VIEWPOINT

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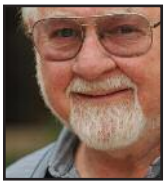
LEARN BY DOING: GET FASTER EVERY LAP



BY JACK RING

Few people ever recall who finished in second place. This is most evident in automobile racing, whether it is the international Formula 1, the annual "greatest spectacle in racing" at Indianapolis, the thundering NASCAR circuit, or the more than 250,000 dirt tracks around the United States.

Automobile racing draws more spectators than any other sport. It's not because of the danger, although the prospect of a crash certainly holds the crowd's interest. What brings people out, time and again, is the simple demonstration that "he who learns fastest wins, but winning once does not guarantee winning again." The spectators as well as the drivers understand that principle intellectually, emotionally, and viscerally. Although most spectators do not apply that rule in their own lives after they leave the track, the winners do, 24 hours a day, until the next race. They exemplify the difference between learning by watching, learning by miming, and learning by doing.

"Building the Winner"

The rate of learning in automobile racing is probably the highest of that in any organized human endeavor, including in the world's best research labs, because winning—or even finishing—requires a wide variety of successful "doing." Each race track is unique. Each lap around the track presents different traffic conditions. Each turn on a lap presents varying road conditions. Drivers, builders, and pit crew members all have "bad hair days." The variety, excitement, and suspense of automobile racing is why Dennis Buede of the Stevens Institute of Technology and Bill Mackey of the University of Maryland believe that it provides the ideal learning environment for their graduate students in systems engineering. Others interested in learning cultures likely would discover new answers to their questions by spending 12 hours at a race track with Roger Penske, Richard Childress, or Leonard Wood.

TEAM TIP

Be aware of when you are learning by watching, learning by miming, and learning by doing—each plays an important role in "team winning."

Winning doesn't guarantee learning. Winning can stall learning if winners begin to think they are superior or pay more attention to garnering praise and fame than to continuing to learn. Arrogance is a sad harbinger of a has-been.

Although winning is preferable, learning by losing is another good way of learning by doing. After Vic Edelbrock, Sr., founded the Edelbrock Corporation in 1938, one of his favorite sayings was, "Buy three of each part. After we have ruined two while learning what won't work, we will have one left for building the winner." Sixty-four years later, Edelbrock continues learning by doing as the innovation and sales leader in the automotive high-performance aftermarket.

The Learning Group

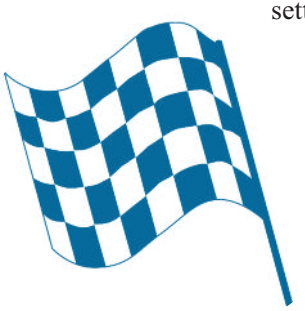
In racing, the consistent winners have learned that assembling the most knowledgeable and motivated people is not sufficient. Rather, the key is whether the working group becomes a *learning group*. The diagnostic ability of the driver–crew chief pair is critical to making the right choices in more than a dozen adjustments on the car. The pit crew, through its elaborate choreography, seeks to save a tenth of a second. Back at the garage, the 20 or more engine builders, chassis builders, test and instrumentation people, and their respective suppliers must collaborate at the idea level regarding design and fabrication as successfully as the pit crew does at the physical level.

The challenge in creating a team learning culture is to harmonize competition and collaboration. Many a highly talented person, fiercely dedicated to winning in competitions, simply cannot collaborate in doing, let alone in colearning by doing. Transforming a person's values to team winning without suppressing the urge to innovate is key. Personal and group learning must meld into a specific "feel" that permeates the team.

To carry the automobile racing analogy just a little further, consider that an engine uses air and fuel to produce horsepower for the drive wheels, which, barring loss of traction, overcome both inherent inertia and motion-induced drag to maximize the speed of the racecar. Often the fastest car does not win because the engine fails, the tires overheat, or some other weak link becomes overstressed. The

winner is the fastest car that finishes. In business, air is ideas, fuel is cash, drive wheels are the products and services that carry value to customers, and traction is the strength of the network of relationships throughout the team. Horsepower feels a lot like enthusiasm, which can overcome both structural inertia and dynamic drag, also known as fear. Enthusiasm, coupled with a learning culture, can even transform negative energy into increased motivation, which leads to superlative results.

Where is the learning? Learning is everywhere and happens every time someone wonders which ideas to pursue, what proportion of profits should be used for what purposes, how to generate enthusiasm, or whether the wheels are spinning because the right relationships do not exist. However, lack of knowledge or integrity—or too much greed—can overstress any one of these factors and create a loser.



Most organizations cannot get a grip on learning. Learning is necessarily multifaceted, but most organizations are filled with linear thinkers (this event causes that result) or scenario thinkers (these related events combine to cause that pattern of results) but few thinkers who consider entire systems (when salespeople overcommit our production, the factory output is actually below full capability). Besides, when joining the race, most organizations believe that business is about generating profit, not about learning.

Types of Doing, Types of Learning

Doing does not guarantee learning. Performing mindless activities by rote takes a long time, and the doer ends up learning little. Achieving a straightforward goal that is well within reach contributes more learning, but not all that much. When a person takes on a challenging goal at the edge of the unknown, learning accelerates.

There are at least three types of learning by doing. One type takes place at the visceral level, as demonstrated by the choreography of the pit crew. Another type exercises the mental level, as can be seen by drivers who learn as much or more between races and during the off-season as they do out on the track. Of course, in this instance, the driver is learning through reflection, examination, and practice—a kind of doing and learning that is very different from that which takes place during an actual race. This type of learning is also reported by golfers, who watch instant video playback to study their swing.

