Schools That Learn

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

A Fifth Discipline Resource
shows a bird developing the ability to leave the nest. The upper symbol represents flying; the lower symbol, youth. For the human mind, learning is ongoing. "Studv and "practice constantly" together suggest that learning should mean: "mastery of the way of self-improvement." - One Sage

Three nested systems of activity

Good connections start with recognition. One of the most consistent themes underlying this book project is the need for a clear expression of "I See You": the ability to recognize each other's identity and value, particularly if one is both of us have been invisible to the other before now. The phrase comes from the opening of The Fifth Discipline Fieldbook:

Among the tribes of northern Bantu in South Africa, the most common greeting, equivalent to "hello" in English, is the expression: Sowet buna. It literally means, "see you." If you are a member of the tribe, you might reply by saying: Sizhina, "I am here." The order of the exchange is important: unless you see me, I do not exist. It's as if, when you see me, you bring me into existence.

This meaning, implicit in the language, is part of the spirit of abaswa, a frame of mind prevalent among native people in Africa below the Sahara. The word "abaswa" stems from the folk saying Umuntu omuntu ngehlukwa, which, from Zulu, literally translates as: "A person is a person because of other people." If you grow up with this perspective, your identity is based on the fact that you are seen—that the people around you respect and acknowledge you as a person.

Who, then, are the participants in any effort to create a school that learns? Whether the school is public or private, urban or rural, large or small, there are three nested systems at play: all deeply embedded in daily life, all interdependent with one another, and all with interwoven patterns of influence. These systems—the classroom, the school, and the community—interact in ways that are sometimes hard to see but that shape the priorities and needs of people at all levels. In any effort to foster schools that learn, changes will make a difference only if they take place at all three levels.
By and large the students remain silent as the stress level grows—until problems erupt more violently. When that happens, schools are blamed for "not keeping order." They respond, most often, by creating even more pressure. It seems that few have any idea what they can do to address the deeper causes of malfunction. This situation leaves students with two basic alternatives: cope or disengage. Many disengage. The system then tracks them into classes for underachievers where they no longer will be challenged. Most students try to cope, like the middle schooler I saw recently pulling a "whodid"—a suitcase on wheels like those carried by airline travelers—full of her books. I wondered to myself just how many more pounds that it could hold.

THE INDUSTRIAL AGE HERITAGE OF SCHOOLS

How did this situation arise? A little history is necessary to see a fuller picture.

In many ways, the industrial age and its roots in the fascination of Kepler, Descartes, Newton, and other seventeenth-century scientists with the clock as a model for the cosmos. "My aim," wrote Johannes Kepler in 1600, "is to show that the celestial machine is to be likened not to a divine organism but rather to a clockwork." According to historian Daniel Boustan, "Descartes made the clock his prototypical machine." Isaac Newton, says Arthur Koestler, assigned to God a twofold function "as Creator of the universal clockwork, and as its Supervisor for maintenance and repair."

For these scientists, it became natural to conceive of the world as made up of discrete components, which fit together like the parts in a machine. This offered the beguiling implication that ultimately the universe could be understood completely. The behavior of atoms, conceived as tiny bouncing billiard balls, could be predicted, as could the behavior of more complex objects assembled from them. A worldview emerged that became the foundation for 350 years of scientific progress. Once you analyze the parts, the whole can be predicted and controlled, as a machine is controlled. As Russell Ackoff puts it, "the universe was believed to be a machine that was created by God to do his work. Man, as part of that machine, was expected to serve God's purposes.... It obviously followed that man ought to be creating machines to do his work." So powerful was the machine metaphor that writers like Ackoff dubbed the industrial age the "Machine Age." Machine-age thinking became the foundation for organizations and...
Management when Frederick the Great, the eighteenth-century Prussian ruler, achieved military successes by instituting standardization, uniformity, and drill discipline. Before Frederick, Morgan notes, armies had been made up mostly of 'mercenaries, panderers, foreign adventurers and unwilling deserters.' Now they became great, invisible machines, with interchangeable parts (infinitely drilled men who could replace one another equally), standardized equipment, and strict regulations. Not surprisingly, Frederick devised many of his techniques by studying machines. He was 'fascinated,' writes Morgan, 'by the workings of automated toys such as mechanical men, and in his quest to shape the army into a reliable and efficient instrument he introduced many reforms that actually served to rob his soldiers of autonomy.'

Inspired by progress in Newtonian science, the turn-of-the-nineteenth-century century patterned their organizations directly after Frederick the Great's army, including such mechanical structures as the 'chain of command,' the 'teams,' and the 'organizations' approach to learning. The organization as machine eventually found its prototypical embodiment in the assembly line. The assembly line produced an unparalleled number of uniform manufactured objects more rapidly than ever before. As scientific progress leaped ahead of itself in new and increasingly powerful technologies, they were incorporated into the assembly line, enabling previously unimaginable increases in labor productivity. From 1770 to 1812, labor productivity increased 220 times over in the British textile industry. By 1880, according to business historian Alfred Chandler, Jr., 'four-fifths of the people working on the production of goods were working in mechanized factories.' The assembly line also transformed the conditions of work, interchangeable, trained workers competing precociously against repetitive tasks, orchestrated by a rhythm set by external bosses.

