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CONFRONTING THE TENSION BETWEEN LEARNING AND PERFORMANCE

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This article summarizes a paper by Sara J. Singer and Amy C. Edmondson entitled, "When Learning and Performance Are at Odds: Confronting the Tension" (forthcoming in *Performance and Learning Matter,* P. Kumar and P. Ramsey (Eds.), World Scientific Publishing) and discusses research published in the following sources:

Cannon, M. D. and Edmondson, A. C. "Failing to Learn and Learning to Fail (Intelligently): How Great Organizations Put Failure to Work to Improve and Innovate," *Long Range Planning,* 38 (3): 299–319, 2005.

Edmondson, A. "Learning from Mistakes Is Easier Said Than Done: Group and Organizational Influences on the Detection and Correction of Human Error," *The Journal of Applied Behavioral Science,* 32(1): 5, 1996.

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Edmondson, A., Roberto, M. A., Bohmer, R. M., Ferlins, E. M., and Feldman, L. "The Recovery Window: Organizational Learning Following Ambiguous Threats in High-Risk Organizations," in M. Farjoun and W. H. Starbuck (Eds.), *Organization at the Limit: NASA and the Columbia Disaster*, Blackwell, 2004.

Edmondson, A., Roberto, M. A., and Tucker, A. L. *Children's Hospital and Clinics, HBS Case #9-302-050*, Harvard Business School Publishing, 2005.

Lee, F., Edmondson, A. C., Thomke, S., and Worline, M. "The Mixed Effects of Inconsistency on Experimentation in Organizations," *Organization Science*, 15(3): 310–326, 2004.

Tucker, A. L. and Edmondson, A. C. "Why Hospitals Don't Learn from Failures: Organizational and Psychological Dynamics that Inhibit System Change," *California Management Review*, 45(2): 55, 2003.

Few readers would disagree with the suggestion that those who develop and exercise a greater capacity to learn are likely to outperform those less engaged in learning. Indeed, we might make the same unsurprising prediction about individuals, teams, or organizations. Nonetheless, the relationship between learning and performance is not as straightforward as it first appears.

Why is this relationship problematic? First, although learning is clearly essential for sustained individual and organizational performance in a changing environment, at times the costs may be more visible than performance benefits. Learning can be messy, uncertain, interpersonally risky, and without guaranteed results. Moreover, not all learning leads to improved performance; it depends on what is being learned and how important it is for particular dimensions of performance. Although some learning is straightforward (the knowledge is codified and readily used by newcomers), other forms rely on experimentation and exploration for which outcomes are unknown in advance. Lastly, time delays between learning and performance may obscure or even undermine evidence of a clear causal relationship.

As described in this article, organizations can at least partly address these challenges through leadership that creates a climate of psychological safety and that promotes inquiry. But first, let's go into more detail about some of the ways in which a focus on learning can actually appear to undermine performance.

TEAM TIP

Use the information in this article to identify and overcome the barriers to learning in your group and organization.

Impediments to Learning

Where catastrophic failure is possible, mistakes are inevitable, or innovation is necessary, learning from failure is highly desirable. Yet research suggests that few organizations dig deeply enough to understand and capture the potential learning from failures. Why this resistance to learning?

Psychological and Organizational Barriers. A multitude of barriers can preclude learning in teams and organizations. These include limitations in human skills or cognition that lead people to draw false conclusions, and complex and cross-disciplinary work designs that can make failures difficult to identify. Additional barriers include lack of policies and procedures to encourage experimentation or forums for employees to analyze and discuss the results.

Learning about complex, interconnected problems also suffers from ineffective discussion among parties with conflicting perspectives. Status differences, lack of psychological safety, and lack of inquiry into others' information and experiences related to substantive issues can combine to ensure that a group as a whole learns little.

