Measuring Learning:
Assessing and Valuing Progress

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Say you've just been appointed the CKO – Chief Knowledge Officer – of your organization. You are responsible for managing the company's knowledge capital, including how it is created, maintained, and used. You understand the principles of learning organizations and believe that effective learning is the pathway to accelerated performance improvement. Now you need to know what the pathway looks like and how you can get started. We suggest that a good place to start is with an assessment of your organization's knowledge base and learning skills. An assessment forms the baseline against which you can measure your progress toward becoming a learning organization. Exhibit 1 offers a roadmap for „learning to learn" and highlights the focus of this article – how to assess your current state of organizational learning.

Learning Serves the Business Vision

Planning for this trip begins with knowing where you want to go. Dual visions, of the business and the organization, define the destination – the higher purposes to be served by specific learning initiatives. Learning needs are driven by business and organization goals, not by some abstract desire to learn.

Different learning needs call for different learning styles and practices. For example, at Electricité de France,[1] safety concerns do not allow nuclear power plant operators to do experiments or take risks, so their learning takes the form of incremental improvements based on TOM techniques. By contrast, Kodak is experimenting with electronic imaging products well beyond its traditional lines of chemical-based films. Such products may require the firm to learn how to redesign key processes. In general, Kodak fosters a creative and relatively high-risk environment aimed at rethinking its business over the long haul. In each case, learning practices match learning needs.

Your organization may have learning needs in three categories – incremental change, redesign, and rethink. Within these categories, different processes may require different learning practices, such as quality circles to continuously improve shop-floor procedures versus scenario planning to rethink strategy development. Exhibit 2 shows learning practices that match different levels of learning needs.

Once you know the destination (your business vision and learning needs), you need to know where you are starting from, i.e., your current learning condition. To assess your current state of learning, you need to evaluate three areas:

• Knowledge base – the strengths and weaknesses of your organization's knowledge base and the knowledge areas to be reinforced

• Learning practices – the specific management and operating practices that foster or hinder learning

• Learning climate – the work culture and its effect on learning

Exhibit 1

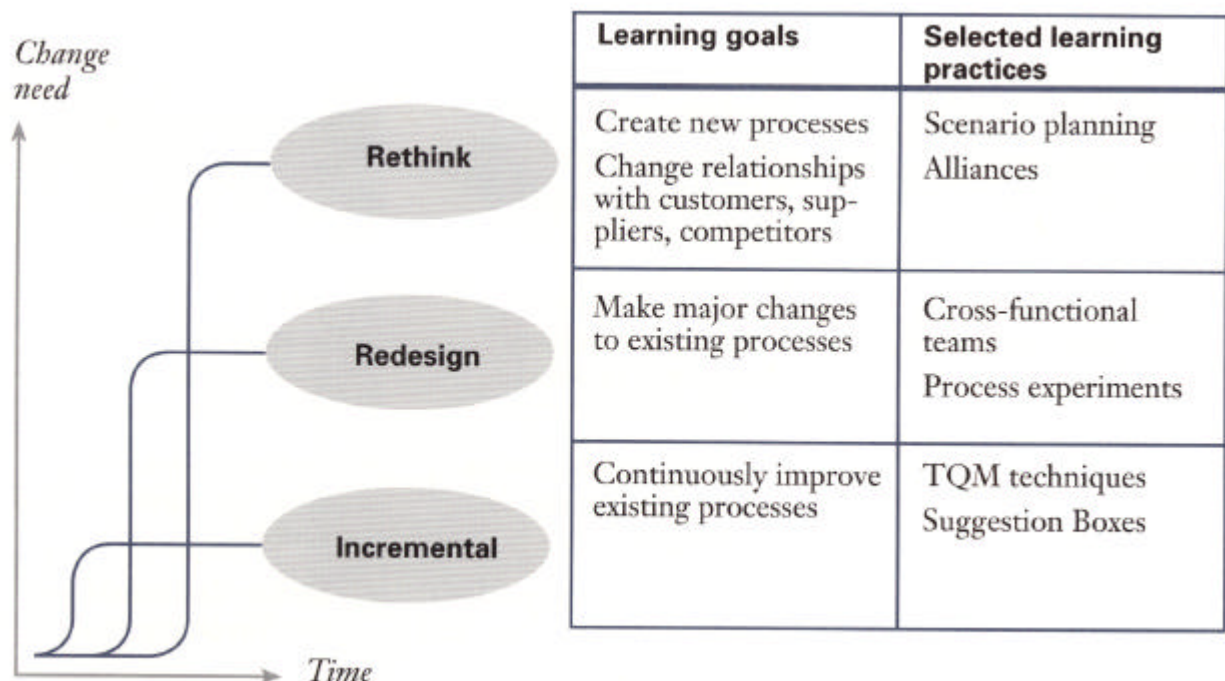## The Road to a Learning Organization
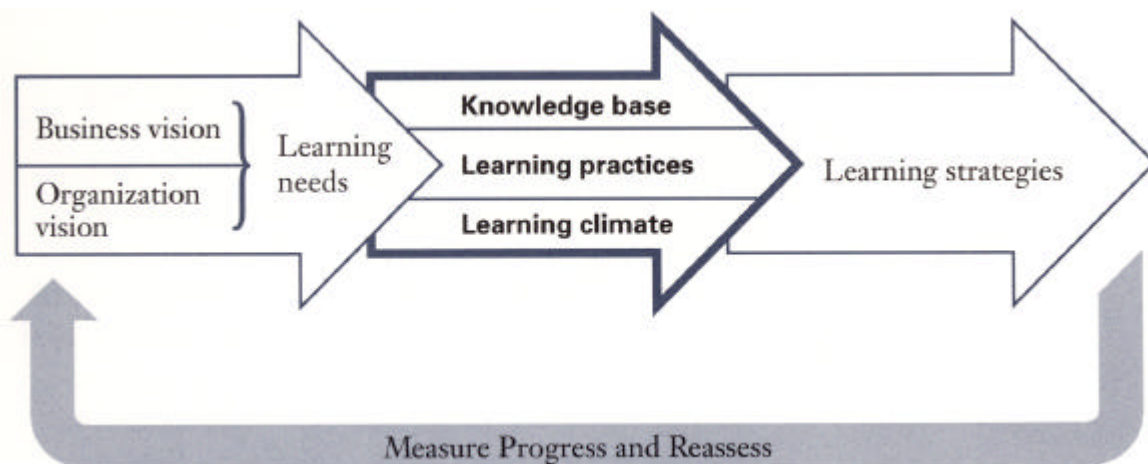
Knowledge Base

