

Schools That Learn

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A Fifth Discipline Fieldbook
for Educators, Parents, and
Everyone Who Cares About
Education

Toronto Sydney Auckland



A Fifth Discipline Resource

INTRODUCING THE FIVE LEARNING DISCIPLINES

We see *Schools That Learn* as a kind of “prequel” to our other books about learning organizations. During the last few years, people in many companies have been called upon to act with greater autonomy, to draw their own conclusions, to lead as well as follow, to question difficult issues in a safe manner, and to risk failure so that they may build capabilities for future successes. These are the skills that learning organizations and learning communities demand. Schools that train people to obey authority and follow the rules unquestioningly will have poorly prepared their students for the evolving world they will live in.

The previous books in this series identified five key disciplines of organizational learning. These five disciplines are not “reforms” or “programs” imposed from the outside, but ongoing bodies of study and practice that people adopt as individuals and groups. As many teachers and administrators have noted, the learning disciplines offer genuine help for dealing with the dilemmas and pressures of education today:

- **Personal Mastery:** Personal mastery is the practice of articulating a coherent image of your personal vision—the results you most want to create in your life—alongside a realistic assessment of the current reality of your life today. This produces a kind of innate tension that, when cultivated, can expand your capacity to make better choices and to achieve more of the results that you have chosen.
- **Shared Vision:** This collective discipline establishes a focus on mutual purpose. People with a common purpose (e.g., the teachers, administrators, and staff in a school) can learn to nourish a sense of commitment in a group or organization by developing shared images of the future they seek to create and the principles and guiding practices by which they hope to get there. A school or community that hopes to live by learning needs a common shared vision process.
- **Mental Models:** This discipline of reflection and inquiry skills is focused around developing awareness of attitudes and perceptions—your own and those of others around you. Working with mental models can also help you more clearly and honestly define current reality. Since most mental models in education are often “undiscussable” and hidden from view, one of the critical acts for a learning school is to develop the capability to talk safely and productively about dangerous and discomfiting subjects.
- **Team Learning:** This is a discipline of group interaction. Through such techniques as dialogue and skillful discussion, small groups of people transform their collective thinking, learning to mobilize their

energies and actions to achieve common goals and drawing forth an intelligence and ability greater than the sum of individual members' talents. Team learning can be fostered inside classrooms, between parents and teachers, among members of the community, and in the "pilot groups" that pursue successful school change.

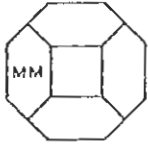
- **Systems Thinking:** In this discipline, people learn to better understand interdependency and change and thereby are able to deal more effectively with the forces that shape the consequences of their actions. Systems thinking is based on a growing body of theory about the behavior of feedback and complexity—the innate tendencies of a system that lead to growth or stability over time. Tools and techniques such as stock-and-flow diagrams, system archetypes and various types of learning labs and simulations help students gain a broader and deeper understanding of the subjects they study. Systems thinking is a powerful practice for finding the leverage needed to get the most constructive change.

}} For an overview of the five learning disciplines, see page 59.

Educators have told us that the learning disciplines sound great—"but what do we do Monday morning? How do we create a sense of systemic awareness or personal mastery within our staff? And is it worth even trying with students? How can we integrate these skills and practices with our existing curriculum and all the changes imposed on us? How do we discover exactly what type of learning classroom or school we wish to create? What do we do about the pressures coming from outside? How do we get started?"

Parents who are familiar with the learning disciplines have similar questions: "How do we build a better place for ourselves in the systems of our children's schools? How do we use these disciplines to deal with problems like homework or disputes with other children? How do we use them in working with our children's teachers? What kind of relationship can we build between the school and the workplace, or other places in the community?"

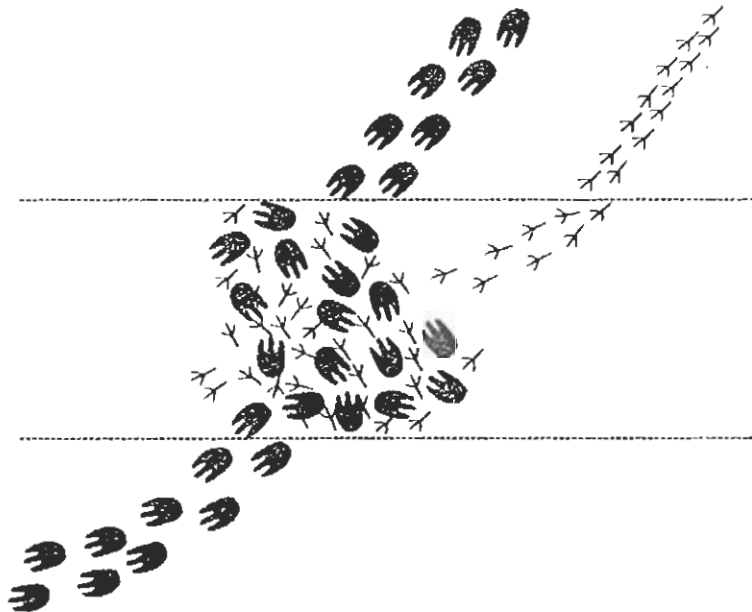
No one person has the answers to these questions. But effective ways of approaching the questions are emerging from the collective experience of people in a wide variety of public and private schools, colleges, and universities. In all, thousands of people—parents, teachers, administrators, experts, politicians, and students themselves—are evolving together into a worldwide community of organizational learners in education. We



2. Mental Models

BECOMING MORE AWARE OF THE SOURCES OF OUR THINKING

Imagine that the baseball field near school is being regraded one day (courtesy of a donation from a local construction company), and the workmen strike a patch of stone with fossil footprints embedded in it. They're dinosaur footprints. Excitedly, students gather around, to see a set of prints gradually uncovered—first the top third, then the middle, and then the bottom.



