains that most people start out asking, "How can we do this" or, "How should we do that?" By substituting the word "might" for "can" and "should" Basadur says we are able to defer judgement and open up more possibilities.

Make a coaching difference with seven good questions

Coaching expert Michael Bungay Stanier (2016) worked with thousands of leaders to help them build their coaching habit. At the heart of building this "coaching habit" are the following seven questions that he argues can radically improve our "leader as coach" stance:

1. **"What's on your mind?"** is the "kickstart" question that gets to the heart of the matter quickly.
2. **"And what else?"** is the "AWE" question that Stanier believes is the "best coaching question in the world ... because someone's first answer is rarely the best answer."
3. **"What's the real challenge here for you?"** is the "focus" question.
4. **"What do you want?"** is the "foundation" question that is often the hardest to answer but has potential for building shared understandings and strengthening relationships.
5. **"How can I help?"** compels the person to make a clear request and prevents us from imposing what we think people want us to do.
6. **"If you're saying yes to this, what are you saying no to?"** is a "strategic" question that forces us to focus and avoid taking on more than we can deliver.
7. **"What was most useful for you?"** is the "learning" question that helps finish the conversation strong and can provide useful feedback.

Build a questioning culture

Sometimes, the culture of our own organization can be the biggest barrier to effective questioning. In a hierarchical organization, questioning is often perceived as "challenging authority." Asking staff "why we're doing things this way" may also be seen as a threat to professionalism and experience, rather than healthy inquiry. The following are some ways Berger (2014b) says can help to create a questioning culture:

- Set an example as leaders.
- Reward questioning.
- Allow time and space for deep questioning.
- Give people the tools they need to become good questioners.
- Practice.

Ask questions to stimulate dialogue about culturally responsive and relevant teaching and leading

As Berger points out, questioning is a “skill and a way of thinking.” To sharpen this skill he suggests using question formulation exercises. For example, instead of searching for solutions focus on questions. This approach is evident in sample questions provided in the *Culturally Responsive Pedagogy: Towards Equity and Inclusivity in Ontario Schools* monograph; for example:

- What questions might we reflect upon to examine our own biases towards diversity and cultural responsiveness?
- How would we start a staff discussion about moving towards cultural responsiveness in a more intentional way?
- What will our school conversation focus on?

The [Right Question Institute \(RQI\)](#) provides exercises that build skill in question formulation and at the same time strengthen thinking and problem-solving.

“Storytelling is a key leadership tool because it’s quick, powerful, free, natural, refreshing, energizing, collaborative, persuasive, holistic, entertaining, moving, memorable and authentic. Stories help us make sense of organizations.”

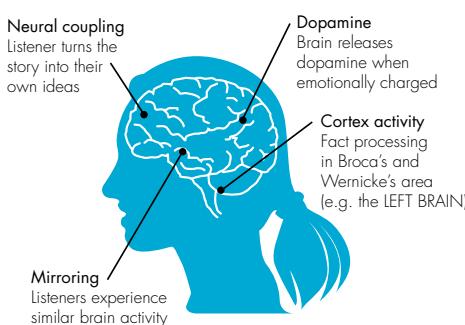
~ Stephen Denning, 2011

“After nourishment, shelter, and companionship, stories are the thing we need most in the world.”

~ Philip Pullman, 2013

Leadership is essentially about influence and inevitably involves engaging, inspiring and motivating people – whether toward a relatively simple goal or a bold vision of the future or to think differently about a problem to solve or a decision to make. As author and executive coach Harrison Monarth (2014) points out, storytelling is a “technology” that is many thousands of years old and remains one of the most effective ways to do just that. He explains that “a story can go where quantitative analysis is denied admission: our hearts. Data can persuade people, but it doesn’t inspire them to act; to do that, you need to wrap your vision in a story that fires the imagination and stirs the soul.”

Stories not only move our hearts but also engage our heads. And now, neuroscience is proving that storytelling is a powerful leadership asset. Paul Zak’s (2014) research shows that stories alter brain chemistry in a way that a collection of facts simply can’t. As he puts it, a character-driven story with emotional content, “blows the standard PowerPoint presentation to bits.” And while we all know intuitively that we can be moved by a powerful speaker, a movie or a suspense novel, Zak and other cognitive scientists (Oatley, 2008, 2016) have been drilling down to exactly how and why this happens.



