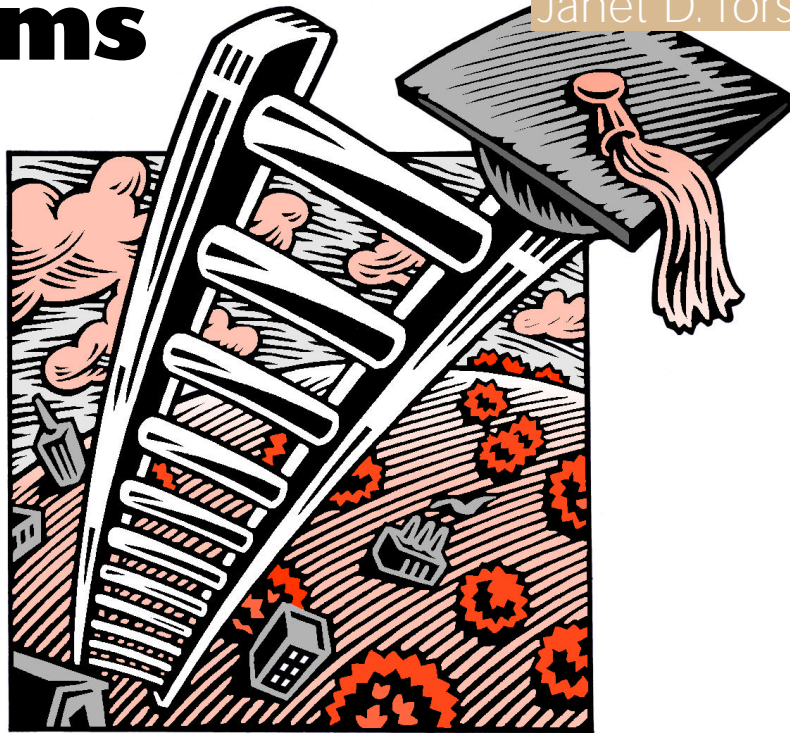




Why Knowledge Programs Fail:

By
Charles E. Lucier
and
Janet D. Torsilieri



A C.E.O.'S GUIDE TO MANAGING LEARNING

What is the purpose of a company's knowledge program? To improve at a rate faster than the competition.

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SENIOR EXECUTIVES AT many of the largest corporations around the world have embraced knowledge or learning as part of their long-term vision to:

> Create a learning organization “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.”¹

A focus on knowledge and learning makes sense: knowledge is increasingly an important source of competitive advantage, the vision of the learning organization is seductive and several prominent companies have achieved spectacular results.

However, the business impact of most knowledge management or learning organization programs is modest at best. We estimate that about one-sixth of these programs achieve very significant impact within the first two years; half achieve small but important benefits; and the remaining third—the failures—have little business impact. The label “failure” may seem unfair because many of these programs generate excitement among participants, stimulate collaboration and create tangible outputs like knowledge databases and collaborative systems. Nevertheless, in our experience, unless a program

generates significant business value, executives under pressure for near-term profitability decide that although a knowledge management or learning organization program might be nice in the long term, it is not a critical current initiative. In fact, a disturbingly high proportion of these programs initiated with great fanfare are cut back within two or three years. And an organization that concludes that “knowledge is an additional cost that does not generate significant business value” is moving away from the learning organization ideal.

Based on our five years of involvement in knowledge and learning organization programs — in Booz-Allen & Hamilton’s own knowledge program, at our clients and in discussions with participants in more than 70 leading programs — we believe that effectively managed learning² can have a significant strategic impact on most companies within the first two years. The less successful programs suffer from four correctable problems:

> No specific business objective, but only general aspirations like “share best practices” or “stimulate collaboration”

> Incomplete program architecture that applies some principles of effective learning but does not build on the linked natural dynamics of organization change and knowledge creation and use

> Insufficient focus upon one or two strategic priorities

> Top management sponsorship without active, ongoing involvement.

Our hypothesis is that these problems stem from top management’s failure to play its accustomed roles of leadership and management — not because of a lack of commitment or interest but rather because top management recognizes that learning requires new management practices and is uncertain about the role it should play.

