

SAFESTART HUMAN FACTORS



CONFERENCE

2022

Orlando, FL

November 8 & 9

VICARIOUS LEARNING AS A TOOL FOR SAFETY

Christopher G. Myers, PhD
Johns Hopkins University

cmyers@jhu.edu | [@ChrisGMyers](https://twitter.com/ChrisGMyers) | christophergmyers.net

Roadmap for Today

Toward A Culture of Learning at Work

- | Challenges and opportunities of learning with and from others

Vicarious Learning in Teams

- | Learning and sharing knowledge with other team members

Learning from Outside the Team

- | Vicarious learning beyond the borders of the team



Why Build a Culture of Learning?

Knowledge and expertise are critical resources, but are often mismanaged (if managed at all)

- | **Fortune 500** collectively lose more than \$31.5 billion each year by failing to share knowledge internally

Organizations are experiencing massive shifts in:

- | How work is done (guidelines/technology) and
- | Who is doing it (new staff with different experiences, expectations)
- | Changes to the amount, relevance, and flow of knowledge in teams

The Challenge of Scaling up Learning

Individual learning efforts alone can't get us there

- | Smart, well-trained individuals faced with frequent problems solve problems locally, with less effort to develop systematic solutions

- || First-order vs. second-order problem solving



Clinical/research teams need systematic learning

- | Challenging: requires coordinated efforts at the level of leadership, process, and culture



Plus, Different Types of Knowledge at Work

Explicit Knowledge

- | Knowledge or skills that can be written down, articulated, or recorded
- | Information-based knowledge that you can identify or explain



Tacit Knowledge

- | Ideas or abilities that are difficult to define, codify, or express to others
- | Deep, experience-based knowledge that “you just know”



And Individual Differences in Approach

Learning Goal Orientation

Desire to develop the self by acquiring new skills, mastering new situations & improving competence

Focus on improving skills & acquiring knowledge

Less concerned with making mistakes

Associated with greater intrinsic motivation

| Personal development

Performance Goal Orientation

Desire to prove one's competence (or avoid disproving competence) & gain favorable judgments

Focus on achieving a high level of performance

Tend to avoid tasks where they might make a mistake

Associated with more extrinsic motivation

| External evaluation

Why do These Approaches Matter?

Strong Research Evidence:

Learning Goal Orientation

- | Greater effort on tasks
- | Increased job performance
- | Resilience and seeing challenges as “opportunities”

Performance Goal Orientation

- | Preference for “rehearsed” tasks
- | Anxiety and pre-occupation with failure
- | Greater chance of unethical behavior

Organizational Life Presents Many Learning Opportunities

Learning from formal training or classroom education

- | Often emphasized in early stages; focus is predominantly explicit knowledge

Learning from reflecting on one's own experiences

- | Allows development of explicit knowledge (abilities) as well as tacit knowledge (underlying reasons/processes)

Learning from the lessons of others' experiences (**Vicarious Learning**)

- | Build explicit knowledge from others' successful/failed techniques, while also absorbing tacit knowledge ("why we do it this way")
- | Shared through observation, storytelling, apprenticing, etc. (formal or informal)

Vicarious Learning

Learning from others' experiences and insights allows **divergent perspectives**, **new ideas**, and **novel solutions** to emerge.



Why Learn From Others?

Beyond obvious informational benefits, learning is a resourcing activity that can help buffer negative effects of stressful work

Survey Data: Team learning behavior associated with lower burnout among medicine residents

- | Particularly for individuals with lower individual trait learning goal orientation
- | Above-and-beyond beneficial effects of supportive organizational context



Promoting Vicarious Learning

Leaders create opportunities for individuals to interact and learn from others' experiences

| Google's physical headquarters; "engineering serendipity" through "casual collisions of the workforce"

| YAHOO!'s decision to eliminate telecommuting: "some of the best decisions and insight come from hallway and cafeteria discussions"

Two Important Questions

| What about virtual teams? (stay tuned)

| So we just bring them together, and they learn?

Just Bring Them Together?

Harnessing knowledge: **Who generates innovative solutions?**

| Data on working independently vs. in brainstorming groups (with same number of people) for similar amount of time

	Individuals Working Independently	Team in Brainstorming Meeting
Quantity: Number of ideas generated	74.5	28
Quality: Percentage of “good ideas” (judged by blind experts)	12.7%	8.9%

Wait, What?

Teams are often **less** innovative than individuals working alone.