Here are some of the findings:

- Our brains produce the stress hormone cortisol during tense moments in a story which allows us to focus.
- Character-driven stories cause the brain to produce the neurochemical which makes us feel empathy and be more generous, trustworthy and compassionate.
- A “happy ending” triggers the limbic system to release dopamine which makes us feel more hopeful and optimistic.

Tell a good story

Zak tells us that there are two key aspects to an effective story. First, it must capture and hold our attention and second, it has to “transport” us into the character’s world. He points out that people are much more motivated by their organization’s “transcendent purpose” such as changing lives than its “transactional purpose” such as delivering services. In presenting a story, we need to explicitly tell people why they should care about what we are proposing, how it will change lives, and how they will feel when the work is complete.

Structure the story

Beyond these general principles, it is the structure of the story that matters most. In fact, the same principles that Shakespeare used to structure his plays are evident in any commercial movie release today or, on a very small scale, in any persuasive 30-second commercial.

Zak’s (2013) research confirms the view of some narrative theorists that there is a universal story structure called the “dramatic arc.”

In this view the structure resembles this:

- It starts with something new and surprising.
- Tension builds with problems that the characters must overcome, often because of some past failure or crisis.
- This leads to a critical point when the characters must look deep inside themselves to overcome the looming crisis.
- Once this transformation occurs, the story resolves itself.

Use fiction to inspire storytelling

Keith Oatley (2008, 2016), University of Toronto cognitive psychologist, tells us that engaging with stories, literary fiction in particular, can improve empathy and “theory-of-mind.” Theory-of-mind he says amounts to imagining what other people are thinking and feeling.

“All stories teach, whether the storyteller intends them or not. They teach the world we create. They teach the morality we live by. They teach it much more effectively than moral precepts and instructions.”

~ Philip Pullman – cited in *Dark Matter* (Watkins, 2004)

“...fiction tells us what can happen, which can stretch our moral imaginations and give us insights into ourselves and other people.”

~ Keith Oatley, 2008, 2016

As he explains, “when we read about other people, we can imagine ourselves in their position and we can imagine being that person.” This, he says “enables us to better understand people and to get along better with them.” It opens us to different worlds helping us see situations from different perspectives. In short, he argues that “books are life simulators. They allow us to see ourselves in someone else.”

Draw on the power of Indigenous life-experience stories

“Stories are very holistic. They can help us learn using the intellect; they help us identify emotions; they are spiritual; touching our inner being, who we are as individuals; and they help us reflect upon our actions.”

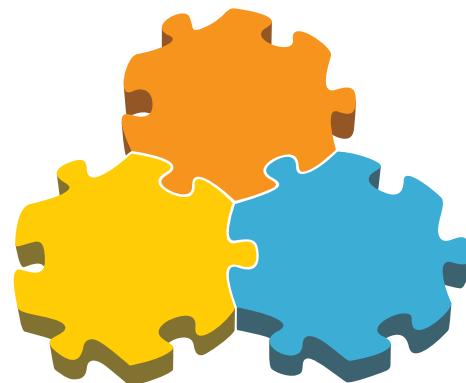
~ Jo-ann Archibald,
cited in Lougheed, 2016

First Nations, Inuit and Métis cultures have long passed on knowledge from generation to generation through oral traditions, including storytelling. Teacher educator Jo-ann Archibald, known as Q’um Q’um Xiiem, from the Stó:lō Nation in British Columbia is one of the founding researchers of Indigenous “storywork.”

She identifies seven principles for using First Nations stories and storytelling which together promote wholeness and systems thinking: respect, responsibility, reciprocity, reverence, holism, interrelatedness, and synergy.

Indigenous storytelling is rich with lessons and insights about how it can be used to build and share knowledge. Its model includes expert use of the voice, vocal and body expression, intonation, the use of verbal imagery, facial animation, context, plot and character development, natural pacing of the telling, and careful authentic recall of the story.

As Archibald tells us, “patience and trust are essential for preparing to listen to stories.” For her, listening is not only about using the auditory sense but also involves visualizing the characters and their actions and letting the emotions surface. As she points out, “Some say we should listen with three ears: two on our head and one in our heart (Archibald, 1997).”



C-8. Grow Expertise

“Engaging in continuous and persistent learning isn’t merely a decision, it must become a habit.”

~ John Coleman, 2017

Having true expertise has particular bearing on the knowledge we need to have about teaching, learning and leading and also to the know-how required to enact effective leadership. As advocates of lifelong learning suggest, “ongoing skill acquisition is critical to persistent professional relevance (Coleman, 2017).”