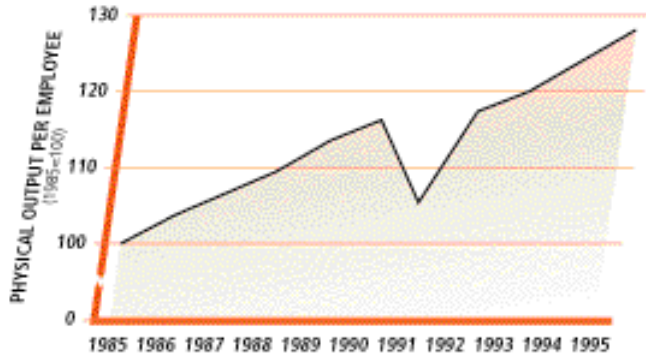
The purpose of this article is to provide C.E.O.’s with sufficient guidance to lead and manage learning and to insure that their organizations achieve significant strategic benefits quickly. Since our focus is top management, we do not discuss the specific tactics for knowledge creation, learning and change that are of greatest interest to the chief knowledge officer or other executive leading the initiative. Although we are all still learning about managing learning, we believe that these guidelines are based on a sufficient accumulation of real world experience — not just hope and hype — that they will prove to be reliable.

SETTING THE OBJECTIVE

The ultimate business objective of learning *should be to systematically accelerate a company’s natural rate of*

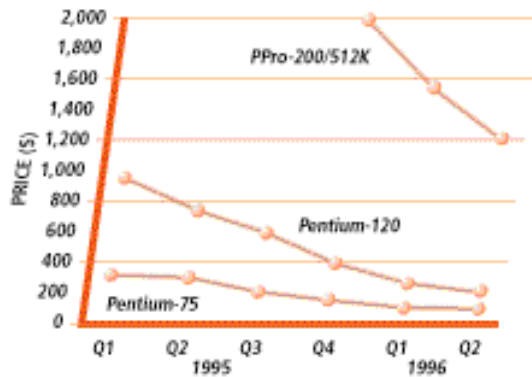
¹Peter Senge, “The Fifth Discipline” (Currency Doubleday, 1990), p. 3.

²Since we believe that effective management of learning simultaneously builds a learning organization and creates and uses knowledge, we use the term “managed learning” to encompass both objectives. In our view, companies should not pursue only one of the two objectives.



Source: Booz-Allen & Hamilton

**EXHIBIT I
PRODUCTIVITY IMPROVEMENT IN A COMMODITY
BUILDING PRODUCTS MANUFACTURER**



Source: Booz-Allen & Hamilton

**EXHIBIT II
INTEL CHIP PRICES**



improvement in value created for the customers it targets. The emerging new paradigm for strategy³ asserts that a company's ability to create greater value for customers than its competitors can provide is the primary driver of improvements in its

competitive position and the creation of long-term value for its shareholders. Improving performance faster than competitors is of obvious strategic importance.

The base line for assessing the effectiveness of learning is the compa-

ny's historical rate of change in the operating measures most important to customers — like cost (for example, total cost per unit, employee productivity or asset productivity), quality or service level (lead times, customer satisfaction or fill rates). For most companies, each operating metric changes at a surprisingly constant rate — what we call the “natural rate of improvement.”

For example, Exhibit I displays the trend in productivity (defined as physical output per employee) for a commodity building products manufacturer. With a minor interruption in 1991 caused by a cyclical decline in volume, the manufacturer's productivity consistently increased by 3 percent a year.⁴

Companies have different natural rates of improvement, not only because of their industry (Intel's pricing of microprocessors in Exhibit II would not make sense if its productivity improved only at the rate of the commodity building products manufacturer) but also because of differing opportunities to learn and differing efficiencies in learning. Hence, there is not a universal standard of an appropriate rate of improvement.

Rates of improvement in operating performance provide a better base line than trends in short-term financial performance because price

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³Charles E. Lucier, Leslie H. Moeller and Raymond Held, “10X Value: The Engine Powering Long-Term Shareholder Returns,” *Strategy & Business* (Third Quarter 1997, Issue 8). Chan W. Kim and Renee Mauborgne, “Value Innovation: The Strategic Logic of High Growth,” *Harvard Business Review* (January-February 1997).