Teams have the **potential** for tremendous learning benefits, but they can be difficult to **realize** due to team barriers

| e.g., tendency towards convergent, vs. divergent, thinking

Requires effective team process to overcome limitations and harness benefits of the teams' accumulated knowledge and wisdom

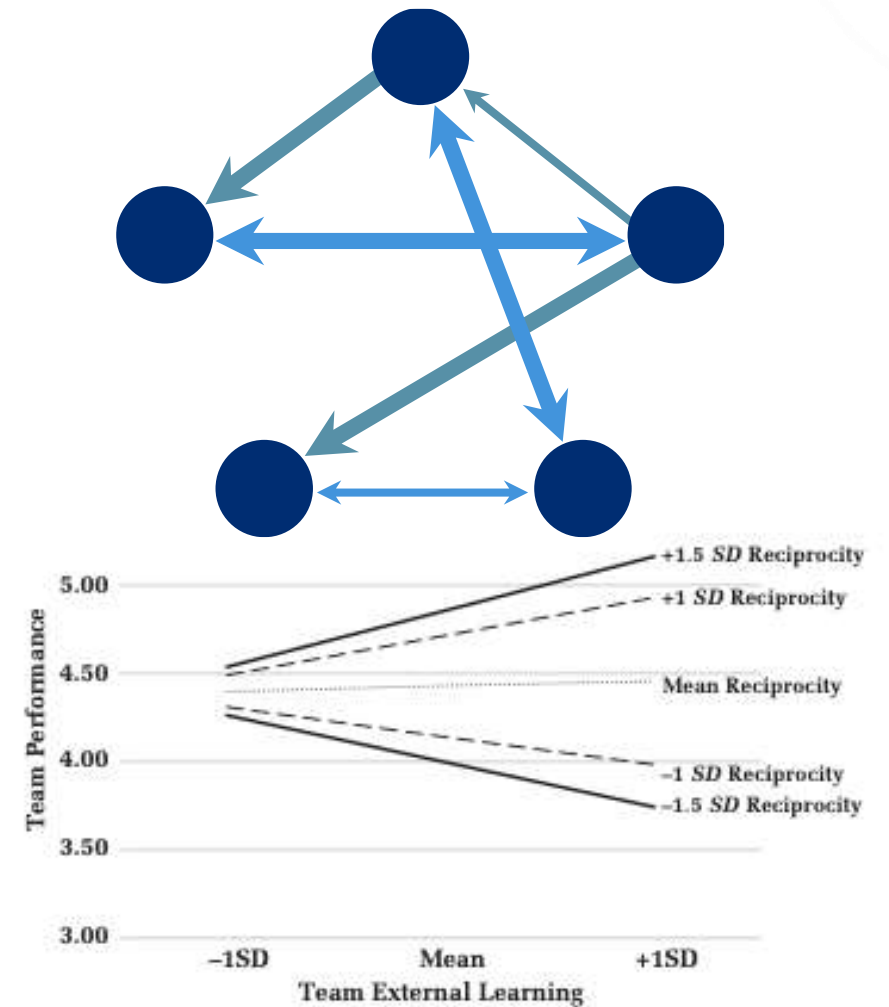


How Learning is Structured in Teams Matters

Vicarious learning is particularly effective when it is reciprocated between team members

| Not just expert → novice

Stronger reciprocal vicarious learning improves team performance, and also allows teams to make better use of external knowledge



So How Do We Create These Interactions?

Multi-year ethnography of an Air Medical Transport organization revealed peer-to-peer **storytelling** about past transport experiences as a key tool for sharing experiences

| Story format captures complexity and tacit elements, and encourages further discussion during mutually-agreed-upon “time and place”