This diagram is adapted from an old exercise—so old and much-adapted that we can't find it to properly credit it. We'd be grateful for any information on the roots of this exercise; please email us through our Web site at <http://www.fieldbook.com> or write to us at the address on p. 593.

"What happened here?" asks one of the teachers. And all the children around the site immediately volunteer answers: The dinosaurs were fighting. No, they were friends, drinking from the same water hole. It was a courtship, with the male chasing the female . . . or the female chasing the male. A courtship? Hardly—clearly, one dinosaur ate the other. No, the smaller one flew away and survived ("See where it jumped off?"). No, it was literally swept off its feet by its larger dinosaur lover. Or perhaps a pterodactyl swooped down and carried it away . . . Or perhaps the whole juxtaposition was coincidence, and the footprints were left in the rock a few thousand years apart.

Try this exercise yourself, with a group of kids. You'll find no shortage

of widely varying interpretations, and many participants will be convinced that their interpretation **must be right**. Indeed, human beings, perhaps unlike dinosaurs, are **creatures of interpretation**. Our behavior and our attitudes are shaped by the images, assumptions, and stories that we carry in our minds of ourselves, other people, institutions, and every aspect of the world.

Because mental models are usually tacit, existing below the level of awareness, they are often untested and unexamined. They are generally invisible to us—until we look for them. Thus, reading this passage, you may have easily noticed your interpretations of the dinosaur tracks, but you may not have reacted to other assumptions implicit in this passage: that the school can't afford to pay for its landscaping, that landscaping workers will probably be male, that the students play baseball (instead of, say, cricket), and that only children, as opposed to adults, will want to guess at the meaning of the dinosaur footprints.

Differences between mental models explain why two people can observe the same event and describe it differently: They are paying attention to different details. **The core task of the discipline of mental models is bringing tacit assumptions and attitudes to the surface so people can explore and talk about their differences and misunderstandings with minimal defensiveness. This process is crucial for people who want to understand their world, or their school, more completely—because, like a pane of glass framing and subtly distorting our vision, our mental models determine what we see. In any new experience, most people are drawn to take in and remember only the information that reinforces their existing mental models.**

Mental models thus limit people's ability to change. A group of superintendents and school board members may tacitly believe that the only way to improve the schools is to invest more money; therefore, they don't recognize other possible approaches. A teacher may assume that students from the "wrong side of the tracks" don't care about school, so he subtly dismisses them out of hand. An administrator may assume that the local teachers' union will block all innovation, so she approaches the unions defensively, holding back as much information as possible—which in turn makes the union leaders more defensive. The leaders of a school reform effort may assume, without even being fully aware of it, that parents don't really know much about their children's needs. Therefore, they inadvertently alienate parent groups, without ever understanding why. A forty-five-year-old laborer who never earned a high school diploma may assume that his children's teachers look down on

The techniques in this section emerged from "action science," a field of inquiry developed by the theorists and educators Chris Argyris and Donald Schön. Their work, in turn, is grounded in the "double-bind" theory of anthropologist Gregory Bateson and the semantic work of linguist S.I. Hayakawa. See *The Fifth Discipline Fieldbook*, p. 264, for more about the roots of this work, and *The Age of Heretics* by Art Kleiner, p. 228ff, for the story of Chris Argyris's work. Also see Argyris, "Teaching Smart People How to Learn," in *Harvard Business Review* (May-June 1991, reprint #91301), and *Overcoming Organizational Defenses* (Needham Heights, MA: Allyn & Bacon, 1990).

him; he never summons the courage to come in to school for meetings, and the teachers assume he doesn't care. A local community member may assume that, because many schoolteachers are women, they do not need to be paid as much—and vote down the school referendum. Though at first glance working with mental models may seem to be an intellectual exercise with little relevance to the "real world," it is probably the most practical of the five disciplines. It has direct relevance for a surprising number of seemingly intractable challenges in schools.

The consequences of untested and unsurfaced mental models can be tragic for children. Statistics suggest that bullying is a lifelong trait. A middle-school child who is recognized by teachers as a bully has a 69 percent chance of having a felony record as an adult. Is that because the teachers and administrators have a mental model of that child as a bully? Or because the child holds an unseen, unspoken mental model that bullying is the most effective way to solve problems?

The practice of "working with mental models" help us see the metaphorical pane of glass we look through and help us re-form the glass by creating new mental models that serve us better. Two types of skills are central to this practice: reflection (slowing down our thinking processes to become aware of how we form our mental models) and inquiry (holding conversations where we openly share views and develop knowledge about each other's assumptions). There is an unwritten rule in many organizations, including many schools, that people should not ask questions unless they already have the answer to offer. The discipline of mental models flies in the face of that idea. People ask questions in the practice of this discipline because they are trying to learn more about their own, and each other's, most deeply held attitudes and beliefs.