⁴For other evidence of a constant natural rate of operational improvement, see Ray Stata, “Organizational Learning — The Key to Management Innovation,” *Sloan Management Review* (Spring 1988), and Arthur Schneiderman, “Setting Quality Goals,” *Quality Process* (April 1988).

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levels are determined by many factors other than a company's efficiency and effectiveness. These factors include: competition with other firms that are also improving their operational performance, the current balance of supply and demand and the decision about how much value to share with customers (to drive growth) and how much to retain. Financial metrics are particularly inappropriate for commodity manufacturers where large fluctuations in prices (often 20 percent or more) from the top to the bottom of the business cycle obfuscate improvements in operating performance.

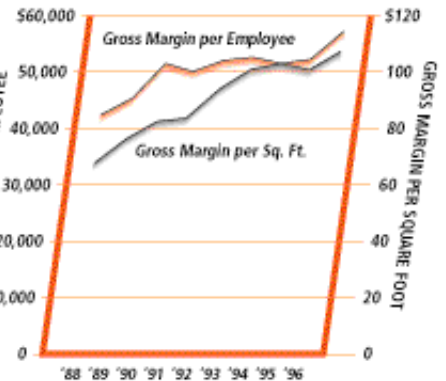
Among the publicly available financial measures, we find that trends in sales per employee, margin per employee and net assets per employee are often sufficiently linked to underlying operating measures to provide meaningful base lines. For example, Exhibit III shows the trends in gross margin per employee and gross margin per square foot for Home Depot, the leading building products retailer

in the United States. Despite rapid growth in sales from \$118 million in 1982 to \$19.5 billion in 1996 and the impact of opening new stores (which have lower productivity in their first year), Home Depot has averaged a 2.4 percent annual increase in gross margin per employee and a 5.7 percent annual increase in gross margin per square foot and now leads its industry in both categories.

In contrast, at the second largest retailer (Lowe's), gross margin per employee has been flat while gross margin per square foot has declined by 5 percent per year.

Motorola and General Electric illustrate the impact — in both magnitude and speed — of learning on the rate of performance improvement even at a large, diversified corporation. Motorola's learning focused on improving quality both in pilot projects (for example, in the Semiconductor Group, where

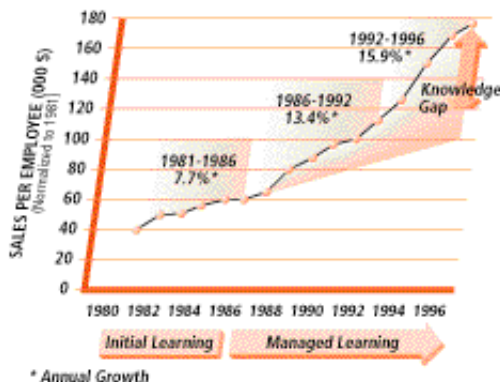
annual quality improvements of 50 percent were attained) and in a company wide effort to improve quality tenfold between 1981 and 1986. In 1986, Motorola inaugurated its large-scale Six Sigma quality effort by investing \$40 million in the training and education of 25,000 employees. Exhibit IV demonstrates that the Six Sigma initiative ultimately doubled the rate



Source: Booz-Allen & Hamilton

**EXHIBIT III
HOME DEPOT'S PRODUCTIVITY**

**EXHIBIT IV
MOTOROLA PRODUCTIVITY**

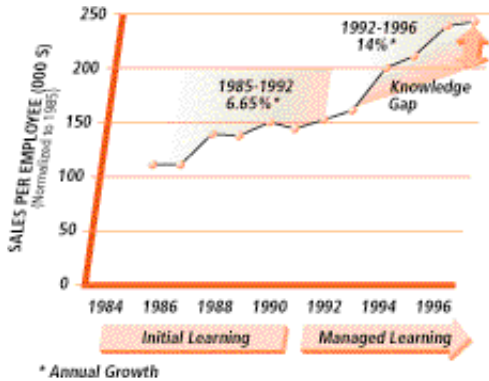


* Annual Growth

Source: Booz-Allen & Hamilton Analysis

of improvement of sales per employee in addition to increasing the rate of improvement in internal measures of quality. The cumulative impact over 10 years of the accelerated rate — what we call the knowledge gap — was a 38 percent increase in sales per employee.