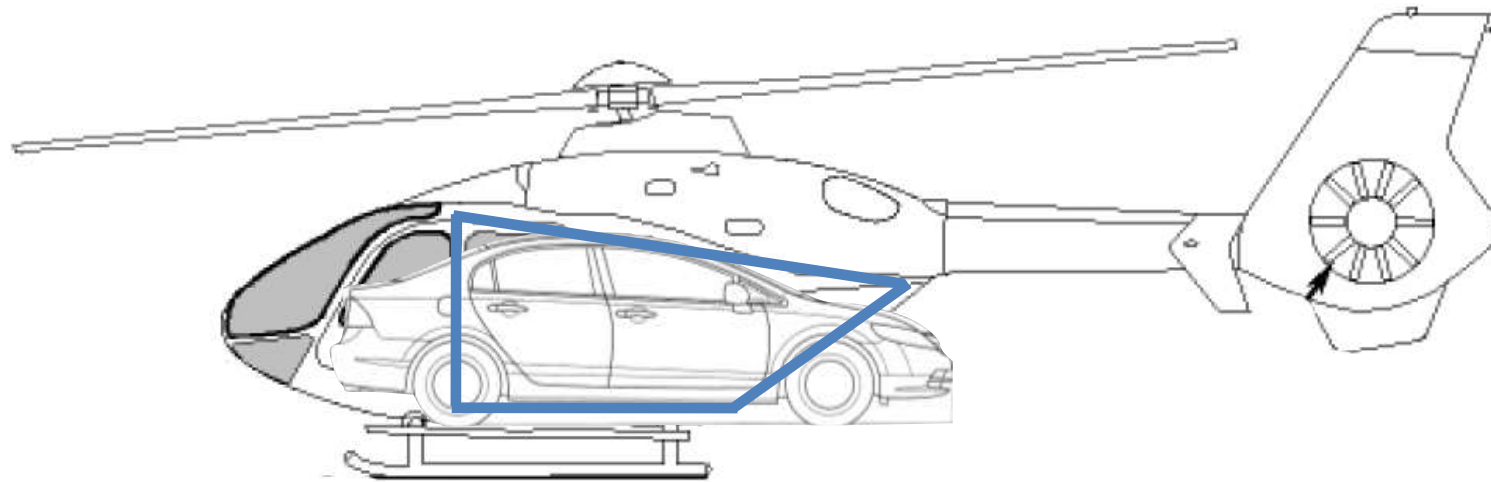


Learning Challenges in Air Medical Transportation

“High acuity, low volume”

- | Varying, non-standard patients
- | Critical consequences for error
- | Complexity of transport

**Requires learning from not only
one's own experiences,
but others' as well**



So How Do We Create These Interactions?

“That tradition of stories helps prepare people for that truly unique or different experience... In some ways that’s instilling the experience or knowledge or ‘lessons learned’ from those transports onto [others] in sort of an informal way, which, (a) lets them know the potential for that crazy, unique, different transport is out there, and that it could happen. And then, (b) they’ll pick up on the strategies we use [or] employ to manage it.”

Supported by organizational structures and practices that:

1. Build the necessary capacity for learning (e.g., formal quarterly learning requirements and generalist hiring standards)
2. Scale and routinize lessons from storytelling (e.g., weekly grand rounds to discuss/raise issues to leadership and story-based clinical simulations)

What Kinds of Stories Should We Tell?

Learning from **Failure** & **Success**

- | 10 years of data on 71 cardiothoracic surgeons (>6,500 minimally invasive procedures)

Surgeons learn more (↓ patient mortality) after their own successes than after failures, but learn more from colleagues' failures than successes

- | **Fundamental attribution error**

However, others' failures & own successes help individuals learn from own failures

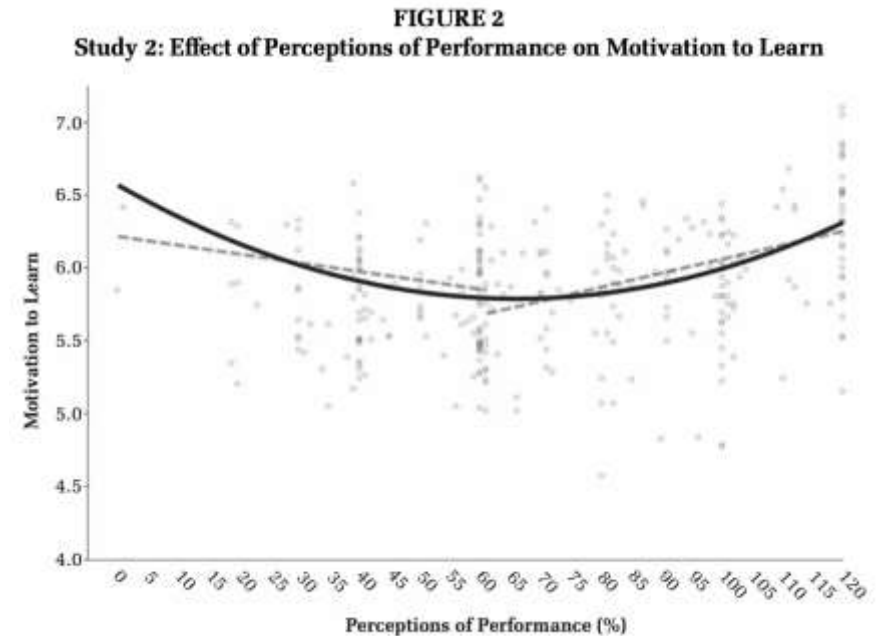


What Kinds of Stories Should We Tell?