The third type of learning by doing is less tangible. It involves formulating propositions and vetting them in order to delete the ones that do not make sense. This kind of learning is often mistaken for abstract thinking or the dialectic of logicians. However, it is different in two ways. First, the effort is to understand a system of relationships and their dynamics, and to develop several propositions and focus on how they interact. Second, it is more than a mental exercise because the person becomes one with the physical world and arrives at a heightened understanding and sense of harmony. This phenomenon is reported not only by racecar drivers but also by musicians and other performers. And in a group setting, the ability to share this "feel" determines who becomes a part of the team and who does not.

Doing is what causes all types of learning to occur. Other ingredients of learning are purpose, nourishment, tenacity, and time. But without the doing part, as is well known, retention suffers and the ability to apply what was learned degrades quickly. And the vetting of doing helps ensure that what is applied makes sense.

Realistic Simulations

A good alternative to practicing doing in the real world is to practice doing in a simulated world, especially for the second and third types of learning. An effective learning culture arranges for the joy of achievement while immersing participants in realistic environments that protect them against undue penalty for error (no sense discovering gravity by being the apple). This aspect of a learning culture creates opportunities for the learner to discern, firsthand, without chance for denial, the results of his or her decisions. Such objectivism is essential. Just as scrimmaging is a valuable form of doing, realistic simulations hasten learning.

An airline pilot is not allowed to fly a real jet without first spending hours in a flight simulator. The same should be true for CEOs, who all too often are hired without anyone testing whether they can cope with the challenges of the job. This insanity is slowly coming to an end. GE's manager development program has used business simulations for more than 40 years, most authored by David Sims. Also, several rudimentary management games are now commercially available.

As managers begin to emerge from the video game generation, this way of learning by doing will become standard practice, probably even featuring tournaments on the Internet. In fact, the technology exists with which managers can build business simulations by describing their own enterprises. Such descriptions can be translated to a computer-executable program that exhibits the characteristics of the enterprise as if it were actually operating. Beyond allowing team members to scrimmage in a "war games" fashion, this software can be executed as a situationally sensitive TelePrompTer that guides

managers and nonmanagers alike as each acts out his or her role. It can even ensure that legal and ethical guidelines are honored while business is carried out on behalf of all stakeholders.

Such software will also show what is not happening. Quality guru Phil Crosby has noted that as organizations get larger, managers find it increasingly difficult to know what is happening and practically impossible to know what is not happening. Realistic business simulations that let employees play the roles of competitors can help this situation. Further, because simulations lead to a high-fidelity representation of the enterprise, minute by minute, such folding of planning and reflection onto operations allows managers to perform, adapt, and align simultaneously, which is the ultimate in learning by doing.

MYOB

Who is qualified to prepare such simulations and models? Only those involved. MYOB, model your own business, is the best advice any manager can receive. When managers set out to see their business as a system, to describe the entities and relationships, and to reach consensus on what actually goes on in the business, they pursue a challenging goal that pays great rewards when achieved. An amazing number of viewpoints and disagreements that have been corroding business processes rise to the surface. No wonder larger companies are less productive and innovative than smaller ones are. They have exponentially more unresolved, even unrecognized, conflicts that interfere with their attempts to learn.

Modeling fosters the third type of learning by doing described earlier: the doing that develops systems thinking. When people construct a model of their organization, they come to a deep understanding of the elements at work and how they interact. They realize, for instance, that responses to requests are determined more by the nature of the interactions than by the competency of an individual.

However, we do not want to engage in just intellectual systems thinking. We want systems doing—systems thinking that is grounded in real-world results, as in the first and second types of learning by doing. To return to automobile racing, for example, we may decide that a greater angle on the aerodynamic lip at the rear of the car will shorten the time through Turn 4. It does, but it causes the car to push, thus putting wear and tear on the tires during Turn 2. This vetting of hypotheses is accomplished in minutes at the race track instead of hours in the wind tunnel or at the computer-aided-design workstation. In this way we shall learn to model, and thus manage, the key entities in a business system: the people and, more important, their relationships.

We now have the technology to do so. Rudolph Starkerman has produced a model of robots in groups engaged in a process. He has associated the 23 parameters in this model with the attributes of a person involved in a one-on-one interaction.* We can now explore how these parameters implicitly interact to establish the trajectory of the microculture that will be created by any set of people. We can anticipate the effects of environment, nourishment, and purpose on colearning. Further, we can show people what they are doing for, and to, one another that is at odds with their best interests. In this way they can understand both the best learning culture and how to encourage it.

The third type of learning by doing, systems doing, is a prerequisite to arranging, implementing, and sustaining a culture for tripartite learning. No longer must we manage with linear archetypes, which allowed the multibillion-dollar debacle known as business process reengineering. No wonder all those employees with common sense rebelled. Ironically, their rebellion gave rise to programs for quelling resistance to change, which, based on further linear thinking, proved equally futile.

Doing While Learning

With systems doing, we can observe a set of people voluntarily bound by mutual purpose. Each acts independently, no two alike, such that the combined effect takes them closer to their goal. Each coadapts as his or her individual situation changes so that together they are still pursuing their goal. Such coadaptation necessarily involves colearning, which, of course, happens fastest through collaboration. This is not a picture of a utopian company. This is a description of the moment-by-moment doing while learning in today's few leading-edge enterprises.

Some managers are still convinced that the organization is too busy to take time "away from work" for learning. Once we understand the self-aligning and self-cleansing power of learning by doing, we will be able to create true learning cultures. When we all spend our days learning by all three types of doing, then we will all be winners. ◘

This article was originally published in *Transforming Culture: An Executive Briefing on the Power of Learning*. It is reprinted here with permission.

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* Starkerman's work is summarized in William L. Livingston, *Friends in High Places* (FES Publishing, 1990), Appendix 1.