During the 1980's, G.E.'s learning centered on expanding its Management Development Institute and developing new methodologies like "workout." In 1991 and 1992, G.E. broadened its efforts to apply across all of its businesses superior approaches developed by other companies. These included "quick service/quick response" (adapted from Sea Land Appliance, tested by G.E. in Canada in 1986, Motorola inaugurated in 1990 and rolled out in 1991 and 1992), demand flow manufacturing (adapted from American Standard) and, most recently, total quality management. Systematic application of one or two of these new paradigms at a time is enabling G.E. to accelerate the rate of increase of not only operational performance but also publicly available



Source: Booz-Allen & Hamilton Analysis

**EXHIBIT V
GENERAL ELECTRIC PRODUCTIVITY**

aggregate measures like sales per employee. By more than doubling the rate of improvement in sales per employee, G.E. has opened up a knowledge premium of 14 percent in only four years (see Exhibit V).

Some readers have objected that although Exhibits IV and V demonstrate that something significant changed in Motorola and G.E. at the time that efforts to learn were expanded, the analysis does not demonstrate that improved learning caused the acceleration in the rate of performance improvement. Although no analysis can prove causation, the linkage between learning and accelerated improvement is exactly what the theory of learning curves and experience curves leads us to expect. Moreover, the top management teams at Motorola and G.E. expanded their initiatives with the intent of significantly im-

proving performance, and they believe that the initiatives are successful.

Our focus on the objective of measurable acceleration in the rate of performance improvement that creates value for a business's owners and other stakeholders is quite different from most recent discussions of knowledge management and learning organizations. For some zealots, a "learning organization" has become an end in itself — part of the

new relationship between the company and its employees — instead of a means to increase the organization's ability to improve more rapidly. Others⁵ focus on measuring and increasing intellectual assets. Even if knowledge assets can be measured, why should a business focus on maximizing its assets instead of using its assets to create value?

The management implications of managed learning are profound: C.E.O.'s can now manage directly the rate of improvement in performance. In the past, companies selected investments and tactical initiatives whose benefits were defined as the expected increase in the level of performance. The rate of increase in performance was therefore the unmanaged consequence of the stream of investment decisions, moderated by the organization's ability to change and cap-

ture the benefits expected from the investments. That a company's performance improves at a constant natural rate despite lumpy investments suggests that improvements in performance are actually driven by more fundamental forces:

- > The organization's ability to change
- > The depth and use of knowledge, both in the company and in its supplier and customer base.

By managing learning, a C.E.O. directly addresses these fundamentals and can accelerate the company's rate of improvement.

MANAGED LEARNING

Since knowledge is created when leading practitioners apply their best understandings to address a new problem, the value of knowledge (in contrast to information) is not intrinsic but rather dependent on its use. As a result, learning has the greatest value when it is integral to the most important business priorities, not a distinct or additional initiative.

For a business, *managed learning is a more efficient and effective means of achieving the strategic agenda that leverages the natural dynamics of organizational change* and knowledge creation and use. A common misconception is that managed learning is a new issue to be addressed: "Motorola implemented a quality program, not a learning initiative." Our view is that managed learning is not about

⁵See, for example, Thomas Stewart, "Intellectual Capital" (Currency Doubleday, 1997). Skandia and Dow Chemical have also focused on calculating the value of intellectual assets.

what to do but rather about how to do it. It was Motorola's approach to quality through management of the creation and use of knowledge and organization change that caused us to characterize their efforts as managed learning. The same is true for how GE applied superior approaches like quick service/quick response.

Exhibit VI displays the most effective approach to managed learning, building on two natural dynamics that are mutually reinforcing:

- > Systematic creation and use of *knowledge*, which enables not only immediate improvements in performance but also a stream of subsequent improvements as knowledge advances.⁶

- > A rapid series of significant *changes* that are successful by the organization's traditional measures of business performance and reinforced by incentives enhances the organization's long-term ability to change.⁷

The knowledge and change dynamics are mutually reinforcing because advancing knowledge enables the series of significant, successful changes and because an organization willing to change implements knowledge initiatives more quickly and hence exhibits an increased rate of improvement.