In today's economies, knowledge, not capital assets, is the source of wealth. While there are some exciting new methods for measuring and valuing knowledge capital,[2] few organizations study how they themselves create that capital, store it, and use it. Start your learning assessment by mapping your organization's business processes from the perspective of the knowledge they create and use.

This is exactly what one European company did in a systematic way five years ago. This company faced increasing pressures from global competitors in the baby diaper business, in which product innovation had increased thanks to new materials and manufacturing technologies. The company defined what it knew how to do in all its business processes and assessed its knowledge position versus what it viewed as world-class. Then, using Arthur D. Little's Strategic Management of Technology[3] approach, it unbundled ist knowledge base into precisely defined areas of know-how, determined the competitive impact of each area, rated its performance versus its competition, identified gaps in the knowledge base, and designed corrective actions, as summarized in Exhibits 3 and 4.

Exhibit 2

Levels of Learning Needs

	Learning goals	Selected learning practices
Rethink	Create new processes Change relationships with customers, suppliers, competitors	Scenario planning Alliances
Redesign	Make major changes to existing processes	Cross-functional teams Process experiments
Incremental	Continuously improve existing processes	TQM techniques Suggestion Boxes

Change need (vertical axis), Time (horizontal axis): Incremental, Redesign, Rethink.

The results triggered a wake-up call. The company realized it needed to take major actions to reinforce its knowledge base. It defined the areas of collaboration needed to fill gaps in the knowledge base and entered into several alliances. Collaboration partners found the approach so helpful that they initiated systematic knowledge base mapping themselves.
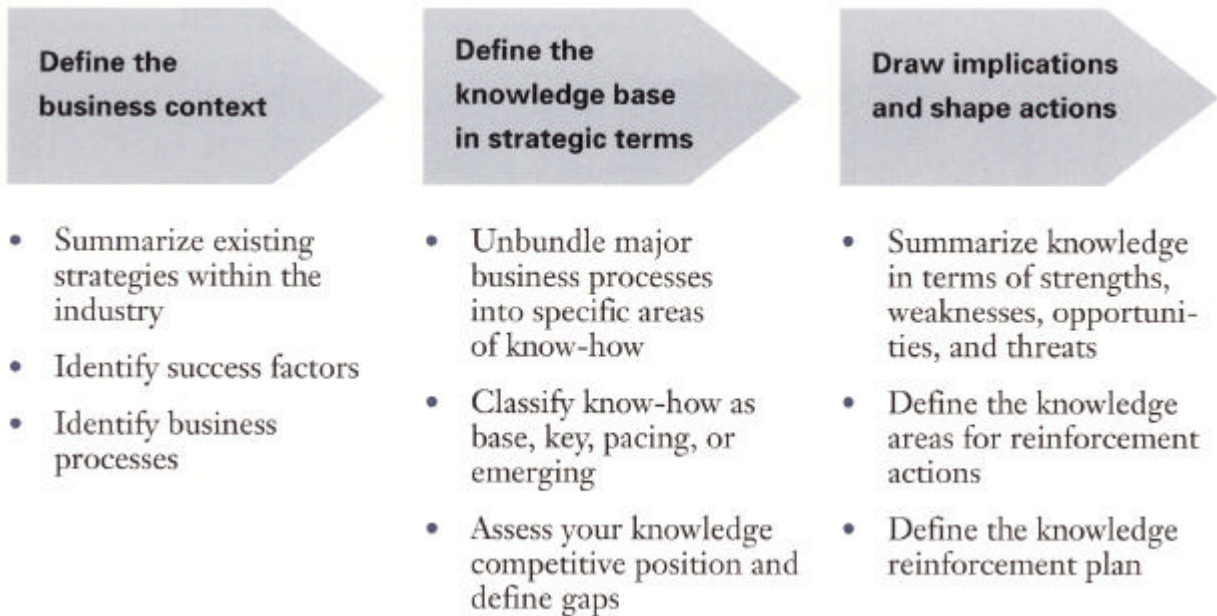
In assessing your firm's knowledge base, it's important to remember that knowledge comes in many forms, not just databases and procedure manuals. Tacit knowledge, based on experience and practice, can be as important as explicit knowledge. For example, Matsushita developed a breadmaking machine in the late 1980s.[4] When early prototypes could not replicate the art of high-quality breadmaking, developers apprenticed themselves to master breadmakers to discover the tacit knowledge that these experts could not explicitly communicate. Your knowledge map should show the strategic importance of both tacit and explicit knowledge.