Powerful individuals or respected experts can stifle dissent simply by expressing their opinions. Social pressures for conformity exacerbate the impact of leaders' actions, particularly when large status and power differences exist among leaders and subordinates. In addition, people in disagreement rarely ask the kind of sincere questions that are necessary for them to learn from each other. We tend to try to force our views on others rather than educating

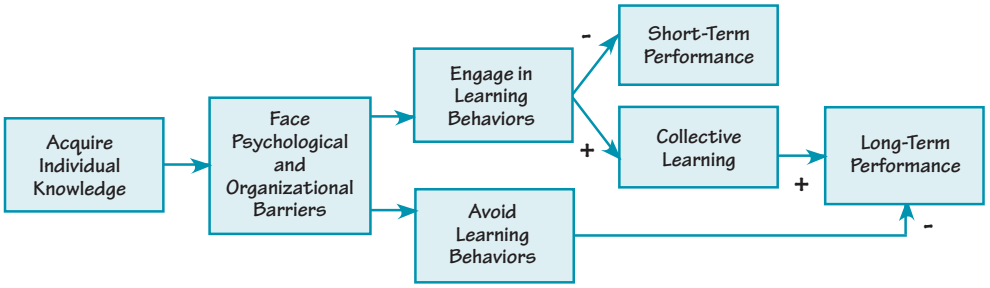
them by providing the underlying reasoning behind our perspectives, as Chris Argyris and Donald Schön showed long ago (see Argyris, C. and Schön, D. *Organizational Learning: A Theory of Action Perspectives,* Addison-Wesley, 1978).

More generally, the human desire to "get it right" rather than to treat both success and failure as useful data greatly impedes learning. Individuals prevent learning when they ignore their own mistakes in order to protect themselves from the unpleasantness and loss of self-esteem associated with acknowledging failure. People may also deny, distort, or cover up their mistakes in order to avoid the public embarrassment or private derision that frequently accompanies such confessions, despite the potential of learning from them. In addition, people derive comfort from evidence that enables them to believe what they want to believe, to deny responsibility for failures, and to attribute a problem to others or the system.

Similarly, groups and organizations tend to suppress awareness of failures. Organizational incentives typically reward success and punish failure, creating an incentive to hide mistakes. Teams and organizations are also predisposed to underreact to the threat of failure when stakes are high, different views and interests are present, and the situation is ambiguous. Such groups can fail to learn and hence make poor decisions.

Multiple mechanisms can combine to inhibit responsiveness and preclude learning in group settings. First, people tend to filter out subtle threats, blocking potentially valuable data from careful consideration. They also remain stubbornly attached to initial views and seek information and experts to confirm initial conclusions. Groups silence dissenting views, especially when power differences are present. They spend more time confirming shared views than envisioning alternative possibilities. Organizational structures often serve to block new information from reaching the top of the organization. Rather, they tend to reinforce existing wisdom.

IMPACT OF PSYCHOLOGICAL AND ORGANIZATIONAL BARRIERS TO LEARNING



While proactively seeking to acquire new capabilities often takes a toll on short-term performance, over time, it benefits both the individual and the organization. Avoiding learning behaviors, on the other hand, can undermine long-term performance.

Inability to Learn from Failure. Most organizations' inability to learn from failure stems from a lack of attention to small, everyday problems and mistakes. Organizations that embrace small failures as part of a learning process are more likely to innovate successfully. Likewise, organizations that pay more attention to small problems are more likely to avert big ones, especially where tasks are interconnected. Despite the increased rate of failure that accompanies deliberate experimentation, organizations that experiment effectively are likely to be more innovative, productive, and successful than those that do not take such risks (see especially Sitkin, S. B. "Learning Through Failure: The Strategy of Small Losses," in L. L. Cummings and B. M. Staw (Eds.), *Research in Organizational Behavior,* Vol. 14: 231–266, JAI Press, 1992, and Cannon and Edmondson (2005), cited above).

Small failures arise not only in the course of purposeful experimentation, but also in daily work that is complex and interdependent. When problems inevitably arise during the course of business in these situations, workers can either simply compensate for or work around problems, or they can seek to resolve the underlying cause by notifying those who can help to correct them. The former would likely go unnoticed, while the latter would expose poor performance. Nevertheless, compensating for problems can be counterproductive if doing so isolates information about problems such that no learning occurs.

In hazardous situations, small failures not identified as problems worth examination often precede catastrophic failures. Small failures are often the key early warning sign that could provide a wake-up call needed to avert disaster down the road. Yet, in recognizing small failures in order to learn from them, individuals and groups must acknowledge the performance gaps.