State-of-the-art approaches to tactical marketing (like decisions about pricing, breadth of product line and promotions) illustrate the dynamics of managed learning. For example, the traditional approach to pricing in many companies combines a simple national price structure with a complex series of customer or project-specific exceptions and discounts to "meet competition." The discounts (which determine actual price realization) have usually been set intuitively, often through negotiations between the field sales force and a central marketing group with approval authority. In contrast, learning-based pricing includes:

- > Creation of an understanding of how prices should be set, based upon:
 - A historical analysis of the impact of prices (relative to competitors) upon customer behavior, a company's own costs and competitors' reactions

- Current estimates of market and cost positions for the company and its principal competitors by market segment
- Development of the price structure that best accomplishes the company's objectives given the current understandings
 - > Equipping both the central marketing group and the field sales force to use the understandings to set price levels and determine discounts, usually including:
 - Training
 - "What if" tools to evaluate the impact of alternative decisions
 - > Using the new price structure and tools to set prices and discounts
 - > Measuring the impact of the new prices and discounts upon profitability, price realization, costs, market share and customer satisfaction
 - > Leveraging the demonstrated improvements in performance to stimulate adoption of a new approach

to pricing and to change the culture

- > Enhancing subsequent performance through both experience-based improvements in prices and new incentives for the sales force.

Learning-based pricing usually results in significant improvements in profitability — from 20

continued on page 25

**EXHIBIT VI
MOTOROLA PRODUCTIVITY**



Source: Booz-Allen & Hamilton

⁶The spiral of advancing knowledge is discussed in Ikujiro Nonaka and Hirotaka Takeuchi, "The Knowledge-Creating Company" (Oxford University Press, 1995), p. 57.

⁷Of course, when the survival of the organization is threatened, rapid change can be accomplished by a direct intervention that does not depend on learning. However, successful response to a crisis does not seem to increase the organization's long-term ability to change.

LINKING KNOWLEDGE TO BROADER CHANGE

The chief executive of a North American money center bank saw a new objective-setting and performance management system as critical to his efforts to raise the performance of branches and to transform the bank's culture. Previously, objectives were set by negotiation during the annual budget process. Branch profitability was the primary measure used to evaluate local performance, even though everyone knew that the potential profitability of an office was significantly influenced by some mix of the environment (including interest rates, population, income levels and levels of commercial and industrial activity), major decisions (like branch location and head count) and the effectiveness of execution in the branches.

The heart of the new management system was the creation of knowledge both about the business potential of a geographic area and about the expected impact of major decisions. The knowledge could be used to set overall priorities and specific quantitative objectives for individual managers, to guide important decisions and to assess the relative performance of managers — while contributing to a culture of rational, but ever-increasing, performance standards.

Initial development and implementation required three iterations of the knowledge creation and change loops.

First, *validation*. Estimates of both business potential and the impact of decisions were based upon a statistical analysis of historical data. Since the initial estimates yielded some surprising results — both wide variation (plus or minus 40 percent from the mean) and a


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different ranking of the effectiveness of local managers — the initial challenge was validation and improvement of knowledge. During this phase, the quality of the input data was improved and additional variables were found to be important. Broad inclusion of managers at all levels jump-started the change process, not only by capturing managers' attention but also by motivating managers at branches now understood to be underperforming to engage in di-

alogue with their more successful colleagues.

Second, *pilot*. Next, the system was used to guide management in one region. The knowledge was further improved as the results of actual decisions were incorporated in the model. Enthusiasm among managers in the region, both because of their deeper understanding and because of the demonstrable improvements, created positive anticipation in the rest of the country.

Third, *rollout*. National rollout, of course, enabled further knowledge creation and refinement. By this time, the knowledge had sufficient credibility that the estimates of managers' effectiveness were incorporated into performance incentives.

The phased implementation, linking improvements in knowledge to the broader change process, was critical to this bank's success in simultaneously improving performance and transforming the organization and its culture. Had the bank used the knowledge in performance incentives during the first iteration (before the knowledge was sufficiently powerful and before the power was widely recognized), the impact would have been smaller and slower. 

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percent to more than 75 percent in some commodity businesses — in the first year of full rollout.