Failure, Success, & Exceptional Success

- | ED clinician's motivation to learn from stories of others' failure, success, & exceptional success
- | Motivation to learn among participants in online study (completing a blood smear labeling task) from (fake) story of past participants' success

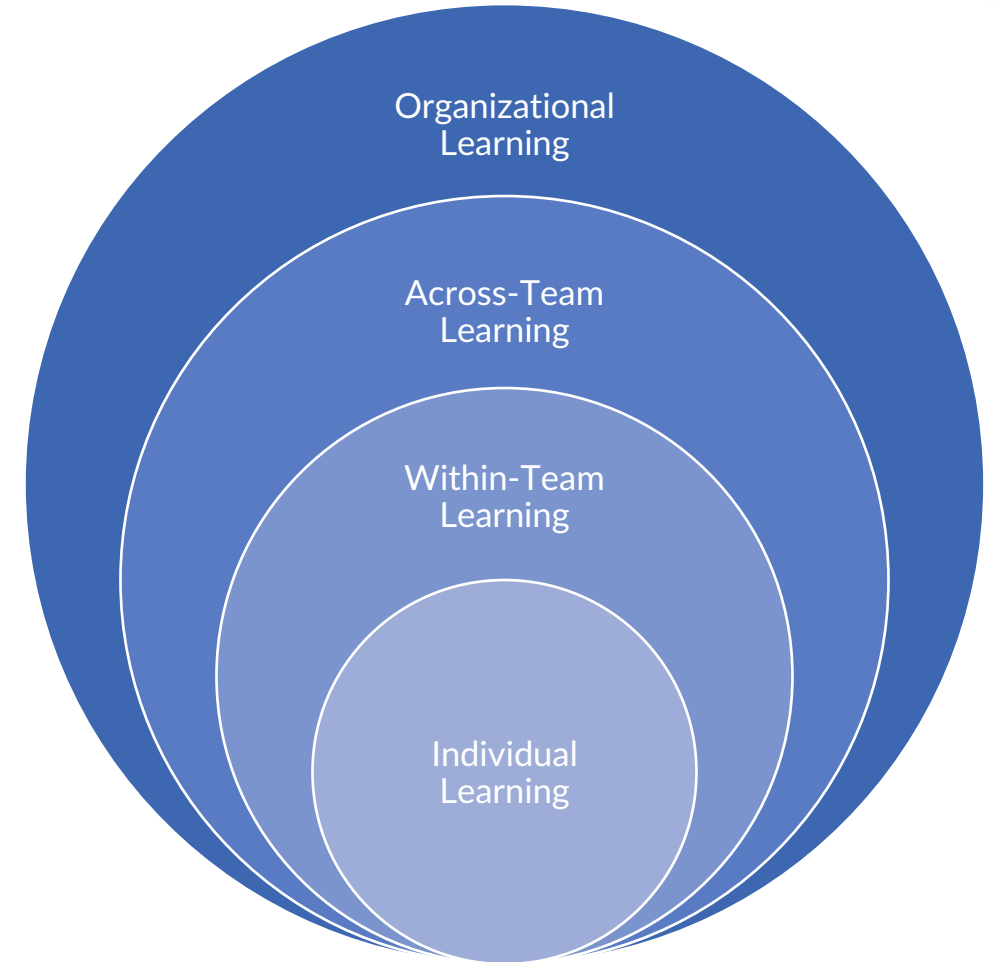
Motivation to learn was higher for exceptional success (and sometimes failure) relative to “normal” success



Learning Beyond the Team's Boundaries

Essential knowledge for individual and team performance often resides outside the team and its members

- | Successes/failures made by other teams/units within the organization
- | Technological changes and developments within the industry
- | Innovations from adjacent fields