“What is expertise?” is a question best answered by Anders Ericsson who is reputed to be “the world’s expert on what it means to be an expert (Duckworth, 2016).” For him, real expertise must pass three tests:

1. It must lead to performance that is consistently superior to that of the expert’s peers.
2. It produces concrete results.
3. It can be replicated and measured.

The question about whether we can grow our expertise is often posed as a “nature versus nurture” issue and is one that has long been the centre of debate. The good news is that, consistently and compellingly, there is consensus among researchers that experts are always made and not born. We also know that there are no shortcuts to achieving genuine expertise. What then are some ways we can grow our expertise on our own and with others?

Practice deliberately

Malcolm Gladwell (2008) made popular Ericsson’s “10,000-hour” rule – the maxim that it takes 10,000 hours of practice to become an expert in a field. In fact this is misleading. As Ericsson and others clarify, “Not all practice makes perfect.” Instead it’s “deliberate” practice that matters.

Understand deliberate practice

For Ericsson et al (2007) deliberate practice must:

- focus intentionally and continuously on improving a narrow aspect of performance;
- involve improving one’s current skill set and/or extending its reach and range;
- develop skills that other people have and have methods available to develop them;
- involve well-defined goals that require constantly trying things just beyond current capacities;

“By three methods we may learn wisdom: First, by reflection, which is the noblest; Second, by imitation, which is easiest, and Third by experience, which is the bitterest.”

~ Confucius

“Building and developing knowledge is one of the things that deliberate practice accomplishes.”

~ Geoff Colvin, 2008

- involve feedback and modification of efforts in response to that feedback; and
- produce and depend on effective “mental representations” or mental models which make it possible to monitor progress both in practice and in performance.

Apply the principles of deliberate practice to leadership practice

Although research shows that deliberate practice that results in expert performance applies only to fields which are “established” such as sports in which athletes are scored, Ericsson et al (2007) tell us that the principles of deliberate practice are useful as a guide to developing effective leadership practice; for example:

- Recognize that we can all take a scientific approach to developing and growing our expertise.
- Reserve only a few hours a day, typically in the morning, for demanding mental activities.
- Identify expert leaders and ask them to share their know-how.
- Observe these experts in action. Reflect on their actions and try to account for their effects. Then ask for time to talk and check your observations against their intentions. Try to “teach back” to them what you observed by explaining what you saw.
- Find out what learning supports they used to help them get to superior performance.
- Seek out feedback from coaches and mentors who are skilled in giving constructive and honest feedback. Know when the feedback is right for you. Rely on your “inner coach.”

After feedback, then what? Psychologist Angela Duckworth (2016) puts it this way: “experts do it all over again, and again, and again. Until what was a struggle before is now fluent and flawless. Until conscious incompetence becomes conscious competence.”

Become a better learner

Deliberate practice involves learning. Ulrich Boser (2017) who delves into the neuroscience of learning, tells us that “there is simply no such thing as effortless learning ... to develop a skill, we’re going to be uncomfortable, strained, often feeling a little embattled.”

“Talk to yourself” ... out loud

Boser tells us to “forget the impression we leave others when we talk out loud to ourselves.” Recognize its value in helping us slow down, be more deliberate, and think about our thinking.

“A good teacher can give you valuable feedback you couldn’t get any other way. Effective feedback is about more than whether you did something right or wrong. Good math teachers, for instance, will look at more than the answer to a problem; they will look at exactly how the student got the answer as a way of understanding the mental representations the student was using. If needed, they will offer advice on how to think more effectively about the problem.”

~ Ericsson and Pool, 2016

Self-talk can influence behavior and cognition in two ways:

- Instructional: self-talk helps us stay focused on a multi-step task.
- Motivational: self-talk says, “I can do this.”

~ Kristin Wong, 2017

Ask yourself questions

Ask explanatory questions like, “What does this mean?” and “Why does it matter?” When we’re engaged in a conversation with ourselves, we typically ask ourselves questions along the lines of: “How will I know what I know?” “What do I find confusing?” and “Do I really know this?”

Summarize

Endless opportunities to summarize are available to us. For example, the next time anyone gives a set of instructions Boser suggests that we take the time to verbally repeat them. In this way we will be far more likely to remember the information.