Implementation is accomplished in three iterations of the linked organizational change and knowledge dynamics, with the emphasis on change versus knowledge varying with each “turn” of the cycle:

> Initially, the knowledge loop is emphasized to create and use the new price structures and levels. Change occurs only in a small pilot community, a relatively small change challenge.

> Next, prices are refined based on the results of the pilot effort, and the focus moves to the change loop as the members of the entire sales force are equipped with tools and learn to apply the tools and to change their dialogues with customers.

> By the third turn, both dynamics operate in more of a steady state as price structures and levels are systematically updated and as the sales force uses the tools more proactively and effectively to prioritize their efforts and to develop target accounts.

The dynamics of knowledge creation and use — and of organization change — must occur in concert to accelerate the natural rate of performance improvement because, by definition, “pricing better” requires both change and knowledge.

The box on page 24 illustrates effective managed learning with a different focus.

Companies where learning “fails” do not build on both linked natural dy-

namics. In fact, most failures explicitly address only one of the dynamics — and then only partially — while completely ignoring the linkage between knowledge and organizational change. Three errors are the most frequent.

First, many companies focus on part of the knowledge creation and use cycle: collaboration and the sharing of “best” practices across the organization, often by leveraging information technology. After an initial burst of enthusiasm, these systems seldom receive sustained use — both because knowledge of “best” is not powerful (more usually, a compilation of current practices) and because the change challenges are not addressed. How valuable is the sharing of current practices without a distillation of what is truly “best” — both internally and externally? Why would a busy, experienced practitioner adopt (or even take the time to read about) the practices of peers who face somewhat different problems? If other practitioners are not using the information, what will motivate people to continually update the database with their current practices? One service business proud of its efforts to create a database of current practices was confronted by the value question the first time it highlighted the database in a selling presentation to a customer. The customer replied: “Since you are not very good practitioners, sharing information about what you’re doing is a waste of time and money. We don’t want to

‘benefit’ from the sharing; just save the money and give us a lower price.”

Other companies try to increase the organization’s ability to change by adopting Peter Senge’s five explicitly “personal” disciplines to modify “how we think, what we truly want and how we interact and learn with one another”⁸ without managing the knowledge creation and use dynamic. The symptom of an excessive reliance on the organizational change dynamic is the large size of two groups: prominent naysayers, and individuals who express interest in participation, but who do not make meaningful contributions because other, higher priorities always intrude. Without the persuasive bottom-line benefits that result from the creation and use of knowledge, the naysayers are not convinced of the benefits from change, and the conflict of priorities is not resolved between urgent tasks and participation in learning.

A third set of companies try to drive improvement by the declaration of the C.E.O. that knowledge and change are critical, reinforced by financial incentives for participation and the promise that naysayers will be dismissed. Although incentives can be powerful motivators, use of incentives to compel change before the value of knowledge is recognized is at best difficult and inefficient because:

> Constructive discussion about the role and value of knowledge is suppressed.

> The C.E.O. faces very difficult

⁸ Peter Senge, “The Fifth Discipline” (Currency Doubleday, 1990), p. 11.

decisions about whether to enforce the incentives against the inevitable subset of top performers who choose not to participate in learning. After all, most of today's top performers understand how to be successful when learning is not managed effectively.

By building on the natural dynamics of change and knowledge and imposing strong incentives at the right time — only after the value of knowledge creation and use is well established — organization change is both more rapid and sustainable.

FOCUS AND MEASURE

All businesses can identify hundreds of ways that more effective organizational change and knowledge creation and use can significantly improve their performance. The best ways for top management to assure acceleration of the rate of performance improvement and drive rapid iterations of the linked knowledge and change loops are:

- > Focus narrowly, like Motorola with quality or G.E. with quick service/quick response or demand flow manufacturing
- > Make learning integral to the most important strategic priorities
- > Measure results.

Few businesses focus their learning as much as they should — neither G.E. during the 1980's (the initial effort was broader and more bottom-up) nor, we are pained to admit, Booz-Allen's own knowledge program. Although well-managed learning can accomplish

significant results quickly despite excessive breadth at companies where knowledge is the business (as at a top management consulting firm like Booz-Allen or an applications engineering business like National Starch, which Unilever recently sold to ICI), we have discovered that a narrower focus enables even greater impact. And other companies with very successful programs (like G.E.) built a second, more focused iteration of learning on the foundation of a broader initial effort.