Collective learning requires valuing failure and being willing to incur small failures in front of colleagues. It requires being willing to enhance rather than reduce variance. Learning groups must proactively identify, discuss, and analyze what may appear to be insignificant mistakes or problems in addition to large failures. When organizations ignore small problems, preventing larger failures becomes more difficult (see "Impact of Psychological and Organizational Barriers to Learning").

The Learning Mindset

Given the above challenges, this section describes some of the theoretical alternatives for promoting organizational learning that enhances future performance. It ties together different but related ideas from research at several levels of analysis (see "Learning Mindsets at Multiple Levels of Analysis," p. 4).

Advocacy and Inquiry Orientations. As discussed above, organizational structures and processes can severely inhibit the ability of a group to effectively incorporate the unique knowledge and concerns of different members. Key features

LEARNING MINDSETS AT MULTIPLE LEVELS OF ANALYSIS			
	Dimension	**Performance Orientation**	**Learning and Innovation Orientation**
Individual & Group	Behavioral characteristics of individuals and group members	Advocacy orientation • Lack of listening • Reliance on quantitative data	Inquiry orientation • Openness, tolerance for ambiguity • Reliance on intuition and interpretation
	Leader response to problems	Confirmatory response • Reinforce accepted assumptions	Exploratory response • Experiment to test assumptions
	Leader approach to environment	Coping • View as threat • Technically oriented	Learning • View as exciting opportunity • Team oriented
Organization	Behavioral characteristics of organizations	Exploitation • Appropriate in mature markets • Focus on execution	Exploration • Appropriate in uncertain environments • Focus on learning and experimentation
	Leader mindset and organizational design	Organize to execute • Ask, "Did we do it right?" • Promote first-order learning	Organize to learn • Ask, "Did we learn?" • Promote second-order learning

of group process failures include antagonism; a lack of listening, learning, and inquiring; and limited psychological safety for challenging authority. These kinds of individual and interpersonal behaviors have been collectively referred to as an *advocacy orientation* (Garvin and Roberto introduced this term in "What You Don't Know About Making Decisions," *Harvard Business Review,* Vol. 79, No. 8, September 2001).

For example, simple but genuine inquiry into the thinking of other team members could have generated critical new insights about the threat posed by the foam strike to the Columbia space shuttle. Instead, NASA managers spent 16 days downplaying the problem and so did not view the events as a trigger for conducting detailed analyses of the situation. A recent analysis by Roberto, Bohmer, and Edmondson concluded that NASA's response to the foam strike threat was characterized by active discounting of risk, fragmented, discipline-based analyses, and a wait-and-see orientation to action. When engineers became concerned about the foam strike, the impact of their questions and analyses was dampened by poor team design, coordination, and support. In contrast to the flat and flexible organizational structures that enable research and development, NASA exhibited a rigid hierarchy with strict rules and guidelines for behavior, structures conducive to aims of routine production and efficiency. The cultural reliance on data-driven problem solving and quantitative analysis discouraged novel lines of inquiry based on intuitive judgments and interpretations of incomplete, yet troubling information. In short, the shuttle team faced a significant learning opportunity but was not able to take advantage of it due to counterproductive organizational and group dynamics.

In contrast, effectively conducting an analysis of a failure requires a spirit of inquiry and openness, patience, and a tolerance for ambiguity. Such an *inquiry orientation* is characterized by the perception among group members that multiple alternatives exist, frequent dissent, deepening understanding of issues and development of new possibilities, filling gaps in knowledge through combining information sources, and awareness of each others' reasoning and its implications. Such an orientation can counteract common group process failures. Learning about the perspectives, ideas, experiences, and concerns of others when facing uncertainty and high-stakes decisions is critical to making appropriate choices.

Confirmatory and Exploratory Responses. Leaders play an important role in determining group orientation to an observed or suspected failure. Analyzing the Columbia Shuttle tragedy, Edmondson and colleagues suggested that when small problems occur, leaders can respond in one of two basic ways. A *confirmatory response* —appropriate in routine production settings, but harmful in more volatile or uncertain environments—reinforces accepted assumptions, naturally promoting an advocacy orientation on the part of leaders and others. When individuals seek information, they naturally look for data that confirms existing beliefs. Confirmatory leaders act in ways consistent with established frames and beliefs, passive and reactionary rather than active and forward-looking.