Use the “Feynman technique”

Nobel-prize winning physicist Richard Feynman was revered for his ability to clearly illustrate complex concepts like quantum physics to anyone. He famously challenged others to explain any idea or word or concept by rephrasing it without using the idea, word or concept in their explanation. Out of this grew his formula for learning known as the Feynman technique:

1. **Teach it.** Choose the concept and write out what you know about it as though you were teaching it to someone else.
2. **Review.** For gaps in knowledge go back to the source material and re-learn it.
3. **Organize and simplify.** Review notes and write a simple story. Read it aloud to see if it needs more work.
4. **Transmit.** Run it past someone – ideally one who knows little about the concept or subject.

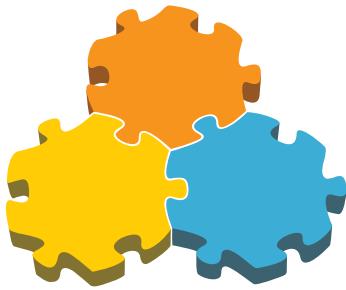
Grow grit

In *Grit: The Power of Passion and Perseverance*, psychologist Angela Duckworth (2016) says grit is the tendency to pursue long-term goals with passion and persistence. A good place to start, she says, is to understand where you are today. If you are not as gritty as you want to be, ask yourself why. To get your grit score, take the “grit test” at: <http://angeladuckworth.com/grit-scale/>. The following are examples of statements that the grit test asks us to rate on a five-point scale, from “not like me at all” to “very much like me.”

- Setbacks don’t discourage me. I don’t give up easily.
- I often set a goal but later choose to pursue a different one.
- I finish whatever I begin.

Grit is about “working on something that you care about so much that you’re willing to stay loyal to it...it’s doing what you love, but not just falling in love, staying in love.”

~ Angela Duckworth, 2016



Duckworth tells us that we can learn from the four psychological assets that “mature paragons of grit” share:

1. **Interest comes first.** Passion begins with inherently loving and appreciating what we do.
2. **Practice comes next.** One form of persistence is the daily discipline of trying to do things better than we did yesterday.
3. **Purpose is third.** What develops passion is our belief that our work matters.
4. **Hope comes fourth** but “does not define the last stage of grit ... it defines every stage.”

Duckworth is emphatic that the four psychological assets – interest, practice, purpose and hope – are not “you have it or you don’t.”

Instead, she contends that we can “learn to discover, develop, and deepen our interests. We can acquire the habit of discipline. We can cultivate our sense of purpose and meaning. We can teach ourselves to hope. We can grow grit from the inside out.”

C-9. Apply Systems Thinking

“Systems thinking is a mindset – a way of seeing and talking about reality that recognizes the interrelatedness of things.”

~ Vassallo, 2016

As we learned earlier in this paper, the discipline of systems thinking provides a different way of looking at problems and goals as components of larger, less visible structures that affect each other rather than as isolated events. To understand a system is to understand those interrelationships and how they recur and change over time (Senge et al, 2012).

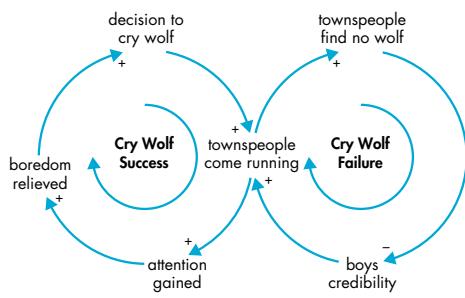
Fullan (2005) argues that the best way to develop leaders who are “practical system thinkers” is through deliberate and focused learning in context around significant problems, led by system thinkers in action who model and mentor.

In addition there is growing intelligence about systems thinking that can help us build and strengthen it. Systems thinking as a discipline has been enriched by a set of tools over the past 50 years. Using the tools of systems thinking in our contexts can help us to grow a systems thinking mindset.

Consider the following suggested approaches to support becoming systems thinkers in action.

Become familiar with the language of systems thinking

Systems thinking is powerful as a language that can enhance and change the conventional ways we think and talk about complex issues and problems. The tools of systems thinking allow us to talk about interrelationships more easily than the linear language of “A causes B.” In systems thinking we would talk about a scenario where, “A causes B while B causes A, and both continually interrelate with C and D.” The following provides a glimpse into the language of systems thinking:



- Causal loop diagrams (CLD) capture how variables in a system are interrelated. In systems thinking every picture tells a story that depicts cause-and- effect linkages.
- Archetypes use CLDs to show generic stories in systems thinking. These are common patterns that recur in different settings that can be used to quickly reach a potential solution for a systemic problem. The following are two examples:
 - Fixes that Fail: a fix is applied to a problem and has immediate positive results. However, the fix also has unforeseen long-term consequences that eventually worsen the problem.
 - Drifting Goals: A gradual downward slide in performance goals goes unnoticed threatening the long-term future of the system or organization.