Since learning is not a distinct activity, the natural focus is one of the two or three most important strategic priorities. Companies can select their focus in at least three different ways:

- > Choose one of the most important current strategic opportunities and identify how the more systematic creation and use of knowledge can accelerate and enhance achievement of the objective. Motorola, Booz-Allen and National Starch all took this path. Similarly, Intel's "Copy Exactly" program focuses on the obviously critical priority of quickly improving quality and reducing costs while ramping up production of a new generation of microprocessors.
- > Find a global best practice that, if successfully implemented across the company, will materially improve operational performance (like G.E.). New strategic planning processes to stimulate breakout thinking and produce strategies that "change the rules of the game" have recently been especially popular.⁹

> Analyze the potential impact of alternative priorities and select the focus with the greatest expected value. (See box on page 27.)

Since companies have managed learning so poorly in the past, all three approaches seem to be viable as long as the result is a tight focus targeted at strategic priorities.

Effective management of any strategic initiative requires metrics. When learning is important, we recommend three tiers of metrics:

- > At the highest level, bottom-line financial impact measured in terms of improvements in specified lines of the income statement or balance sheet
- > Operating performance metrics, which identify the aspects of performance where learning is expected to accelerate the rate of improvement
- > Direct measures of learning to insure that knowledge is being created and used and that change is occurring (for example, number of active participants in knowledge communities, customers impacted by the use of knowledge or number of people trained).

The usual sequence in which to define the metrics is middle-up-down, where the middle metric is the measure a company is targeting for improvement, the up metric charts the financial impact and the down metric is the learning measure that a company wants to keep track of. The decision about focus often implies the middle level metric. One frequent mistake is



⁹Charles E. Lucier, Leslie H. Moeller and Raymond Held, "Planning for Strategic Breakout," Working Paper, Booz-Allen & Hamilton (1997).

to demand quantitative assurance that increases in the lowest-level learning measures “cause” improvements in the bottom line. We believe that the search for causal linkages is misguided in the high-impact strategic priorities that should be the focus for learning. Bottom-line improvements are not the automatic consequence of learning — for example, productivity cannot increase faster than sales unless management forces a reduction in head count — but rather the result of a series of interrelated decisions based on management’s belief and commitment to drive the benefits of learning to the bottom line. The conviction of Motorola’s top management team that Six Sigma quality was crucial to its long-term competitiveness played an important role in capturing the financial value of the learning activities and the accelerating rate of improvement in quality. The three tiers of metrics should be designed to allow diagnosis of problems, identification of opportunities for improvement and retrospective assessment of the plausibility of the linkages among learning, operating performance and the bottom line.

BEYOND SPONSORSHIP TO INVOLVEMENT

Learning usually gets off to a good start: top management sponsors the long-term ideal of creating and using knowledge more effectively or becoming a learning organization, a respected manager is selected to champion learning (often with a title like chief knowledge officer or chief learning officer) and teams are launched with fanfare and excitement.

WINNING SUPERIOR PERFORMANCE

A global company that manages outsourced facilities launched a knowledge initiative targeted at achieving consistent, superior performance. After middle managers identified more than 100 worthy initiatives, top management requested a rational economic assessment of the alternatives as input to the selection of an initial focus. Exhibit VII displays part of the analysis.

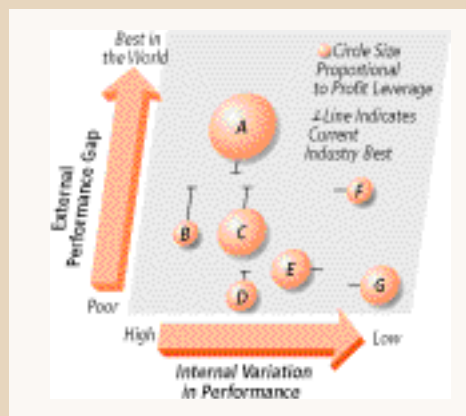
The company evaluated the potential benefit of each alternative along three dimensions. First, it calculated the opportunity to reduce variation in its performance across the facilities it managed (the horizontal axis, where the greater the current variation the greater the opportunity). Second, the value of attaining world-

class levels of performance was assessed (distance on the vertical axis), although the client recognized that implementation of world-class best practice would probably also improve the consistency of its performance. Third, circle size reflected the relative profit impact of a standard level of improvement in performance. In this exhibit, the potential opportunity of an alternative is the distance from the upper right (where the company is consistently at world-class levels of performance) times the size of the circle.