Learning Practices

Successful learning does not happen by accident. The hallmark of a learning organization is a purposeful approach, designed to create knowledge and translate it into effective action. How do you find learning practices?

Exhibit 3

The Steps in Preparing a Strategic Knowledge Map

Define the business context	Define the knowledge base in strategic terms	Draw implications and shape actions

- Summarize existing strategies within the industry
- Identify success factors
- Identify business processes

- Unbundle major business processes into specific areas of know-how
- Classify know-how as base, key, pacing, or emerging
- Assess your knowledge competitive position and define gaps

- Summarize knowledge in terms of strengths, weaknesses, opportunities, and threats
- Define the knowledge areas for reinforcement actions
- Define the knowledge reinforcement plan

Begin by looking for learning cycles. Successful learning typically follows a sequence:

1. *Shared awareness* of a need for learning
2. *A common understanding* of the situation
3. *Aligned actions,* with measured results
4. *Joint review* and communication of results
5. *Collective reflection* about the learning process

Exhibit 4

Analysis of the Knowledge Base in Terms of Strengths, Weaknesses, Opportunities, and Threats

Own knowledge position / Type of Knowledge	Weak	Tenable	Favorable	Strong	Dominant
Base knowledge	Survival threat?			Waste of resources?	
Key knowledge	Losing position today?		OK	Opportunity for advantage today?	
Pacing knowledge	Losing position tomorrow?			Opportunity for advantage tomorrow?	

We have identified practices that support the stages of the learning cycle. The following are examples that will help you identify the learning practices in your organization.

Generating Shared Awareness. Learning organizations continuously assimilate internal and external information about problems and opportunities.

• Dell Computer holds regular Customer Advocate Meetings to share what support people have heard from customers with colleagues from Product Development, Sales, and Marketing.

• NUMMI rotates shop-floor employees through the plant to build shared awareness of new processes.

• Arthur D. Little sponsors „Management Jamborees" to share best practices across offices and publicizes „Star Cases" to share client success stories.

Creating Common Understanding. Learning organizations converge on a common understanding of their key problems and opportunities and openly discuss their options for action, using common tools.

• Ford uses management simulators to experience the results of decisions without betting the company.