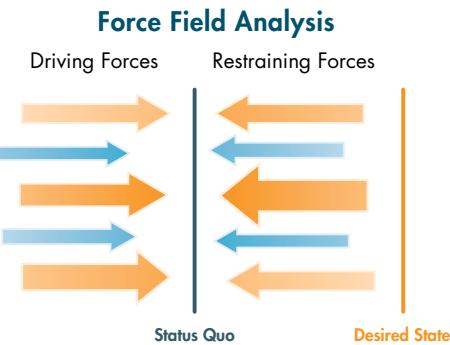
Senge et al (2012) tell us that we will know we can “speak” the systems language skillfully “when it becomes second nature, when we find ourselves thinking in it, when we don’t have to translate a causal circle or an archetype into English to figure it out.”

The [Systems Thinker](#) website provides a complete systems thinking “toolbox” of pocket guides, how-to-guides, articles and case studies. To deepen understandings of how to use these tools by working with others and engaging in a wide-ranging set of exercises that apply systems thinking tools refer to *The Fifth Discipline Fieldbook* (Senge et al, 1994) and *Schools that Learn* (Senge et al, 2012)

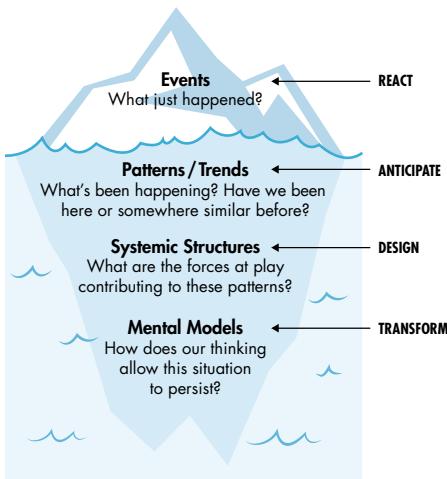
Practice systems thinking

It is wise to avoid treating systems thinking as something that we do on our own. This is because our individual perspectives are probably incomplete. Instead, Senge et al (2012) suggest getting a group of committed people together to talk about a common situation and use the following basic protocol:

- **Identify the problem.** Start by stating “the problem is ...” right now, as you see it. It should be important to you and your organization, something you really care about and want to understand. Avoid including a suggestion of the solution in your problem statement.
- **Tell the story.** At the heart of systems storytelling is one question, “How did we, through our internal thinking, our processes, our practices and our procedures contribute to or create the circumstances, good and bad, that we face now?”



Force field analysis is useful for making decisions by analyzing the forces for and against a change, and for communicating the reasoning behind a decision.



- **Consider the issue through various system tools.** For example, use the force field analysis protocol and map the forces at play (Lewin, 1951).
- **Pay attention to your own role in the problem.** Ask yourself what actions you are taking that may have contributed to the situation and are making it difficult for the situation to improve.
- **Try to identify leverage points.** Locate places where relatively small actions can produce large results.
- **Experiment on a small scale.** Talk about these experiments and the results with colleagues and other partners.

Your group's efforts can become a natural part of the system, a form of feedback for the system as a whole, and a catalyst for system improvement.

Use the “Iceberg Model”

The “iceberg” is a systems thinking protocol that can help a group think through the complexities of their problem. An iceberg has only 10 per cent of its total mass above the water and 90 per cent is underwater. That 90 per cent is what the ocean currents act on and what creates the iceberg’s behavior at its tip.

The “iceberg” protocol focuses a group’s attention on understanding the problem. Though this exercise often helps people eventually come up with solutions to problems they have identified, it is better to think of it as a way to understand the problem. It can help us move from dealing with isolated events to seeing the interconnectedness of multiple events.

Senge et al (2012) suggest four steps to follow for any major problem. At the beginning of each step lead with inquiry. Ask people to start by asking questions and avoid offering interpretations. This will result in a deeper understanding about how different people view the problem and its patterns.