The ladder of inference

We live in a world of self-generating beliefs that remain largely untested. We adopt those beliefs because they are based on conclusions, which are inferred from what we observe, plus our past experience. Our ability to achieve the results we truly desire is eroded by our feelings that:

- Our beliefs are *the* truth.
- The truth is obvious.
- Our beliefs are based on real data.
- The data we select are the real data.

For example: I am a teacher presenting a proposed change in the science curriculum at a faculty meeting. Doris, an experienced teacher and department chair, sitting at the end of the table, seems bored out of her mind. She turns her dark, morose eyes away from me and puts her hand to her mouth. She doesn't ask any questions until I'm almost done, when she breaks in: "I think we should wait until next year." In this school, that typically means "Let's forget about this and move on." Everyone starts to shuffle papers and put notes away. Doris obviously thinks that I'm incompetent—which is a shame, because these ideas are exactly what she needs. Now that I think of it, she's never liked my ideas. Clearly, Doris is a power-hungry jerk. By the time I take my seat, I've made a decision: I'm not going to propose anything again to any group that includes Doris. She will always use it against me. It's too bad I have an enemy who's so prominent in the school system.

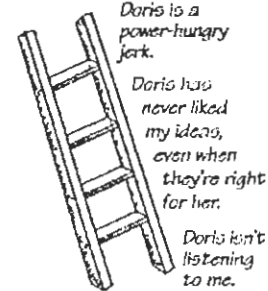
During the course of this meeting, I have climbed up a mental "ladder of inference"—a common mental pathway of increasing abstraction, often leading to misguided beliefs:

- I started with the **observable data**: Doris's comment, which is so self-evident that it would show up on a videotape recorder.
- I **selected some details** about Doris's behavior: her glance away from me and apparent yawn. (I didn't notice her listening intently one moment before.)
- I **added some meanings of my own**, based on the culture around me (that Doris wanted me to hurry up and finish).
- I **moved rapidly up to assumptions** about Doris's current state. (She's bored.)
- I **concluded that Doris, in general**, thinks I'm incompetent. In fact, I now believe that Doris (and probably everyone whom I associate with her) is opposed to me.

Thus, as I reach the top of the ladder, I'm plotting against her. It all seems so reasonable, and it happens so quickly, that I'm not even aware I've done it. Moreover, all the rungs of the ladder take place in my head. The only parts visible to anyone else are the directly observable data at the bottom and my own decision to take action at the top. **The rest of the trip, the ladder where I spend most of my time, is unseen, unquestioned, not considered fit for discussion, and enormously abstract.** (These leaps up the ladder are sometimes called "leaps of abstraction.")

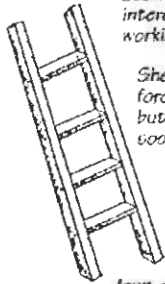
I've probably leapt up that ladder of inference many times before.

I won't propose new ideas to Doris; she'd use them against me.



Doris put her hand to her mouth while I was speaking.

We've either got to find a way to motivate Jean or ask her to leave.



Jean's not really interested in working with us.

She's probably been forced to show up, but she leaves as soon as she can.

She must not really be interested in the committee.

Jean, one of the teachers on our joint parent-teacher committee, left early today.

The more I believe that Doris dislikes me, the more I reinforce my tendency to notice her malevolent behavior in the future. This phenomenon is known as the "reflexive loop": Our beliefs influence what data we select next time. And there is a counterpart reflexive loop in Doris's mind: As she reacts to my strangely antagonistic behavior, she's probably jumping up some rungs on her own ladder. For no apparent reason, before too long, we could find ourselves becoming bitter enemies.

Doris might indeed have been bored by my presentation—or she might have been eager to read the report on paper. She might think I'm incompetent, she might have other things on her mind, or she might be afraid to embarrass me. More likely than not, she has inferred that I think she's incompetent. We can't know, until we find a way to check our conclusions.

Unfortunately, assumptions and conclusions are particularly difficult to test. For instance, suppose I wanted to find out if Doris really thought I was incompetent. I would have to pull her aside and ask her, "Doris, do you think I'm an idiot?" Even if I could find a way to phrase the question, how could I believe the answer? Would I answer her honestly? No, I'd tell her I thought she was a terrific colleague and a fine teacher, while privately thinking worse of her.

Now imagine me, Doris, and three others on, say, a school curriculum committee, with our untested assumptions and beliefs. When we meet to deal with a concrete problem, the air is filled with misunderstandings, communication breakdowns, and feeble compromises. Thus, while our individual IQs average 140, our team has a collective IQ of 85.

You can't live your life without adding meaning or drawing conclusions. It would be an inefficient, tedious way to live. But you can improve your communications through reflection and by using the ladder of inference. For instance, once Doris and I understand the concepts behind the ladder of inference, we have a safe way to stop a conversation in its tracks and ask several questions:

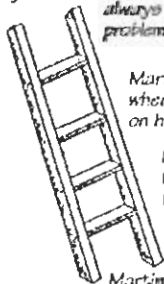
- What are the observable data behind that statement?
- Does everyone agree on what the data are?
- Can you run me through your reasoning?
- How did we get from that data to these abstract assumptions?