• Royal Dutch Shell has a rich history of using scenarios of possible oil industry trends. They challenge managers to form strategies based on these possible worlds. These team-based planning exercises develop a common approach to strategy.

• DuPont maintains and publishes a reference model of all business processes.

• Canon organizes competing product development teams, which then debate the advantages and disadvantages of each proposal.

Producing Aligned Action. The purpose of learning is to enable the organization to take more effective action. Alignment refers to the match between an organization's goals and its actions, and to the choreography of actions across divisions and over time.

• Honda helps to ensure that customer management and engineering actions are aligned by including representatives from Sales, Engineering, and Product Development in every project team.

• Philips, the Dutch electronics products giant, recently completed a major transformation program, called Operation Centurion, that uses a multifaceted communication program to align changes:

 – Top-down – a cascade of management meetings, involving 14,000 people

 – Bottom-up – meetings at each plant, involving 200,000 people

 – Group discussions – customer-focused satellite and group communications, involving 100,000 people

 – Individual information – an interactive CD available to 150,000 people

Performing Joint Review. In a learning organization, the results of actions are measured and reviewed openly. The purpose is not to assign blame or praise, but to gain insight from the complete cycle and kick off the next cycle of performance improvement.

• Procordia, a Scandinavian consumer goods and health care group, undertook two major acquisitions simultaneously in 1990. In order to manage the integration of the two groups, it created a merger process organization that masterminded and reviewed actions. Every second Friday during the four-month process there was an all-afternoon meeting with the top management group to report on progress from the merger task forces.

• Many organizations review the results of their actions through customer and employee feedback surveys. Widespread distribution of results ensures shared awareness of stakeholder satisfaction, preparing the organization for a new cycle of learning.

Conducting Collective Reflection. Learning organizations are purposeful improvers. They reflect on past and present operations and seek improvements in their learning activities.

• British Petroleum uses a five-person unit reporting to the board of directors to derive lessons learned from past major projects.

• Boeing commissioned a group called Project Homework to dissect its past product development processes, leading to the successful development of the B757.

• L.L. Bean has a team devoted to improving the business process improvement process.

Learning Practice Profile. A summary way to view current learning practices is to illustrate the inventory of your organization's use of specific learning practices. The resulting profile, shown in Exhibit 5, provides a sense of where the organization perceives gaps between the current situation and the desired situation, and indicates

priority areas for attention.

Exhibit 5

Learning Practice Profile
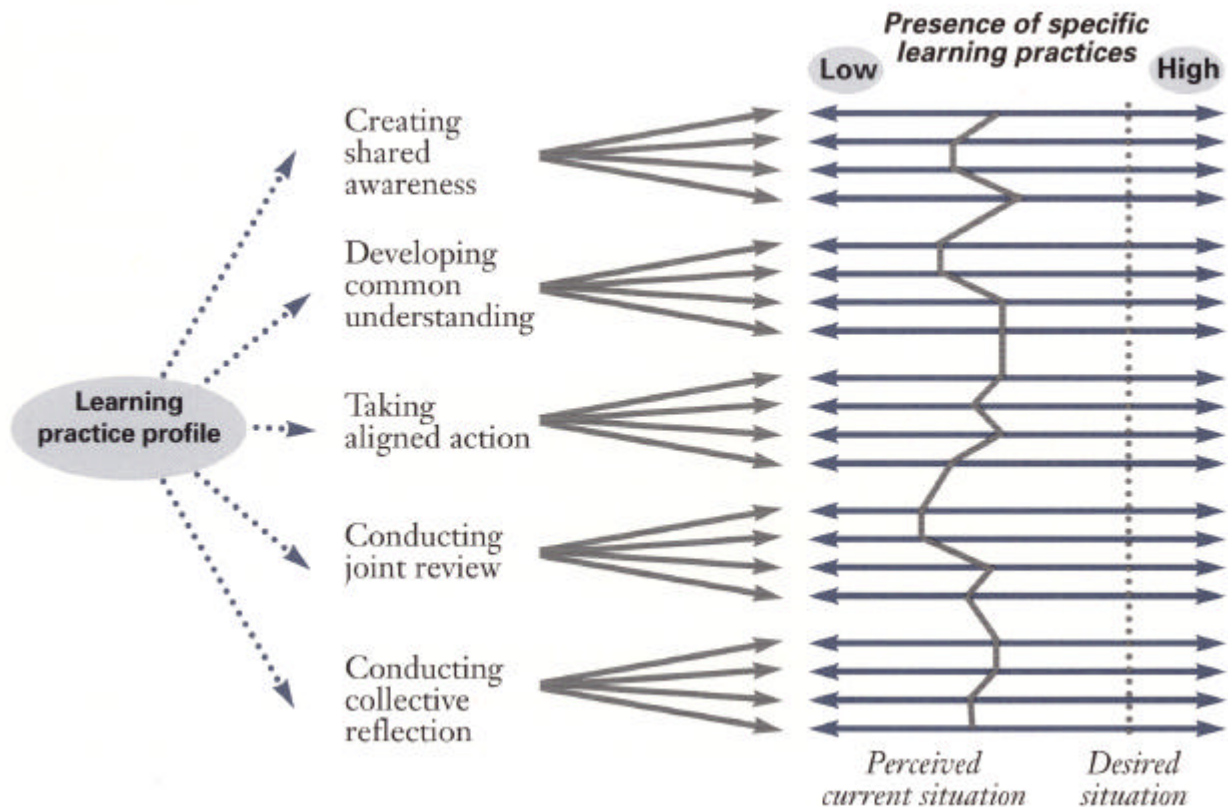
Learning Climate