It is little surprise that educators of the mid-nineteenth-century explicitly borrowed their new design from the factory-finders they admired. The result was an industrial-age school system fashioned in the image of the assembly line, the icon of the booming industrial age. In fact, school may be the oldest example in modern society of an elite-institution modeled after the assembly line. Like any assembly line, the system was organized in discrete stages. Called grades, they segregated children by age. Everyone was supposed to move from stage to stage together. Each stage had local supervisors—the teacher responsible for it. Classes of twenty to forty students met for specified periods in a scheduled day to drill for tests. The whole school was designed to run at a uniform speed, complete with bells and rigid daily time schedules.
Each teacher knew what had to be covered in order to keep the line moving, even though he or she had little influence on its preset speed, which was determined by school boards and standardized curricula.

Although few of us today appreciate how deeply assembly-line concepts are embedded in the modern school, nineteenth-century writers spoke admiringly of schools as analogues of machines and factories. According to historian David Tyack, "As eighteenth-century theologians could think of God as a clock-maker without derogation, so [too] the social engineers searching for new organizational forms used the words 'machine' or 'factory' without inventing them with the negative associations they evoke today." For example, machine concepts like standardization played a role in creating unified school systems. In 1844 Samuel Gridley Howe, a newly elected Massachusetts Board of Education member, implemented a standardized test and used the dismal results to galvanize public outrage about the decentralized Boston schools, leading to their consolidation as a single, citywide system, an approach that ultimately influenced schools throughout North America and the rest of the world. The result of this machine-age thinking was a model of school separate from daily life, governed in an authoritarian manner, oriented above all else to producing a standardized product, the labor input needed for the rapidly growing industrial age workplace—and as dependent on maintaining control as the systems of Frederick the Great.

The industrial model of schools didn't just change how students learned; it also changed what was taught. In the American colonial period, for example, in local one-room schoolhouses, children might be taught from Ben Franklin's Poor Richard's Almanack. Other countries had their own local, indigenous texts, both written and oral. They learned about weather and climate, but not for the sake of altering or controlling the seasons. They learned about the world to understand and fit into it, not to command or control it.

While the assembly-line school system dramatically increased educational output, it also created many of the most intractable problems with which students, teachers, and parents struggle to this day. It operationally defined smart kids and dumb kids. Those who did not learn at the speed of the assembly line either fell off or were forced to struggle continually to keep pace, they were labeled "slow" or, in today's more fashionable jargon, "learning disabled." It established uniformity of product and process as norms, thereby naively assuming that all children learn in the same way. It made educators into controllers and inspectors, thereby transforming the traditional mentor-disciple relationship and establishing teacher-centered rather than learner-centered learning.
Motivation has become the teacher’s responsibility rather than the learner’s. Discipline became adherence to rules set by the teacher rather than self-discipline. Assessment centered on gaining the teacher’s approval rather than objectively gauging one’s own capabilities. Finally, the assembly-line model made students instruments of the product rather than the creators of learning, passive objects being shaped by an educational process beyond their influence.

Seeing school as an assembly line for producing graduates illuminates the reasons for the ever-heavier backpacks. The assembly-line education system is under stress. Its products are no longer judged adequate by society. Its productivity is questioned. And it is responding in the only way the system knows how to respond: by doing what it has always done but harder. Workloads increase. Standardized testing is intensified. Among neurophysiologists there is a common expression: “The brain shrivels under stress.” When we are fearful, we revert to our most habitual behaviors. Larger human systems are no different. Whether they are exposed to or not, educators are responding to the extraordinary anxiety and stress they are experiencing by turning up the speed of the assembly line. While this might produce a bit more output, all of us—students, teachers, and parents—should be asking whether it produces more learning.

ASYMPTOM TRAPPED

Like other industrial-age institutions, today’s educational institutions are caught in extraordinary cross-currents of change. Businesses also struggle with increasing pressures for performance to please external stakeholders. They too create extraordinary stresses on their members by attempting to get more output with reducing headcount.