I can ask for data in an open-ended way: "Doris, what was your reaction to this presentation?" Or I can simply test the observable data by making a comment like this one: "You've been quiet, Doris." To which

"Martin, you're not trying hard enough. You're going to fail."

2

Martin is always a problem case.



Martin fidgets whenever I call on him.

Martin is fidgety today.

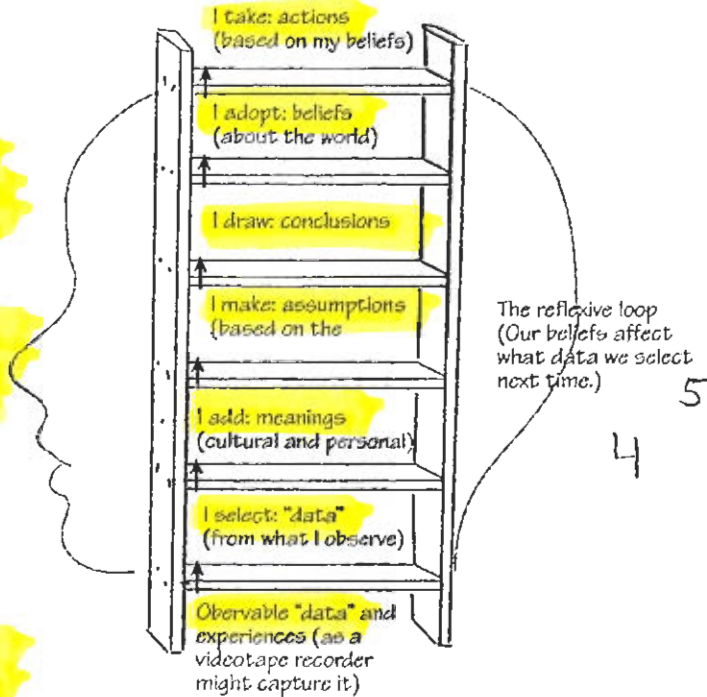
Martin jumped in his chair when I called on him.

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she might reply: "I'm taking notes; I think there's a lot of potential here."

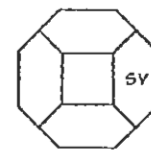
Note that I don't say "Doris, I think you've moved way up the ladder of inference. Here's what you need to do to get down." **The point of this method is not to diagnose Doris's attitude but to make our own thinking processes visible, to see what the differences are in our perceptions and what we have in common. (You might say, "I notice I'm moving up the ladder of inference, and maybe we all are. What are the data here?")**

The ladder can be used in staff development, in the classroom, and in a variety of school and community meetings. When teaching, for example, instead of letting arguments among students escalate, you can ask: **"What did you actually hear or see that led you to this conclusion?"**



3. Shared Vision

Fostering commitment to common purpose



A boy of five, on the first day of kindergarten, asked his teacher, "When am I going to learn to read?"

She said, a bit absently (for there was a lot going on), "Oh, that won't happen until next year, in first grade."

He didn't say anything, but an hour or so later, she noticed that he had slipped away when no one was looking. He walked out of the room and continued home (which fortunately was only a few blocks away). He went up to his startled mother and said, "I'll go back next year . . . when they're ready to teach me to read."

We first heard this story from Leonard Burrello, professor at Indiana University.

All people know what they want from education. The parent wants the child to be successful—or, perhaps, simply to learn to read. The teacher wants to create a terrific curriculum, encompassing not just intellectual skills but athletics, music, art, and socially adept behavior—or, perhaps, to have a high-performing class. The administration is concerned about meeting state mandates. And the child wants to learn what the child wants to learn—whether it's to read right now, to dive off the high board, to build things, to play music, to make friends, or simply to be him- or herself.

The discipline of shared vision is the set of tools and techniques for bringing all of these disparate aspirations into alignment around the things people have in common—in this case, their connection to a school. In building shared vision, a group of people build a sense of commitment together. They develop images of “the future we want to create together,” along with the values that will be important in getting there and the goals they hope to achieve along the way. Without a sustained process for building shared vision, there is no way for a school to articulate its sense of purpose.

Unfortunately, many people still think that “vision” is the top leader’s job. In schools, the “vision” task generally falls to the superintendent, the principal, and the school board. Within a classroom, it may fall to a teacher. But visions based on authority are not sustainable. They may succeed in carrying a school or a school system through a crisis—“the superintendent wants us all to pull together to get through this budget crunch.” But when the crisis is over, people will fall apart, back to their fractionalized and disparate hopes and dreams. They will never know the potential that comes from creating a shared vision of what their school, their classroom, and their community might be.

Catalyzing people’s aspirations doesn’t happen by accident; it requires time, care, and strategy. To support this creative process, people need to know that they have real freedom to say what they want about purpose, meaning, and vision with no limits, encumbrances, or reprisals. School administrators and community leaders must put aside their fear that “we must set the limits within which people can create vision, or they will run out of control.”