Learning organizations have a foundation of individual and group skills, support structures, and attitudes that encourage learning. The learning climate has both „soft" and „hard" components. On the soft side, cultural norms can support or hinder learning. The hard side of a learning climate includes the structures and technologies in place to support open communication, knowledge management, and teamwork. How would you rate your organization on the following learning climate conditions?

Curiosity. A culture that values curiosity and inquiry naturally adopts learning behaviors. Simulations and experiments follow from „what if" questions. Questions about what customers think and what competitors are doing lead to scanning and targeted studies of the outside world.

Sharp defines its product development vision as „optoelectronics," a grand but undefined term.[5] The breadth and open-endedness of the term spurs the curiosity of employees who ask, „What does that mean? How can this term fit my work?" Sharp's overhead projection computer display is a result of the creative tension caused by ambiguity.

Recognition of Conflict and Errors. Learning requires openness to new ideas, even when they generate controversy. Conflict should be welcomed as the means to develop common understanding, not suppressed for the sake of camaraderie.

Organizations that celebrate the discovery of errors, rather than searching for blame, will learn from their mistakes. We interviewed a team that writes documentation for electronics products. Each month the team celebrates the discovery of documentation errors with a bonfire of obsolete manuals – the bigger the better!

Leadership. The leader of a learning organization is not the traditional hero, individually responsible for tough decisions. Instead, he or she is the designer of corporate culture and accepts the uncertainty implied by experiments. This is a very different model of leadership. When it is practiced at the top, it diffuses to all management levels. Those being led can tell you which model of leadership is prevalent in your firm. (See also the article by Charles Kiefer in this issue of *Prism.)*

Staff Development. The implicit contract between a firm and its employees has changed. Long-term employment guarantees are giving way to employer-supplied opportunities to maintain and expand knowledge and skills. Look for learning opportunities not just in the training department, but through job experiences that broaden responsibilities across functions.

Information and Communication Systems.

Technology solutions to the challenges of creating, storing, and sharing knowledge include groupware, corporate knowledge bases, and videoconferencing. As you trace the flow of knowledge through your organization, look for how well these technologies are used. (See also the article by Robert Curtis and Stuart Lipoff in this issue of *Prism.*)

Team-Based Work. Some work environments encourage efforts by individuals, while others foster collective work. Learning organizations encourage interaction and problem solving by teams. Team skills are taught and the organization is designed to accomplish its goals using cross-functional teams. To assess whether your organization values individuals or teams, look at recognition and reward systems. Is performance measured individually or in groups? Do rewards go to stars or to stellar team efforts? Are major initiatives personalized (as when a project takes on the name of its leader, e.g., the *Grace Commission)* or do they remain the responsibility of teams?

Guidelines for Assessing Learning

Now you know what to look for – knowledge management processes, learning practices, and factors affecting the learning climate. How do you find them?

Self-assessment. First, enlist the active help of a few first-hand process members. Because learning is embedded in day-to-day activities and organizational culture, guided self-assessment can offer valid results. Train a member of each group in the principles of learning and have these people lead structured interviews that identify learning practices and climate factors. This training also prepares selected process members to facilitate the learning action plan that should follow an assessment.

Group Interviews. Interviews of process members to tease out learning practices are best done in groups rather than one-on-one. Learning practices at the team, company, and inter-company levels relate to group dynamics, such as communications and coordinated efforts. Participants describing both sides of knowledge transfers can offer more complete perspectives.

