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- Knowledge Creation for Today and Tomorrow: How Your Knowledge Gaps Can Help You Build Extensible Knowledge
- Focused Problem Statements for Thorny Problems: Frame and Scope Your Problems at the Right Level

About the Author

Katherine Radeka has a rare combination of business acumen, scientific depth and ability to untangle the organizational knots to remove the barriers to change. Since 2005, Whittier Consulting Group, Inc. has helped some of the world's leading companies get their products to market faster.

She has a global reach with clients in Europe, North and South America, Asia, and Australia/New Zealand. She has worked with companies in pharma, biotech, medical device, high tech, consumer electronics, food and beverage, and consumer packaged goods, among others. She currently supports more than 150 implementations of the Rapid Learning Cycles framework through the Rapid Learning Cycles Certified™ Professionals Community.

Katherine is the author of two books. Her first book, *The Mastery of Innovation: A Field Guide to Lean Product Development* won the Shingo Research Award in 2014. This book contains 19 case studies of companies, including Steelcase, Ford, Novo Nordisk and Philips Electronics, who have used lean ideas in product development to get their ideas to market faster.

Katherine's second book is *The Shortest Distance Between You and Your New Product: How Innovators Use Rapid Learning Cycles to Get Their Best Ideas to Market Faster.* This book summarizes Katherine's ground-breaking work to integrate Agile Development with her work on Knowledge Capitalization into a proven method for accelerating innovation.

Katherine has climbed seven of the tallest peaks in the Cascade Mountains and spent ten days alone on the Pacific Crest Trail until an encounter with a bear convinced her that she needed a change in strategic direction.

The Idea Is the Unit of Knowledge
Why Sharply Focused Key Decisions and Knowledge Gaps Build Extensible Knowledge

By Katherine Radeka

RAPID LEARNING CYCLES INSTITUTE℠

The Idea Is the Unit of Knowledge

Why Sharply Focused Key Decisions and Knowledge Gaps Build Extensible Knowledge

Key Takeaways

- **The single, focused idea is the unit of knowledge.**
- **It's much easier to capture knowledge, reuse it and extend it if it is maintained in small pieces that are easier to write about, read about and experiment with.**
- **Big, fuzzy Knowledge Gaps can be difficult to break down but it helps to start with some learning to establish some scope boundaries and understand the current state of the knowledge.**

When it comes to organizing things, Gene is a "lumper" and I am a "splitter." You can tell by the organization of our computer files. The files in my domain are organized into nested folders so that I can find what I need by navigating down a tree. Gene puts everything into just a few folders with lots of files in them, and then searches for what he needs. His approach would drive me nuts when I was looking for a file, and mine would drive him nuts when he was saving a new file. We didn't bother each other about our different styles until we added our third employee. What level of granularity is right now that we have another person to consider?

Knowledge Gaps can also have different levels of granularity, depending on the functional area or technical discipline, the organization's established norms and individual preferences. Some Knowledge Gaps, especially those in early development, are just naturally big and fuzzy. Even when they come into focus, they're focused on broader questions that are not easily broken down. Others naturally decompose into sharp, focused Knowledge Gaps. For both types, it helps to remember that the idea is the unit of knowledge.

The Idea is the Unit of Knowledge

The single, focused idea is the unit of reusable knowledge. It is easier to reuse a single idea than it is to reuse a complex system. The idea will be more broadly applicable, easier to evolve, and easier to embed in standardized knowledge, such as checklists and design guides. It will be easier to combine the idea with others in unexpected ways to create things that are truly innovative.

Some types of reusable knowledge, like platform designs, will have more than one idea. But even the most complex systems of reusable knowledge will benefit from an understanding of the single focused ideas that underlie them, and an attempt to make those ideas reusable on their own. Just as small, decoupled modules are easier to build into systems, small, decoupled ideas are easier to incorporate into innovations.

Single, Focused Ideas are Easier to Capture

It is much easier to write- and read - about one focused idea than to dive into a lengthy briefing. Some platform documentation can run to hundreds of pages, meaningful only to the people who wrote it, because it is so complex that others can't decipher it. Some technical briefs never get finished because the authors have difficulty finding the time to work on something that big - and reviewers don't have the time to make comments on the drafts. We have to integrate knowledge capture into our work, and that's much easier if the knowledge we capture is focused on one idea.

Every week, I send out my latest Knowledge Brief to a list of about 2,000 people, and I usually get about 750-1,000 downloads per Knowledge Brief over the two weeks after I send it out. This is outstanding performance for an email newsletter, and over the years, I've come to believe that the Knowledge Brief format itself is one reason why.