Shared visions have a way of spreading through personal contact. To link multiple communities together, the school system depends on its informal networks—communication channels where people talk easily and freely, meeting at potluck suppers, participative events, and other informal gatherings. Electronic mail and computer conferencing can also support such networks. However, early experience suggests that

Margaret Wheatley reminds us that “we need to be able to trust that something as simple as a clear care of values and vision, kept in motion through dialogue, can lead to order.” They provide the “shape” for the organization, and within that context organizational members must be given significant freedom to create. See *Leadership and the New Science* (San Francisco: Berrett-Koehler, 1992), p. 147.

while computer networks can help people keep in touch and compare assumptions easily, they are **not adequate for building shared meaning**. As members of a community, **we need to meet in person** when we talk about what we really care about.

}} See shared vision processes for classrooms (page 175), or school and community (page 289). Also see Ed Joyner's view of the Comer approach to shared vision (page 385).

4. Team Learning

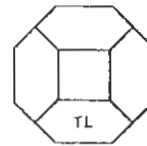
Transforming our skills of collective thinking

At its core, team learning is a discipline of practices designed, over time, to get the people of a team thinking and acting together. The team members do not need to think *alike*—indeed, it's unlikely that they ever will. But through regular practice, they can learn to be effective in concert.

Schools are rife with team activity. A classroom is a team of people who need one another to accomplish their mutual purpose: to develop competence together. As a team, the classroom thus implicitly includes people who are not thought of as being members: the writers of key books and resources used in the classroom, the staff whose work makes the classroom possible, the administrators who secure the resources and support it needs, and the parents whose participation gives the classroom some of its power. The core team, however, consists of the people who return to the classroom day after day: the teacher and students.

When you move up the nested systems into the school and community levels, teams conduct the bulk of work. Policies are set by an elected team known as the school board; the board, superintendent, and top administrators form a high-level administrative team. Curriculum teams, site teams, and staff development teams all set the tone for innovation in schools. There is also increasing interest in intramural teams—for example, the Danforth Foundation has initiated meetings among a national group of superintendents, who compare notes and build capabilities for organizational learning in their school systems. These capabilities have begun to filter out into their administrative teams; many of the school boards in the individual school systems have now begun to practice the skills of, say, working with mental models.

The practice of shared vision has its roots in the "preferred vision" exercises developed by Ronald Lippitt in consultation with the Michigan YMCA, and later at National Training Laboratories, during the 1950s and 1960s. See Art Kleiner, *The Age of Heretics* (New York: Doubleday, 1996), p. 43. Charlie Kiefer, Bryan Smith, and others at Innovation Associates developed the form that we describe here.



}} For more about the Danforth Superintendents' Forum, see page 418.

Because of many schools' long-standing experience with team teaching, team-building, and group dynamics, teams believe that they have been practicing a version of this discipline for years. However, most team building involves separate "retreat"-like sessions for improving communications skills. Afterward, the team returns and conducts its regular business in the same old counterproductive ways. Team learning is a discipline of regularly transforming day-to-day communication skills: taking existing conversations, for example, and conducting them in new ways.

Staff development is also a natural vehicle for team learning. In groups of teachers and administrators, there is a great deal of leverage in dialogue about core values and beliefs: "Why are we here?" "What has brought us to education as a profession?" "What has kept us here?" Surprisingly few educators ever have that conversation, and it makes a difference.



ALIGNMENT

Team learning is based on the concept of alignment—as distinct from agreement. Derived from the French *aligner* ("to put in line"), alignment has the connotation of arranging a group of scattered elements so they function as a whole, by orienting them all to a common awareness of each other, their purpose, and their current reality.

Even though people retain their individuality, their efforts will naturally move in a common direction. They waste less time and effort reaching common goals because they understand one another more completely. Even if they don't agree, they know one another well enough so that any of them can speak for the group as a whole, on many subjects, without having to check first.

In a classroom, alignment develops when students all feel involved in their common learning endeavor, not just individual learning. In a school or community, alignment starts with the ability to see and respect each other, and to establish some common mental models about reality.

Dialogue

The most effective practice we know for team learning emerges from this conversational form. William Isaacs, founder and director of the MIT Dialogue Project and the "DiaLogos" Institute, defines dialogue as a sustained collective inquiry into everyday experience and what we take for granted. The goal of dialogue is to open new ground by establishing a "container" or "field" for inquiry: a setting where people can become more aware of the context around their experience, and of the processes of thought and feeling that created that experience.

In the practice of dialogue, we pay attention not only to the words but to the spaces between the words; not only to the result of an action but to its timing; not only to the things people say but to the timbre and tones of their voices. We listen for the meaning of the field of inquiry, not only its discrete elements. *During the dialogue process, people learn how to think together—not just in the sense of analyzing a shared problem or creating new pieces of shared knowledge but in the sense of occupying a collective sensibility, in which the thoughts, emotions, and resulting actions belong not to one individual, but to all of them together.*

Dialogue is an old practice. It may seem unfamiliar at first, but it feels very natural to most people once they start. That may explain why it seems to flourish in modern settings, despite a range of institutionalized barriers. In short, dialogue creates conditions in which people experience the primacy of the whole.

Dialogue is valuable as a kind of antidote to the fragmentation and isolation of modern life. People tend to divide the world into categories and then treat the categories as sacrosanct, forgetting that, just as they were created by people, they can be changed. Dialogue is a form of conversation, in short, that draws people to see past the blinders that they have put upon themselves.