- **Step One – Events.** Name a critical event or issue that has emerged in your context. Reflect on the event, why it’s a problem, and what’s been done about it to date.
- **Step Two – Patterns and Trends in Step One.** What’s been happening? Chart the course of events over time in a graph to note patterns.
- **Step Three – Systemic Structures.** What forces seem to create the pattern of behaviour described in Step Two? How do these systemic elements seem to influence each other? What fundamental aspects must be changed if you want to change the patterns? Illustrate these patterns in a causal loop diagram.

Mental Models are:

- The images, assumptions and stories which we carry in our minds of ourselves, other people, institutions, and every aspect of the world;
- Usually tacit, existing below the level of awareness;
- Untested and unexamined;
- Generally invisible to us, until we look for them.

~ Peter Senge et al, 2012

- **Step Four – Mental Models.** Consider the problem from the perspective of attitudes and beliefs, some of which have been unchallenged because they are unseen. Can you safely bring them to the surface and inquire about them?

C-10. Adopt good “self-care” habits

“Simply, the way to improve your health, perform better, and unleash your potential lies in the magical combination of four elements: We need to sleep soundly. We need to move more. We need to eat smarter. We need to think clearly.”

~ Greg Wells, 2017

Toronto physiologist Greg Wells, author of *The Ripple Effect*, is among the growing number of experts from neuroscientists and executive coaches to entrepreneurs and sleep experts whose research provides us with insights about brain-enhancing approaches we can use to take good care of our brains. While we all know about the importance of healthy eating and exercise and rest for the body, we are now paying closer attention to the mind-body connection.

To show the way, we can look to successful leaders who are known to follow specific practices designed to maintain and build their “cognitive fitness.” For example, author and writer Arianna Huffington (2016), after collapsing from exhaustion due to her demanding schedule, is now a practitioner and advocate of establishing a rigorous sleep ritual. She is among many leaders who are showing us that our brain is an asset we need to look after and protect.

Tame multitasking

Canadian neuroscientist Daniel Levitin (2014a), is among the most persistent authorities who make the case for genuine “downtime” as key to getting the most out of our brains. In Levitin’s view, multitasking doesn’t exist. What he means by this is that we are not actually doing four or five things at once. Instead, as research confirms, “the brain is shifting rapidly from one thing to another.” Our brain, he says, starts to produce cortisol – the stress hormone – which can overstimulate the brain and cause “mental fog or scrambled thinking.” To make matters worse, the very brain region we need to rely on for staying on task is easily distracted.

There are also metabolic costs, he says. “The kind of rapid, continual shifting we do with multitasking causes the brain to burn through fuel so quickly that we feel exhausted and disoriented after even a short

“The history of science and culture is filled with stories of how many of the greatest scientific and artistic discoveries occurred while the creator was not thinking about what he was working on ... or not consciously anyway. The daydreaming mode solved the problem for him, and the answer appeared suddenly as a stroke of insight ...”

~ Daniel Levitin, 2014a

time. We've literally depleted the nutrients in our brains. This leads to compromises in both cognitive and physical performance."

So what's the solution? Here are some tips he offers:

- Divide days into project periods; e.g., do social networking at designated times, not as constant interruptions. Do the same with email.
- Immerse yourself in important, single tasks for sustained periods.
- Make a habit of noticing when you are distracted and then work on changing the behaviour.
- Consciously decide what work to complete now, without multitasking, and then do it.
- Practice. Start with ten minutes at a time and stay on task. Then, work on incrementally increasing the amount of time focused on the task. The goal is to be able to stay on task for between 25 and 90 minutes, depending on personal focus thresholds and your type of work.

Hit the reset button

The following are a number of evidence-informed ways that can serve as a "neural reset button" (Levitin, 2014b).

Daydream

The daydreaming mode is a natural state of the mind known as the "default mode" (Raichle et al, 2001) when our brains are not engaged. It is a state in which we rest our brains (Levitin, 2014a). There is scientific evidence that shows how daydreaming leads to creativity and teaches us the agency we need to change our worlds and shape it to our liking.

Read

According to John Coleman (2012), "deep, broad reading habits are often a defining characteristic of our greatest leaders and can catalyze insight, innovation, empathy and personal effectiveness." What's more reading is known to be one of the best ways to relax. Even six minutes can be enough to reduce stress levels by more than two-thirds, slowing heartbeat, easing tension and altering the state of mind (Lewis, 2009).