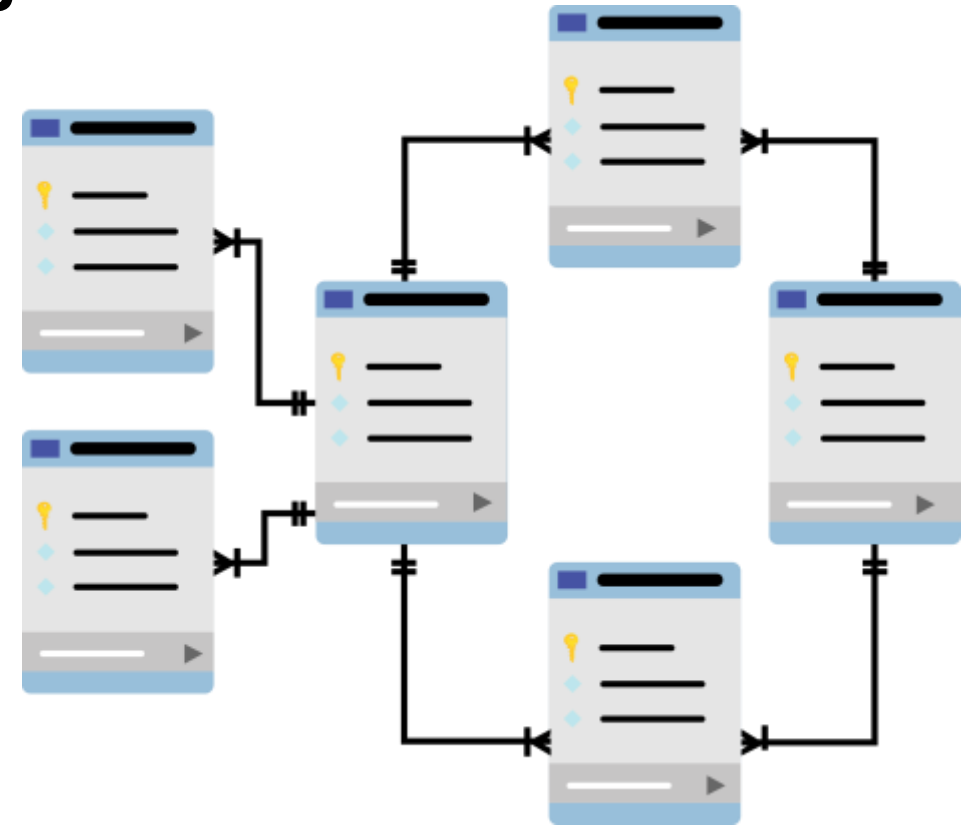


Learning from Other Parts of the Organization

Typical Approach: **Knowledge Management**

Implementing formal **systems** and **conduits** for sharing knowledge and information

| Information management systems, expertise maps, etc.



Information-focused vs. Experience-focused

Knowledge management systems tend to be focused on codified, explicit information that can be recorded and applied elsewhere

- | But sometimes this information is not enough (missing tacit element)

- | **Bain & Co. Manager:** knowledge repositories/databases offer *“a picture of a cake without giving out the recipe”*

Others' practices and knowledge don't automatically translate

- | Practices need adaptation/modification to fit new context, but key contributors to success are not always identifiable, leading to wholesale imitation strategies (e.g., Intel's **“Copy Exactly!”**)

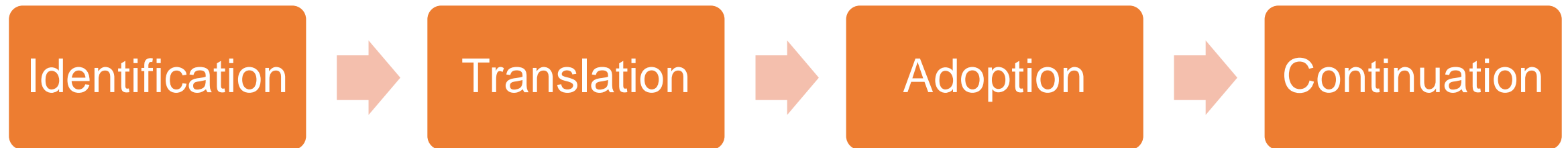
Effective Cross-team Vicarious Learning

Two-year study of 8 pharmaceutical drug development teams

- | In-licensing teams: charged with locating, researching, and negotiating the acquisition of drugs discovered by an external source
- | High stakes: Need to do deliver and avoid repeating past mistakes

Developed 4 stage process of adopting other groups' routines

- | Iterative & inquiry-based, vs. prescriptive advocacy



Scaling Beyond the Organization

Global vicarious learning in the face of COVID-19

- | Learning from others' experience to improve response as disease migrates
- | Formal knowledge-sharing efforts (i.e., WHO reports, national policy-making), but limited peer-to-peer learning regarding on-the-ground treatment

Effective vicarious learning is impeded by many of the necessary restrictions imposed by the threat of a pandemic like COVID-19