In uncertain or risky situations or where innovation is required, an *exploratory response* may be more appropriate than seeking to confirm existing views. An exploratory response involves challenging and testing existing assumptions and experimenting with new behaviors and possibilities, the goal of which is to learn and to learn quickly. By deliberately exaggerating ambiguous threats, actively directing and coordinating team analysis and problem solving, and encouraging an overall orientation toward action, exploratory leaders encourage inquiry and experimentation. Leaders seeking to encourage exploration also actively foster constructive conflict and dissent and generate psychological safety by creating an environment in

which people have an incentive, or at least do not have a disincentive, to identify and reveal failures, questions, and concerns. This form of leader response helps to accelerate learning through deliberate information gathering, creative mental simulations, and simple, rapid experimentation.

Rather than supporting existing assumptions, an exploratory response requires a deliberate shift in the mindset of a leader—and of others—that alters the way they interpret, make sense of, and diagnose situations. When leaders follow an exploratory approach, they embrace ambiguity and openly acknowledge gaps in knowledge. They recognize that their current understanding may require revision, and they actively seek evidence in support of alternative hypotheses. Rather than seeking to prove what they already believe, exploratory leaders seek discovery through creative and iterative experimentation.

Learning-Oriented and Coping-Oriented Approaches. When implementing an innovation such as a new technology or practice, leaders can orient those who will be responsible for implementation by responding in one of two ways. They may view the innovation challenge as something with which they need to cope or as an exciting learning and improvement opportunity. A *coping-oriented* approach is characterized by protective or defensive aims and technically oriented leadership. In contrast, *learning-oriented* leaders share with team members a sense of purpose related to accomplishing compelling goals and view project success as dependent on all team members.

In a study of 16 cardiac surgery departments implementing a minimally invasive cardiovascular surgery technique, successful surgical team leaders demonstrated a learning-oriented approach rather than a coping approach. Learning-oriented leaders explicitly communicated their interdependence with others, emphasizing their own fallibility and need for others' input for the new technology to work. Without conveying any loss of expertise or status, these leaders simply recognized and communicated that in doing the new procedure they were dependent on others. In learning-oriented teams, members felt a profound sense of ownership of the project's goals and processes, and they believed their roles to be crucial. Elsewhere, the surgeon's position as expert precluded others from seeing a way to make genuine contributions beyond enacting their own narrow tasks, and it put them in a position of not seeing themselves as affecting whether the project succeeded or not. Learning-oriented teams had a palpable sense of teamwork and collegiality, aided by early practice sessions.

Organizing to learn and organizing to execute are two distinct management practices, one suited to exploration and the other to exploitation respectively.

In addition, team members felt completely comfortable speaking about their observations and concerns in the operating room, and they also were included in meaningful reflection sessions to discuss how the technology implementation was going. In teams that framed the innovation as a learning opportunity, leaders enrolled carefully selected team members, conducted pretrial team preparation, and engaged in multiple iterations of trial and reflection. Dramatic differences in the success of learning-oriented versus coping-oriented leaders suggest that project leaders have substantial power to influence how team members see a project, especially its purpose and their own role in achieving that purpose.

Organizational Exploitation and Exploration. Inquiry and advocacy orientations describe individuals and groups; exploration and exploitation are terms that have been used to describe parallel characteristics of organizations. In mature markets, where solutions for getting a job done exist and are well understood, organizations tend to be designed and oriented toward a focus on execution of tasks and *exploitation* of current products or services. In more uncertain environments, knowledge about how to achieve performance is limited, requiring collective learning—or *exploration* in which open-ended experimentation is an integral part. In sum, exploration in search of new or better processes or products is conceptually and managerially distinct from execution, which is characterized by planning and structured implementation and amenable to formal tools such as statistical control.

Organizing to Learn and Organizing to Execute. In the same way that leader response drives group member orientation, the mindset of organizational leaders as well as the structures and systems they initiate play a large role in determining firm behavior and capabilities. Organizing to learn and organizing to execute are two distinct management practices, one suited to exploration and the other to exploitation respectively.