Stories. Abstract questions about learning lead to abstract answers. Stories and anecdotes can help people recall their learning practices. Ask interviewees to recall incidents when change took place rapidly and effectively, when they mastered a new process, or when a best practice was diffused rapidly throughout the organization.

Artifacts. Anthropologists search for artifacts that are tangible clues to how a society behaves. What artifacts might a learning assessment find? At Arthur D. Little, each table in the company cafeteria has paper and pencils – an invitation to informal brainstorming. Publicly displayed performance scorecards, often seen in production facilities, are artifacts that show a concern for measurement and feedback.

Some artifacts are subtle. For example, when we visited the offices of a construction equipment producer, a manager explained that coffee stations were placed such that design staff and customer service staff were forced to share stations. This guarantees that design staff have at least informal opportunities to learn from the voice of the customer.

Incomplete Learning Cycles. Your search for learning practices should include problems as well as successes. One way to diagnose learning problems is to look for patterns of consistently broken learning cycles. Consider the examples in Exhibit 6. If there are many stories of fact-finding and analysis but few examples of taking action, your organization is trying to learn vicariously. You are in „analysis paralysis." You need to verify what you are learning and to internalize „how to" knowledge. If there is lots of action but little analysis and planning, your learning may be accidental at best. You are practicing the „ready, fire, aim" approach. If your firm regularly progresses to aligned action but can't seem to learn from results, you may not have adequate measurement, review, and feedback systems in place. You reinvent wheels because the results from past wheel designs were never internalized.

Conclusion

The assessment process is an opportunity to train staff members in learning principles. Scientists from Hawthorne to Heisenberg have discovered that measuring a process inevitably causes it to be altered. Measuring learning causes learning processes to be altered as well. You can design assessment interviews to serve as training in the principles of learning, thus improving your learning state even as you measure it.

Measure learning continuously. Assessment is not a one-time effort. The learning needs of a company will change as it revises its vision and strategy. An initial learning assessment provides a baseline of learning practices against which to evaluate progress.

Exhibit 6

Incomplete Learning Cycles
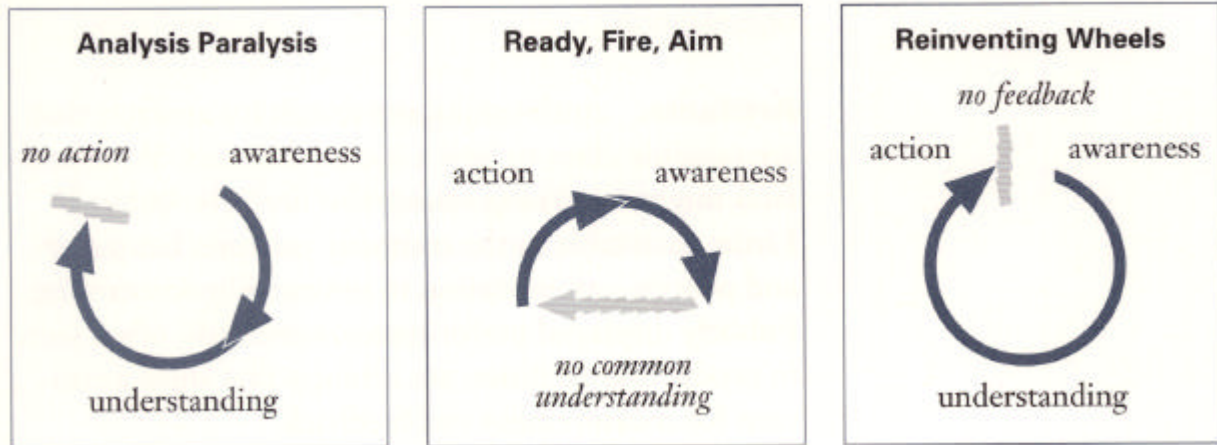
[1] *Nevis, Gould, and DiBella, „Organizations as Learning Systems,“ 1993.*

[2] *See* Fortune, *October 3, 1994, for measurement techniques that assess the value of intellectual capital.*

[3] *„The Strategic Management of Technology,“ presentation by Arthur D. Little to the World Economic Forum, Davos, Switzerland, 1981.*

4 *Nonaka, Ikujiro, and Takeuchi, Hirotaku,* The Knowledge Creating Company, *Oxford University Press, 1995.*

[5] *Ibid.*

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