- | Face-to-face discussion and mutual co-construction of learning is challenging in an era of social distancing and increased isolation
- | **Ripe opportunity for technology and social media platforms**

Social Media as a Platform for Vicarious Learning

One Example (out of many):

Robotic Surgery Collaborative Facebook Group

“ *It gives me real time surgical feedback from my peers on a level that isn't possible any other way. Not only do I learn but others can simultaneously learn from my mistakes and not repeat them. It permits rapid dissemination of helpful and new techniques which make me a better surgeon for my patients.*



Learning Vicariously from Other Fields

Learning from Other Disciplines Lies at the Root of Innovation

| **One example:** Foundational study in anesthesiology utilizing the critical incident technique was led by a former Dupont engineer (Jeffrey Cooper)

Requires a Shift from NIH to PFE:

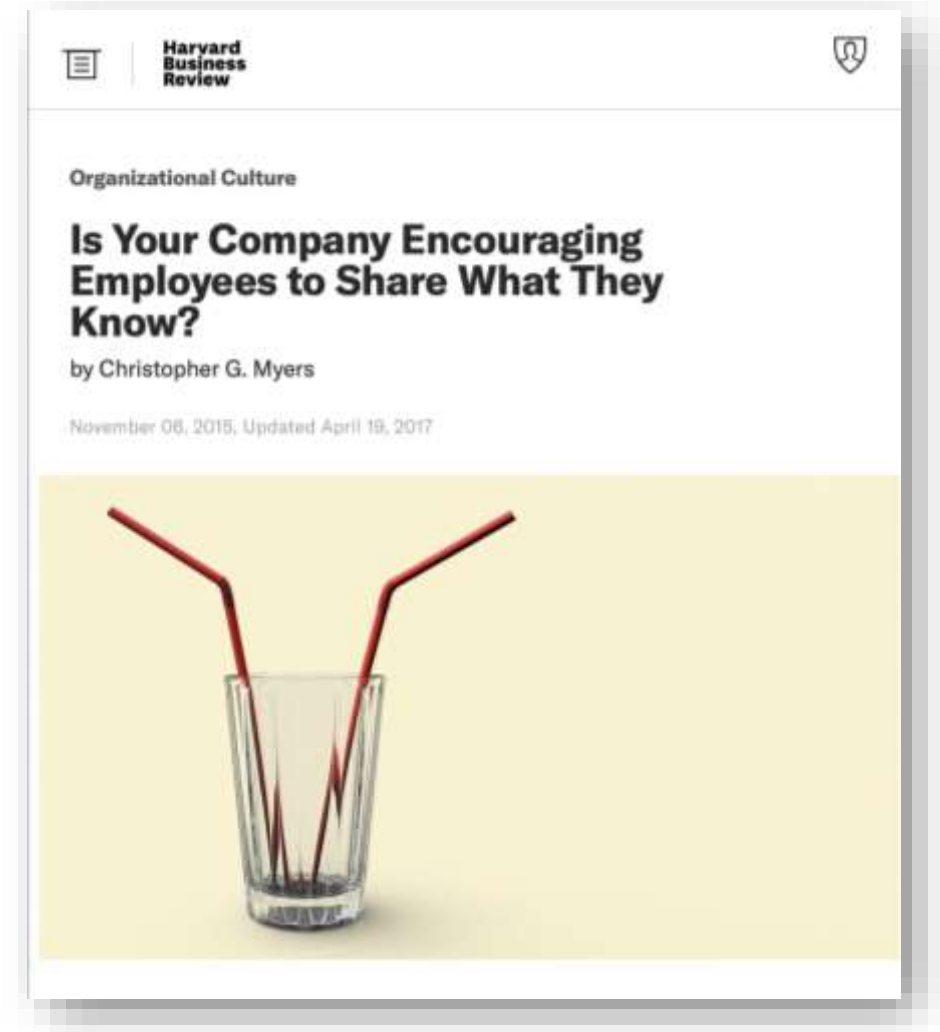
“Proudly Found Elsewhere”*

| *Proudly adopted from studies of R&D



Leading your Teams for Vicarious Learning

1. Create designated space
2. License and endorse
3. Plant starter seeds



SAFESTART HUMAN FACTORS



CONFERENCE

2022

Orlando, FL

November 8 & 9

Reach Out Anytime with Questions,
Comments, or Thoughts!

Thanks!

Christopher G. Myers, PhD
Johns Hopkins University

e. cmyers@jhu.edu
t. [@ChrisGMyers](https://twitter.com/ChrisGMyers)
w. christophergmyers.net