The dialogue session begins with an invitation process. People must be given the choice to participate. Dialogue can't be shoved down their throats, because that will invoke the memory of previous times when something was forced on them. The result will be a primitive "fight, flight, or freeze" response. The goal with dialogue is to evoke a higher-level attitude that encourages collective inquiry.

Dialogue encourages people to "suspend" their assumptions. This does not mean laying your assumptions aside, even temporarily, to see what your attitudes would be if you felt differently. It means exploring your assumptions from new angles: bringing them forward, making them



This section is adapted, in part, from several articles on dialogue in *The Fifth Discipline Fieldbook*, particularly: "Dialogue" by William Isaacs (p. 357), and "Designing a Dialogue Session" by William Isaacs and Bryan Smith (p. 374). Also see William Isaacs, *Dialogue: The Art of Thinking Together* (New York: Doubleday, 1999).

The modern-day practice of dialogue draws deeply on the work of physicist David Bohm. Bohm pointed out that when the roots of thoughts are observed, thought itself seems to change for the better. See David Bohm, *Unfolding Meaning* (Loveland, CO: Foundation House, 1995).

explicit, giving them considerable weight, and trying to understand where they came from. The word "suspension" means "to hang in front." Hanging your assumptions in front of you so that you and others can reflect on them is a delicate and powerful art that involves several activities. First comes *surfacing assumptions*: making yourself aware of your own assumptions before you can raise them. Second comes the *display of assumptions*: unfolding your assumptions so that you and others can see them. The third component is *inquiry*: inviting others to see new dimensions in what you are thinking and saying, and to do the same for the assumptions of others.

- Open dialogue with a "check-in" at the beginning of every session and a "check-out" at the end. This means giving every participant an opportunity to simply speak for a minute about what he or she is thinking, is feeling, or has noticed. Stress the value of speaking from personal experience. When people know that they will have some air time, they tend to relax.

}} For more about check-in, see page 215.

- Avoid agendas and elaborate preparations; these inhibit the free flow of conversation.
- While meeting over a meal may break the ice, restaurant service and eating can be distracting.
- Agree, as a group, to hold three meetings before you decide whether to continue or to disband. Anything less may not be a fair experiment; it can take time to grow into the dialogue form of conversation.
- Speak to the center of the group, not to each other. In other words, you're creating a pool of common meaning, not a set of person-to-person dynamics.
- Consider a trained facilitator. Dialogue is difficult to sustain, because it confronts people's habitual ways of talking and thinking. It's easy to get sidetracked into debate, argument, or manipulative "consensus-building" unless a skilled outsider is present to keep drawing the group back to its true purpose.

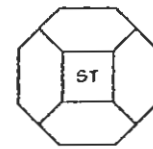
When these techniques are made part of an ongoing series of conversations, and when people have no agenda other than the establishment of deeper connection with those who are important to them, then something very powerful happens. One dialogue session covered the question of how much attention and money special education should draw away from the rest of the school budget. The dialogue included teachers,

administrators, parents, social workers, and community advocates. Everyone in the room had a powerful attitude, grounded in personal experience with people with disabilities, experience as teachers, and feelings about state budgets and state legislatures. Everyone spoke from the heart; everyone seemed to recognize the reasons why people had come to their views. The problem took on a meaning that it had not had before, as if the great possibility of special education itself hung in the air before the group. Nothing was resolved; no policies were decided on. But after these dialogues, the contentiousness of the issue seemed to disappear, as if people recognized that they had no choice but to approach this problem as members of one body. Later, in other meetings, decisions were made that resolved the question. People said they were far happier with the decisions than they would have been if dialogue had never taken place.

}} Also see *Productive Conversation*, page 153, and other examples of team learning practice on pages 110, 395, and 406.

5. Systems Thinking

Developing awareness of complexity, interdependencies, change, and leverage



Most schools are drowning in events. It's amazing to sit in a superintendent's office and listen to incoming phone calls—and equally amazing, in a sense, that he or she doesn't unplug the phone. Each event seems to require an immediate response. A child is hurt on school grounds so an outside supervisor is assigned. A teacher's parent dies just before midterm reviews, and there is no qualified substitute, so the test is rescheduled. Each time, the superintendent (or another staff member) does a heroic job of fixing the problem: making the fastest possible diagnosis and finding the most immediate solution.

But there's a very real chance that each quick fix will do more harm than good in the long run. Moreover, reacting to each event quickly, and solving problems as quickly as they come up, helps develop a kind of "attention-deficit culture" in the school system. Moving rapidly from one issue to the next, people grow highly skilled at solving crises instead

of looking for ways to prevent them. In this type of culture, it's almost impossible to get people to speak openly and candidly about their mutual problems and concerns; those, after all, are "beside the point."

The discipline of systems thinking provides a different way of looking at problems and goals—not as isolated events but as components of larger structures. The superintendent's office, after all, is a system: composed of the habits and attitudes of the people who work there, the policies and procedures imposed by the state and the community, and such inplacable forces as available money and student population.