Top management selected alternative A as its initial focus both because the potential profit impact was so large and because it reinforced the company’s current source of competitive advantage.

(Notice that alternative A is the one area where the company’s current performance is better than the industry’s.) Of course, once the focus was selected, the chief knowledge officer had to define and implement the specific initiatives to enhance the alternative selected.

**EXHIBIT VII
EVALUATION OF ALTERNATIVE PROJECTS**



Source: Booz-Allen & Hamilton

To improve on the track record of previous learning efforts — and improvement is necessary since, to date, the vast majority of companies have realized modest results at best — management must do more than be a sponsor: it must remain involved and fulfill four roles.

First, *guide the start-up* by:

- > Setting the initial objectives specifying which measures of operating performance should be expected to increase at what rate

- > Insuring that the program design includes complete and linked knowledge and change dynamics

- > Targeting the initial focus on one or two strategic priorities

- > Selecting the initial scope (which business units and geographies)

- > Incorporating the expected benefits in the financial targets and performance incentives of business units.

Second, *set aggressive targets*: demand rapid and dramatic improvements in performance. Recall the magnitude of the knowledge gaps: 38 percent increase in productivity across the company at Motorola in 10 years and a 14 percent increase at G.E. in four years. One reason that impact can be so rapid is that learning is accelerated — not slowed — by information technology because systems for knowledge sharing are relatively inexpensive and easy to implement. For example, Booz-Allen deployed three increasingly powerful Knowledge On-Line systems (culminating in what continues to be the state-of-the-art knowledge intranet) in three years

at a total development cost of less than \$2 million. Speed is inherent in successful learning because of the power of multiple iterations through the linked knowledge and change dynamics.

Third, *change the organization*. Although learning creates a climate conducive to change, significant and rapid change in the organization requires active involvement by the C.E.O. and top management to reinforce the dynamic and use the formal levers of control:

- > Validating that learning — the strategic focus, the more effective use of knowledge and the improved ability of the organization to change — is important and consistent with the future vision of the company.

- > Evolving incentives and performance metrics consistent with the success in using knowledge and transforming the organization.

- > Helping to manage skeptics, initially by acknowledging that the value of knowledge has not yet been demonstrated and encouraging them to wait before making a judgment; then as results become apparent, by encouraging the skeptics to participate; and finally, once the impact is clear, by demanding their involvement.

Finally, *exercise stewardship*. The key questions are:

- > Is progress on the strategic initiative as rapid as possible?

- > Does top management remain convinced that learning is making a material contribution to the strategic initiative?

- > How can the effectiveness and efficiency of learning be improved?

- > Is the level of spending for specialized resources appropriate? (Any successful learning requires some specialized resources because, at least for a few people, developing the infrastructure knowledge cannot be a hobby or an additional duty.)


- > How do the efficiency and effectiveness of learning compare with the best companies in the world?

- > Should a new focus be selected?

Managing learning is a new challenge for business: the oldest initiatives are less than 20 years old and the majority of knowledge programs are less than 3 years old. Although we are all still learning, initial results demonstrate that:

- > The potential impact is enormous, not only in terms of immediate business impact but also in long-term competitiveness and organization effectiveness.

- > Top management has a crucial role to play in managing learning. As this article has argued, the C.E.O.'s role is the familiar one of leadership and management in the unfamiliar context of accelerating rates of improvement.

And as businesses learn how to manage learning and to fully exploit direct control over the rates of improvement in operational effectiveness, the bottom-line benefits will increase beyond those realized by Motorola, G.E. and the other pioneers. Managed learning enables a C.E.O. to break out of today's hypercompetitive environment and create new opportunities to sustain long-term competitive advantage. 

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