Procrastinate

Wharton professor and author of *The Originals*, Adam Grant (2016) has proven to himself that "the right kind" of procrastination has helped him learn that in every creative project, there are times for "thinking more laterally, and yes, more slowly." He adds that we can

"Reading was proven to be:

- 68% better at reducing stress levels than listening to music;
- 100% more effective than drinking a cup of tea;
- 300% better than going for a walk."

~ David Lewis, 2009

The Healthy Mind Platter for Optimal Brain Matter

- **Focus Time:** Goal-oriented tasks and challenges
- **Play Time:** Spontaneously enjoying novel experiences
- **Connecting Time:** The healing power of relationships
- **Physical Time:** Moving aerobically
- **Time In:** Reflection and mindfulness
- **Down Time:** Relaxing, daydreaming and mind wandering
- **Sleep Time:** Refreshing the mind and body and consolidating memory

~ Adapted from David Rock & Daniel Siegel, 2011

"Learn more about mindfulness and ways to strengthen it in [Ideas Into Action – Exploring the "Social" Leadership Resources: Perceiving Emotions, Managing Emotions & Acting in Emotionally Appropriate Ways.](#)

- Rapid eye movement (REM) sleep is an active period of sleep marked by intense brain activity.
- Non rapid eye movement (NREM) sleep is characterized by reduction in physiological activity.

~ Sleep-Wake Cycle National Sleep Foundation, 2006

avoid "destructive procrastination" by carving out small windows of time to focus on a task, making a pre-commitment, and lowering our standards for what counts as progress.

Play ... hard

Another one of the most effective ways to promote our cognitive health is to play. Roderick Gilkey and Clint Kilts (2007) recommend that we "work hard at play" explaining that play engages the prefrontal cortex, responsible for our highest-level cognitive functions, including self-knowledge, memory, mental imagery, and incentive and reward processing. To get the most out of play, they advise us to participate in activities involving risk which alerts the brain and activates our reason and imagination capacities.

Practice mindfulness

Research shows that mindfulness exercises help improve our attention and our focus. One exercise Maria Konnikova (2013) recommends takes 10 to 15 minutes a day designated as a time for doing nothing. It's simple, she says. Sit in your chair at work, close your eyes for ten minutes, and focus on your breath ... and that's it.

Sleep

According to sleep experts Nick van Dam and Els van der Helm (2016a), sleep is one of the most overlooked commodities of good health and well-being. They point out that among other forms of mental relaxation as well as healthy eating and exercise, sleep emerges as an area of one's wellness and well-being that requires "specific and urgent attention."

Recognize the leadership benefits of getting enough sleep

According to van Dam and van der Helm (2016b) there is a proven link between effective leadership and getting enough sleep. To understand the impact sleep has on effective leadership they show its effects on four key leadership practices:

1. **Operate with a strong orientation to results by focusing and avoiding distractions.** To do this well, we need to focus and avoid distractions, and at the same time keep the bigger picture in view. Sleep deprivation impairs this ability to focus attention selectively; e.g., after 17 to 19 hours of wakefulness individual performance is equivalent to a person with a blood-alcohol level at the legal drinking limit.
2. **Solve problems effectively:** Sleep is beneficial for a host of cognitive functions including problem-solving and decision-making.

Sleep research shows:

- adults of every age need, on average, a range of 7 to 9 hours of sleep each night
- teenagers need about 9.5 hours
- infants generally require around 16 hours per day.

Just as important as the quantity of sleep is getting the right mix of REM and NREM sleep, as well as shallow and deep sleep. In normal sleep, REM and NREM sleep alternate throughout the night according to a predictable pattern referred to as the "sleep architecture."

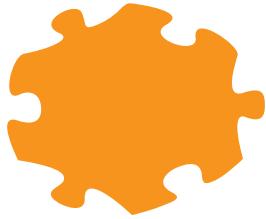
~ Sleep-Wake Cycle, National Sleep Foundation, 2006

3. **Seek different perspectives:** Sleep has an impact on all three stages of the learning process – before learning to encode new information, after learning in the consolidation stage, and before remembering to retrieve information from memory. An important consideration for leaders seeking different perspectives is the ability to weigh the relative significance of different inputs accurately, to avoid tunnel vision, and to reduce cognitive bias.
4. **Support others:** In a sleep-deprived state, our brain is more likely to misinterpret cues that help us understand others – facial expression and tone of voice – and to overreact to emotional events.