A system is any perceived whole whose elements "hang together" because they continually affect each other over time. The word "system" descends from the Greek verb *sunistanai*, which originally meant "to cause to stand together." As this origin suggests, the nature of a system includes the perception with which you, the observer, cause the system to stand together. Examples of systems (besides the superintendent's office) include biological organisms (including human bodies), the atmosphere, diseases, ecological niches, factories, chemical reactions, political entities, industries, families, teams—and all organizations. Within every school district, community, or classroom, there might be dozens of different systems worthy of notice: the governance process of the district, the impact of particular policies, the labor-management relationship, the curriculum development, the approaches to disciplining students, and the prevailing modes of staff behavior. Every child's life is a system. Every educational practice is a system.

The discipline of systems thinking is the study of system structure and behavior; it is enriched by a set of tools and techniques that have developed over the past thirty-five years, particularly since the advent of powerful computers. People who have experience with systems thinking can act with more effective leverage than a "short-attention-span culture" generally permits.

THE CONTINUUM OF "SYSTEMS THINKING"

The term "systems thinking" has been used, in the last two decades, to refer to a confusing array of tools, methods, and practices. *The Fifth Discipline* and *The Fifth Discipline Fieldbook* may have contributed to some of that confusion, by referring to "systems thinking" in inconsistent ways. There is, we now believe, a viable continuum of systems thinking practices, all with different



for different purposes, in different circumstances. Regular use of any or all of them will build your capability in systems thinking—the ability to see systems more clearly and apply more effective leverage to accomplish your purposes. — Art Kleiner



The iceberg

Purpose:

To consider a serious problem and thus introduce yourself to the practice of systems thinking.

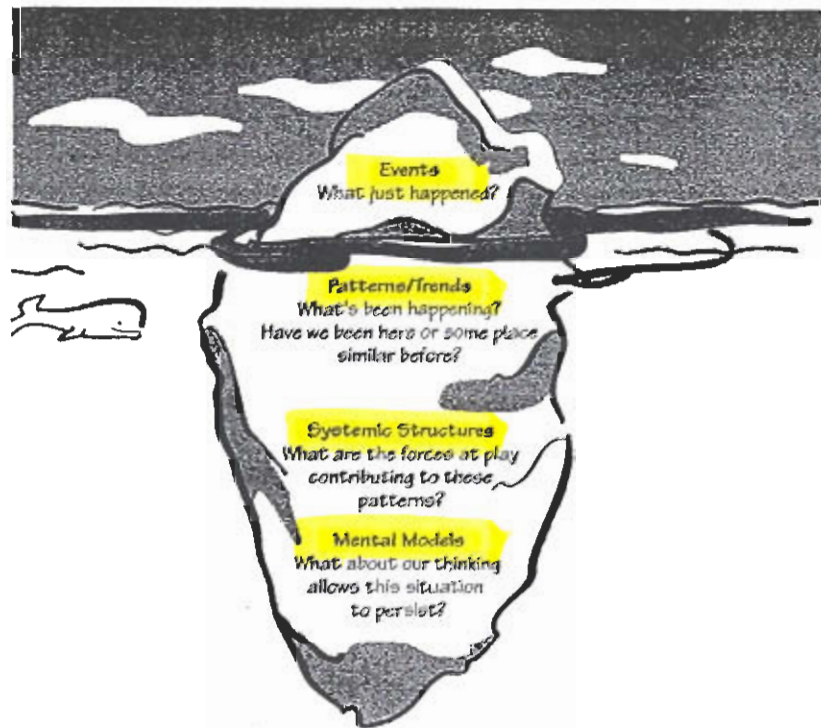
Overview:

These four questions lead you from the perception of a situation as a series of unrelated events, to view the underlying patterns that connect them.

STEP 1: EVENTS

Name a critical event (such as a crisis) that emerged in the last few months in your school or classroom. How have people responded? How have they tried to solve it?

Not long ago, in the city of Crisis Corners, New Jersey, the school superintendent announced her imminent departure. This was upsetting news, since she was the fourth superintendent to resign in twelve years. Rumors spread that the school board fired her. Parents protested. Fac-



tions blamed each other. And word began to spread that, once again, the district had fallen prey to a superintendent who was just no darn good. Seeing this as a full-blown crisis, the school board began a hurried search for a successor, making offers that went far beyond the budget. Teachers and staff members put all innovations on hold, waiting to see what their new administrator would do.

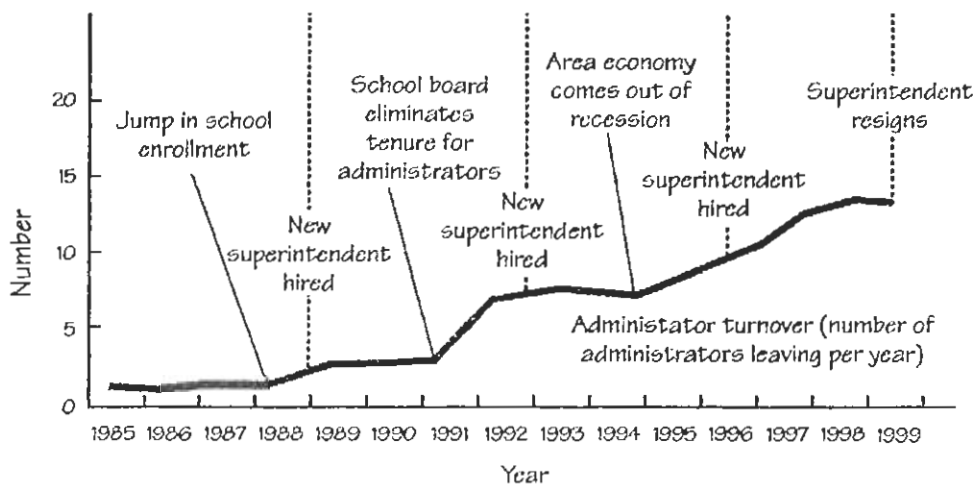
Such responses are typical and understandable. But that doesn't make them inevitable. What if you saw your event (whatever it might be) as simply the tip of an iceberg? The visible part of the iceberg looks massive and threatening, but most of it is hidden by the surface of the ocean. You cannot navigate around it unless you can somehow penetrate the mysterious ocean and see the structure that holds aloft the visible tip.