Where problems and processes are well understood and where solutions are known, leaders are advised to *organize to execute*. Organizing to execute relies on traditional management tools that motivate people and resources to carry out well-defined tasks. When reflecting on the work, leaders who organize to execute are well advised to ask, "Did we do it right?" In general, this approach is systematic, involves first-order learning in which feedback is used to modify or redirect activities, and eschews diversion from prescribed processes without good cause.

In contrast, facing a situation in which process solutions are not yet well developed, leaders must *organize to learn*: generating variance, learning from failure, sharing results, and experimenting continuously until workable processes are discovered, developed, and refined. Motivating organizational exploration requires a different mindset than motivating accurate and efficient execution. Leaders must ask not "did we succeed?" but rather "did we learn?"

In this way, organizing to learn considers the lessons of failure to be at least as valuable as the lessons of success. Such a managerial approach organizes people and resources for second-order learning that challenges, reframes, and

expands possible alternatives. Practices involved in organizing to learn include promoting rather than reducing variance, conducting experiments rather than executing prescribed tasks, and rewarding learning rather than accuracy.

Creating systems to expose failures can help organizations create and sustain competitive advantage. For example, General Electric, UPS, and Intuit proactively seek data to help them identify failures. GE places an 800 number directly on each of its products. UPS allocates protected time for each of its drivers to express concerns or make suggestions. Intuit staffs its customer service line with technical designers, who directly translate feedback from customers into product improvements. At IDEO, brainstorming about problems on a particular project often enables engineers to discover ideas that benefit other design initiatives. At Toyota, the Andon cord, which permits any employee to halt production, enables continuous improvement through frequent investigation of potential concerns.

Leading Organizational Learning

Edmondson's research has identified several success factors for leaders seeking to incorporate learning into their efforts to manage their organizations effectively. These include recognizing and responding to the need for learning versus execution, embracing the small failures from which organizations can learn, and maintaining the ability to shift nimbly between learning and execution as needed.

Diagnose the Situation and Respond Accordingly. Rather than vary their style as appropriate for the situation, in practice leaders tend to employ a consistent approach. They frequently gravitate toward organizing to execute, particularly when associated practices are consistent with the organization's culture. However, being good at organizing to execute can hamper efforts that require learning. When leaders facing a novel challenge organize to execute rather than employing a learning approach, their organizations miss opportunities to innovate successfully.

Several years ago, the new chief operating officer at Children's Hospital and Clinics in Minnesota, Julie Morath, exemplified a mindset of organizing to learn. Emphasizing that she did not have the answers, she invited people throughout the organization to join in a learning journey, aimed at discovering how to ensure 100 percent patient safety.

Organizing a team to experiment and learn about an unknown process requires a management approach that embraces failure rather than seeking perfect execution.

Embrace Failure. Organizing a team to experiment and learn about an unknown process requires a management approach that embraces failure rather than seeking perfect execution. Discovery and expeditious trial and error are the keys to successful learning. In the Electric Maze®, an interactive learning exercise created by Interel, participants recognize how unnatural collective learning is for most managers. Teams of students must get each member from one end of the maze to the other without speaking. Individuals step on the maze until a square beeps, at which point the individual must retrace his or her steps back to the start.

To optimize the learning process, the team should "embrace failure" (symbolized in the Electric Maze exercise as "beeps going forward") and systematically collect as many "failures" as quickly as possible. More typically, however, the need to learn is hampered by the perceived interpersonal risk of "failing" in front of colleagues by stepping on a beeping square. In reality, only by stepping on beeping squares can the team learn quickly and discover the true path forward. The exercise offers a palpable experience to show managers that the desire to look as if one never makes mistakes hinders team and organizational learning.

Maintain Flexibility and Shift as Needed. Some business situations require innovation and execution simultaneously, or in rapid sequence. However, shifting from organizing to learn to organizing to execute can be difficult. Participants in the Electric Maze exercise come to appreciate this challenge as well. To find the correct path through the maze requires organizing to learn.

Once the path is discovered, teams are required to have participants walk through the path as quickly as possible with minimal error. In practical terms, this means the teams must shift their behavior from learning to execution, something that most teams find difficult. The Maze exercise illustrates that managing a team for superb execution of a known process calls for a different approach than managing a team to experiment and discover a new process. The ability to recognize situations that require learning and the flexibility to shift from execution to learning requires awareness as well as skillful management, posing significant challenge to many leaders and competitive advantage to leaders with such ability.