Try these sleep tips at home

The improved understanding of the biology of sleep and its importance in maintaining mood, memory and cognitive functioning have brought to the forefront proven tips for improving our sleep habits. The following is a selection of research-informed sleep tips (Van Dam & van der Helm, 2016b; Levitin, 2016b):

- Create an optimal sleep environment; e.g., remove your smart phone from the bedroom, avoid using the bedroom for work, transform your bedroom into a peaceful place, keep it cool to allow core body temperature to drop.
- Wind down by establishing routines that promote relaxation in the hours before bedtime.
- Avoid setting multiple alarms to allow a consolidated sleep without interruptions. The waking-state brain differs from the sleeping state. The brain prefers to wake up naturally.
- Go to bed at the same time every night. Wake up at the same time every morning. If you have to stay up late one night, still get up at your fixed time in the morning.



Part D – Learning More: Publications Recommended by Ontario Leaders

- *A More Beautiful Question: The Power of Inquiry to Spark Breakthrough Ideas* by innovation expert Warren Berger (2014) shows how questioning can help us identify and solve problems.
- *Coherence: The Right Drivers in Action for Schools, Districts, and Systems* by Michael Fullan and Joanne Quinn (2016) illustrates systems thinking in action through its coherence framework: focusing direction, cultivating collaborative cultures, deepening learning and securing accountability.
- *Creating Great Choices: A Leader’s Guide to Integrative Thinking* by Jennifer Riel and Roger Martin (2017) illustrates what integrative thinking is, how it works, and how to do it.
- *Decisive: How to Make Better Choices in Life and Work* by brothers Chip Heath and Dan Heath (2013) introduces a four-step process for decision-making that offsets biases.
- *Deep Diversity: Overcoming Us vs. Them* by Shakil Choudhury (2015) gives us a simple step-by-step approach to address critical race issues by understanding each of us is part of the problem and part of the solution.
- *Grit: The Power of Passion and Perseverance* by Angela Duckworth (2016) shows that the secret to growing expertise that results in outstanding achievement is not talent but a special blend of passion and perseverance that Duckworth calls “grit.”
- *How School Leaders Contribute to Student Success: The Four Paths Framework* edited by Ken Leithwood, Jingping Sun, and Katina Pollock (2017) describes a coherent framework for improving schools and student learning and offers many different expert perspectives.
- *How to Have a Good Day: Harness the Power of Behavioral Science to Transform Your Working Life* by economist Caroline Webb (2016) blends psychology and neuroscience to provide science-based “shortcuts” that can help us have a good day at work every day.
- *Indigenous Storywork: Educating the Heart, Mind, Body, and Spirit* by Jo-Ann Archibald (2008) brings storytelling into educational contexts by drawing on the traditional and life-experience stories of Coast Salish Elders and storytellers.

- *Mastermind: How to Think Like Sherlock Holmes* by Maria Konnikova (2013), draws on 21st Century neuroscience and psychology to apply the methodology of Sherlock Holmes in response to the question, “How can we train our brains to think like Sherlock Holmes?”
- *The Organized Mind: Thinking Straight in the Age of Information Overload* by Daniel Levitin (2014b) shows how our brains organize the barrage of input we get all day long and offers tips on how to improve our thinking and decision-making personally and professionally.
- *Peak: How to Master Almost Anything* by Anders Ericsson and Robert Pool (2016) reduces expertise to a discrete series of attainable practices and offers invaluable advice on setting goals, getting feedback, identifying patterns, and motivating ourselves.
- *Talent is Overrated: What Really Separates World-Class Performers from Everybody Else* by Geoff Colvin (2008) explains why talent matters less than hard work and describes what deliberate practice is and how to apply its lessons.
- *The Intelligent, Responsive Leader* by Steven Katz, Lisa Ain Dack, and John Malloy (2017) explains the power of “purposeful practice” and show us how to turn adaptive challenges into leadership inquiries for growth and thereby strengthen our Personal Leadership Resources.
- *The Ripple Effect: Sleep Better, Eat Better, Move Better, Think Better* by Greg Wells (2017) offers concrete strategies for healthy living and working through eating better, moving better, sleeping better.
- *Thinking, Fast and Slow* by Daniel Kahneman (2011) tells the story of two characters, “System 1” or fast thinking and “System 2” or slow thinking to represent our two different mental operations and show how the workings of our mind have an impact on problem-solving and decision-making.
- *Your Brain at Work: Strategies for Overcoming Distraction, Regaining Focus, and Working Smarter All Day Long* by David Rock (2009) applies cognitive science to show how we can improve how our brain works to sustain our focus and become better problem-solvers.

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