Crisis Corners is a fictional city, but it is based on several true stories of school administrator turnover in urban New Jersey school districts.

STEP 2: PATTERNS AND TRENDS

What is the history of the event you described in step one? When has it occurred before? Chart the course of related events over time, on a graph. **What patterns do you see emerging?**

For example, in Crisis Corners, a systems team looked at administrative turnover over the past ten years and all the related factors they could think of, and came up with a chart looking something like this:



They could see several events that seemed to correlate with superintendent turnover—a jump in school enrollments in the late 1980s, and the elimination of tenure for administrators in the early 1990s. Perhaps the regional economic boom of the late 1990s had also had an effect. (Other variables, not on this diagram, could also be considered—such as

the attitude of the staff toward change or the number of ongoing curriculum reform initiatives.)

Systems specialists refer to these diagrams as behavior-over-time diagrams. This is not human "behavior" but the behavior of the system: the patterns of rising and falling key variables. As patterns emerge, it is clear that most of them have been seen before. Rarely are patterns completely new. They may not look exactly the same, but they will certainly look similar to patterns that appeared two, five, or ten years earlier.

Looking at patterns of behavior is often depressing; they make it seem as if fate is inexorable. No matter what you do, you'll fall into that pattern. But that is based on the false assumption that history will repeat itself. Not one endeavor or business, from health care to banking to manufacturing to government, has stayed the same over the past ten years. Education is no exception. Thus, patterns of behavior, while they reveal trends, are inadequate for making decisions. To look more deeply, you need to consider the root causes of the pattern—the interrelated forces that have brought you here.

STEP 3: SYSTEMIC STRUCTURE

What forces seem to create the pattern of behavior you described in step 2? How do these systemic elements seem to influence each other? What fundamental aspects of the school must be changed, if you want to change the patterns?

Behind each pattern of behavior is a systemic structure—a set of unrelated factors that interact, even though they may be widely separated in time and place, and even though their relationships may be difficult to recognize. When studied, these structures reveal the points of greatest leverage: the places where the least amount of effort provides the greatest influence for change. These are not necessarily the points of highest authority; they are the places where the ingrained channels of cause and effect are most susceptible to influence.

Many of these systems have developed over time as the result of habitual approaches to chronic problems. For example, in the story of administrative turnover, perhaps there is a combination of extremely high expectations for student performance and low support for staff development—especially administrator training and development. The district attracts charismatic figures for superintendent and principal positions, encourages them to act as if they know all the answers, and "punishes" them, in subtle and unsubtle ways, when they fail to produce

results in a very short time. Thus, they tend to leave the school district early or get pushed out, thereby creating an even more urgent demand for improvement and a truly heroic administrator next time. Each successive administrator, selected to “compensate” for the “excesses” and “mistakes” of the one who came before, sets a complete shift of policies in motion. The unintended result is a thorough disruption of the school system, with the regularity of the tides, every three or four years.

}} See page 88 for a diagram of this “administrative turnover” system.

STEP 4: MENTAL MODELS

What is it about my thinking and everyone’s thinking that causes this structure to persist?

Systems often take their shape from the values, attitudes, and beliefs of the people in them. That’s because our mental models, our theories about the way the world works, influence our actions, which in turn influence the interactions of the system.

Consider, for example, the mental models that lead to the superintendent turnover problem. Do people in the school district believe that the leader must be a superhero? Do they feel that any visible flaw is a sign that they have chosen the wrong person? Do they expect him or her to be thoroughly politic and not ruffle any feathers or disturb any sacred cows?

What mental models, in turn, does the superintendent have about the community? About the teachers? About the teachers’ unions? About the students? About the best model for learning? And about him- or herself? Many administrators, as successful and well-educated people, have learned the power of advocacy but are not skilled in inquiry. They tend to hold the mental model that, when faced with a conflict, they can win by arguing more avidly and debating most fervently. In this way, they perpetuate the structure of recurrent misunderstanding between superintendents and the board.

Now consider the problem that you have been charting. Behind each element of the systemic structure is a set of attitudes and beliefs, some of which have been unchallenged, even though they are misleading or counterproductive, because they are unseen. Can you safely bring them to the surface and inquire about them?

I personally feel the iceberg diagram is deceptive because it makes the progression from system structures to mental models seem too linear. In systems thinking practice, we try to help people see and change the ways that their mental models—their deep attitudes and beliefs—influence all the levels of a system: structures, patterns, and events. — Lees Stuntz