Yet, as someone who spends considerable time with educators and businesspeople, it is my judgment that educators feel more trapped and less able to innovate than do their business counterparts. Several years ago I asked a group of educators a question I have often asked of business groups: “Do you believe that significant change occurs only as a result of a crisis?” In business groups, typically three-quarters will respond affirmatively. But, they, others will tell stories of significant changes that arise without a crisis, from passion and imagination, from leaders of many types willing to take risks in favor of something in which they believed. The group of educators responded differently. Very few raised their hands at my first question. Puzzled, I asked, ‘Does that
response, I would argue that your efforts at innovation, while unsuccessful, also grew out of appreciation of the limitations of machine-age thinking. Moreover, basic institutional innovation takes decades, not years. Many writers have developed the theory that basic innovation, especially the innovations that create new industries, involves ensembles of technologies. For example, the birth of the commercial airline industry involved many innovations in aircraft design in the first three decades of the twentieth century, but it also required the development of jet engines and radar in the 1940s. Like technological innovation, institutional innovation usually arises only as multiple new "component innovations" come together to create ensembles of new ideas and approaches that can support widespread application. I believe the conditions for just such innovation exist today.

First, there are unprecedented signs of breakdown in the assembly-line school concept and process. Extraordinary stress—not just on students, but on teachers, administrators, and parents—is one symptom of breakdown. Another is the increasing separation of "haves" and "have-nots." Those who can afford it increasingly put their children in private school, where they purchase smaller class sizes, the opportunity to be surrounded by other elite students, and access to teachers who are more satisfied with their working conditions. Others opt for home schooling, by some accounts the fastest growing segment of precollege education, estimated to involve 300,000 to 1.35 million children. But neither private nor home schooling are options for the majority of families, and those in public school are being increasingly shut out of society's best opportunities. As a result of growing inequality, social unrest and disturbance are growing. Moreover, judging from conversations I have had in recent years, concern over situation seems to be growing throughout the industrialized world at levels that would have seemed almost unimaginable a few years before.

Second, many of the historic conditions upon which the industrial-age school relied no longer exist. Part of this is due to demographic changes. The original female labor market that schools depended on to draw the majority of teachers has disappeared, as women now pursue a much broader range of professions. Even more problematic, traditional schools dependence on traditional family and community structures that no longer exist. In the United States, the traditional family structure of one parent working and the other parent at home to raise kids created to be a social norm during the 1960s and 1970s. It has been replaced by families with two working parents or single parents as the norm. Today, among
families with children under eighteen, only 20 percent have more than one
parental home during the day. (Even this figure may be inflated due to
the increasing number of parents working from their homes, which gives
more opportunity for contact with children but also creates stress due to
conflicting professional responsibilities.) The other three-quarters of
school children have no one to come home to. A breakdown of the traditional
parent-child-school relationship has resulted. Schools now have to take
on more of a child-care role, and conversations between parents and
teachers often are more focused on existing parents’ stresses than on help-
ing the children academically.

Perhaps as historic is the elimination of the school’s monopoly on the
provision of information, due to the growth in communication and media
technology. One hundred years ago, children knew little of what was
going on in the larger world today, the typical teenagers has at least as
much access to knowledge about the world as parents and teachers have.
Moreover, media technologies such as computers, video games, and the
Internet provide a mix of fun and learning in ways that schoolrooms can-
not match; they are controlled by the learner, available when the learner
is ready, and embedded in networks of mutual interests among peers.
Changes in family structure have rendered these media technologies
especially influential, since they often fill the gap as substitute parents.

Lest, even if these multiple symptoms of profound change were
upward, the simple fact is that the working world is no longer looking for
“industrial workers.” Employers of tomorrow likely will place a much
higher value on listening and communication skills, on collaborative
learning capabilities, and on critical thinking and systems thinking
skills—because most work is increasingly interdependent, dynamic, and
global. The former dean of MIT’s engineering school, Gordon Brown,
used to say, “To be a teacher you must be a prophet—because you are
trying to prepare people for a world thirty to fifty years into the future.”
By continuing to prep up the industrial-age concept of schools through
teacher-centered instruction, learning as memorizing, and extrinsic con-
trol we are preparing students for a world that is ending soon.

Still, it is easy to be dazzled by the challenge of transforming indus-
trial-age schools, especially considering that these underlying assump-
tions still match the thinking of most people and most of society’s
institutions. But, I think such reactions miss an important point. The
challenge is not to come up with a simple set of ideas. Instead, the
machine-age concept of “data” is part of the problem. Many historians of
school reform, from Seymour Sarason to Diane Ravitch to David Tyack,
surrounding statistics from the
Department of Education
(DOE/2006/00001 children taught at
home by the National Legal
Defense Association [7.5 times]).
Since an increasing number of children are "part-time schoolers" (i.e.,
registered for a few years, or as the only
serious subject), this number may be
larger. The source for the changing
families statistics is "statistical abstract
of the United States, Tablo Modefl."
Families With Own Children —
Employment Status of Parents. 1995
and 1979. Source: U.S. Bureau of
and unpublished data.

As Seymour Sarason, The
Problems of Failure of Educational
Reform (op. cit.); Diane Ravitch, The
Troubled Graded American Education
1840-1920 (New York: Basic Books,
1971); and David Tyack and Larry
A. Cuban, Tackling toward Reform
( op. cit.).