Implications for Performance Measurement

The implication of the complex relationship between learning and performance for performance measurement is worth a brief discussion. Performance is easier to measure in execution contexts than in exploratory learning contexts. In the latter, performance can be challenging to measure in the short term, even if it contributes to clear performance criteria in the long term.

Consider the Electric Maze exercise again. In the second phase, excellent performance is error-free, rapid completion of the task—every member traversing the discovered path. In the first phase, success requires encountering and learning from failures, but how many is the right number? How fast should experiments be run? As in this example, the success of experimentation is far more difficult to assess than the success of execution.

Clearly, there are situations in which it is appropriate to measure performance against quality and efficiency standards. This is true when tasks are routine. However, employee rewards

based primarily on indices measuring routine performance, such as accuracy and speed, can thwart efforts to innovate. Stated goals of increasing innovation are more effective when rewards promote experimentation rather than penalize failure. At Bank of America, for example, innovation was an espoused value. Leaders targeted a projected failure rate of 30 percent as suggestive of sufficient experimentation. However, few employees experimented with new ideas until management changed its reward system from traditional performance measures to those that rewarded innovation. Truly supporting innovation requires recognition that trying out innovative ideas will produce failures on the path to improvement.

Leaders need to align incentives and to offer resources to promote and facilitate effective learning. Supporting improvement requires understanding that mistakes are inevitable in uncertain and risky situations. Organizations must reward improvement rather than success, reward experimentation even when it results in failure, and publicize and reward speaking up about concerns and mistakes, so others can learn. Policies that reward compliance with specific targets or procedures encourage effort toward those measures but may thwart efforts toward innovation and experimentation.

Given the problematic nature of the relationship between learning and performance, to provide incentives for learning, performance measurement must examine learning, not just performance. Useful tools include surveys, questionnaires, and interviews to examine attitudes toward and depth of understanding regarding new ideas, knowledge, and ways of thinking. Process measures are also helpful. Direct observation is useful for assessing behavioral change due to new insights. Finally, performance measurement must consider improvement by measuring results over time. Groups that improve more over a fixed time frame or that take less time to improve must be learning faster than their peers.

Supporting improvement requires understanding that mistakes are inevitable in uncertain and risky situations.

Conclusions

This brief article calls attention to some of the challenges and tensions that exist when trying to improve team or organizational performance through proactive learning. We note several ways in which learning and performance in organizations can be at odds. Notably, when organizations engage in a new learning challenge, performance often suffers, or appears to suffer, in the short term. Struggling to acquire new skills or capabilities often takes a real, not just apparent, toll on short-term performance. Moreover, by revealing and analyzing their failures and mistakes—a critical aspect of learning—work groups may appear to be performing less well than they would otherwise.

The work reviewed here has elucidated the challenges of learning from failure in organizations, including the challenges of admitting errors and failures and production pressure that make it difficult to invest time in learning. These challenges are at least partially addressed by managerial efforts to create a climate of psychological safety and to promote inquiry. Leadership is thus essential to foster the mindset, group behaviors, and organizational investments needed to promote today's learning and invest in tomorrow's performance. ◘

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NEXT STEPS

- Evaluate your organization's ability—and willingness—to learn from both success and failure. Do workers compensate for or work around problems, or do they seek to resolve the underlying causes? If it's the former, you may need to revamp incentive systems to reward improvement rather than success or to make it safe for people to acknowledge mistakes.
- Rely on inquiry rather than advocacy, especially regarding failures. Likewise, in uncertain situations or ones in which innovation is required, choose an exploratory rather than a confirmatory approach. These shifts require practice and commitment, but they are critical to overcoming counterproductive group dynamics.
- In launching a new initiative or moving an existing initiative forward, determine whether you need to organize to execute or organize to learn. Depending where you are in the process, you may need to first organize to learn and then later organize to execute.
- For innovative projects, design performance measurement systems that reward experimentation, even when it results in failure. Also, implement ways to measure learning, not just performance, including direct observation, surveys, and interviews.