People know that when they click on one of my Knowledge Briefs, they're going to get two pages of text with a picture or two. It will take them just a few minutes to read. It will be focused on one idea because that's all I have room to put within the form. And if I have more to say about a topic, I'll write a series of Knowledge Briefs that a person can read either independently or together.

One single-sided A3 or tabloid sized paper (or the digital equivalent) is an appropriate scale for documentation because it forces the writer to communicate one focused idea. There is simply not room on the page for anything extra. The writer can create a first draft in a single session. A reader can get through it quickly, making use of bits of time that free up during the day, rather than having to find time for a long reading session.

This is why our templates for Key Decision and Knowledge Gap reports are only one slide, and we advise allowing no more than two additional slides. More slides = more ideas = less crispness and reusability.

Single, Focused Ideas are Easier to Reuse

It is also much easier to ensure that single, focused ideas meet all of the critera to be reusable knowledge:

- **Understood:** Since it's much easier to read focused documents, it's also much easier to understand them. There is simply less to be miscommunicated.

- **Believed:** If a developer focuses a Knowledge Gap report around a single idea, there is plenty of space to include the references, links, experimental methods and visual models that will support the reader's ability to believe that the ideas within the report are credible. There won't be room for all of the experimental data, but most people don't need the data itself on the report - they just need to know that they can get to it. The experimental or analytical methods and the interpretation of the data is much more important to most readers as a guide to assess the credibility of the knowledge. The people who need to see the data for themselves know where to find it.

- **Generalized:** It is easier to generalize a single, focused idea that someone develops in the course of designing a product than it is to make the product design itself reusable. For example, it is easier to capture what a team learns about the user's interactions with the product than it is to develop a reusable user interface platform. The platform will have limitations but the customer knowledge will be reusable in many more applications. The marketing staff may find it helpful, or the test engineers might use it. Other product teams may be able to avoid some of the issues you saw, even if the user interface itself does not apply.

   From a technical perspective, what you learn about the fundamental physics, chemistry or biology of your products is usually much more leverageable across a broader range of products then the product designs themselves. Knowledge about the fundamental science behind our products gives us a greater ability to predict how changes to the design will change the performance of the products. This is why trade-offs and limit curves are so powerful. They capture what we know about the fundamental relationships that exist in our products wherever they apply, not just within a specific design.

- **Actionable:** It's much easier to figure out whether and how to apply one focused idea in a new way. It is easier to see how the idea needs to be adapted to meet the current need.

- **Accessible:** It's much easier to share a single, focused idea than it is to share something bigger. I can hang a Knowledge Gap report on my cubicle wall. I can send it in an email, and know that I'm not imposing too much of a burden on the recipient. I can carry it with me to a meeting, and I can quickly share with someone else in a short 1:1 meeting no longer than a coffee break.

Single, Focused Ideas Close Knowledge Gaps

Large, fuzzy Knowledge Gaps can be hard to close because it's not easy to tell what "closed" looks like. Teams can get stuck swirling around an answer that seems to shift around a lot, and it's not always clear how the team's learning activities contribute toward closing the Knowledge Gap. It's not as easy to draw a straight line from the Knowledge Gap to the final recommendation. It's too easy to get stuck in Build-Test-Fix loops rather than taking a step back to design some experiments that will build understanding.

That's why we encourage teams to break down their Knowledge Gaps into smaller pieces, even if the Knowledge Gap seems like a big, fuzzy question that can't be broken down. By asking questions about scope boundaries, inherent trade-offs and prior knowledge, teams can find the gaps between the current state and the knowledge the team needs to support a good Key Decision.

How to Split Big, Fuzzy Knowledge Gaps Down Into Smaller Questions

If you have a complex Knowledge Gap that's big and fuzzy, you can continue to treat it as one Knowledge Gap at first. Eventually, you'll want to try to figure out if there is more to this Knowledge Gap that can be broken down into smaller, more focused questions.

- ❏ **Spend one learning cycle to scope out the boundaries of the question and establish the facts: what's in, what's out? What are the inherent trade-offs embedded in the question? What do we already know?**
- ❏ **Analyze the gaps between the current state of the knowledge and the answer to the question we need to support our underlying Key Decision, to find the focused Knowledge Gaps underneath it.**
- ❏ **Make sure that the final reports capture single, focused ideas.**

If you've followed these steps, then it doesn't matter so much whether you organize them under a "parent" Knowledge Gap, or just add them to the list of Knowledge Gaps for the related Key Decision. Chances are, you'll find that some work best lumped together, and others work best when they're split up — and that Knowledge Gap owners have their own preferences, too.

Our office filing system is still evolving—we have some things lumped together into baskets that are too big, and others that are split so much that it takes too many clicks to get to them. But it's helped a lot to remember that files and folders, like reports, work best when they're centered on one focused idea.