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OVERVIEW

The Toyota Kata Practice guide

Practicing Scientific Thinking Skills for Superior Results in 20 Minutes a Day

by Mike Rother

Recommendation

If you have ever trained in martial arts, you may be familiar with kata, the Japanese term for a routine or pattern that improves your practice. Based on this approach, Toyota created a routine that supports continual improvement. This heavily illustrated guide to Toyota Kata offers a thorough, detailed explanation of how to learn and coach "Starter Kata" and "Improvement Kata." The details make the difference in putting the process into action versus simply understanding it.

About the Author

Mike Rother, an engineer, researcher, teacher and Kata expert, helps individuals, teams and organizations develop scientific thinking.

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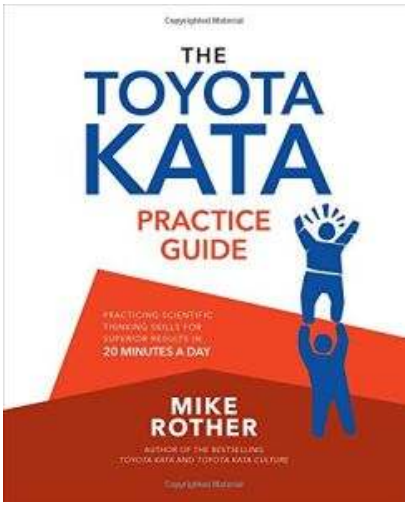

The Toyota Kata Practice Guide

Practicing Scientific Thinking Skills for Superior Results in 20 Minutes a Day

Mike Rother
McGraw-Hill, 2017

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If you have ever trained in martial arts, you may be familiar with kata, the Japanese term for a routine or pattern that improves your practice. Based on this approach, Toyota created a routine that supports continual improvement. This heavily illustrated guide to Toyota Kata offers a thorough, detailed explanation of how to learn and coach "Starter Kata" and "Improvement Kata." The details make the difference in putting the process into action versus simply understanding it.

Take-Aways

- In the workplace, people often jump to solutions before fully understanding the situation, the "overarching challenge" or the "current condition."
- In science, researchers test hypotheses by experimentation and learn by iteration.
- People, teams, and firms perform better when they adopt a scientific approach.
- The "Toyota Kata" method offers a time-tested and simple path for creating a culture that operates according to scientific principles.
- First, organizations should establish an ambitious, inspiring overarching challenge.
- Employees (learners) and managers (coaches) at all levels devise their own goals aligned to and in support of the overarching challenge.
- Learners and coaches break their goals down into a series of "next-target conditions."

- They meet daily to discuss five crucial factors: the current condition, the next "target condition, obstacles, the next step" (sometimes an experiment) and "learnings."
- Learners and coaches should build the habit of approaching each problem through questions and small experiments.
- Small, fast, low-risk experiments reveal quick answers that result in better solutions.

Summary

"Scientific Thinking"
Toyota Kata emphasizes steps that lead to continual learning and improvement. Practicing Kata teaches you to think scientifically, which boosts your creativity and problem-solving skills. Scientific thinking means experimenting and learning systematically. It calls for taking small steps, observing, and learning from the results, adjusting your approach, and then trying again. Repeating this process gets you closer and closer to a good solution. As you attack problems this way, you'll form a habit and begin to apply scientific thinking to any situation or problem.

Practicing Kata
At first, learners and coaches should follow this system's techniques exactly. Repeat them until you feel comfortable performing them. As the routines become second nature, you'll perform them subconsciously. Then you can adapt them and experiment with your own unique elements. Once you master the fundamentals, you can construct your personal implementation methods.

Taking the time to more thoroughly understand where you are now and establish where you are trying to go will pay off in the long run.

Practicing Kata 20 minutes each day should help you achieve proficiency in several months, but it requires "deliberate practice" and feedback. As a learner, work singly with a coach. Don't practice alone; to learn to do Kata correctly, you need a coach to observe you and give you feedback. Then you won't get stuck practicing the same things over and over. Your coach should have deep experience with both "Starter Kata" and "Improvement Kata."

The scientific thinking patterns of the Improvement Kata and Coaching Kata are universal and applicable in all sorts of organizations.

Kata works in four steps. The first three steps constitute Starter Kata, the "planning phase." Improvement Kata, the fourth step, is the "execution phase":

Step One – "Understand the Direction or Challenge"
Learners use Starter Kata to work toward their organization's "overarching challenge" by achieving incremental progress under the guidance of their coaches. The challenge will normally come from higher up in the organization. It should align with the corporation's strategic goals. If the firm hasn't set an overarching goal, the coach and learner need to identify an overarching challenge of their own. It should be meaningful since it will become the reason driving their

improvement efforts. For your specific challenge, set an achieve-by date of six months to three years out. The challenge serves as the common binding feature for running experiments and achieving many target conditions throughout the organization.

Step Two – "Grasp the Current Condition"
Before you start experimenting, establish where you stand now. Never make assumptions about the current condition or the possible solutions; instead follow Kata's "process analysis" to gain an accurate assessment of your immediate situation. Until you fully know and understand where you are now, you can't know the right future condition to target. "Each step toward the target condition is an experiment from which you may learn something."

Practiced deliberately for even just 20 minutes a day, scientific thinking can make anyone more adaptive, creative, and successful in the face of uncertainty.

All work involves a process of steps and patterns. Gauge the results of your existing process. To perform this process analysis, learners work under their coaches' guidance to conduct a methodical examination of how the current situation functions. Then they examine how often the process needs to run to satisfy customer needs. Look for "variations" or problems. Graph the cycle, including delivery time to customers. Look for variations that could slow it down, cost money or affect quality. If your process requires automated equipment, make sure it works well. Diagram the process in a flow chart, and document what you see. Record problems or obstacles. Determine what you need to do to improve your contribution to meeting the firm's challenge.

Step Three – "Establish the Next-Target Condition"
After you fully understand your current condition, identify the next iterative step toward your goals in line with the firm's challenge. Set a fixed deadline – normally about two weeks for novices conducting smaller experiments – and a month or more for experienced learners. Your challenge gives you focus. The obstacles in your way and your knowledge "threshold" – the point at which you need more information – tell you what to work on in the next step (experiment).

Scientific thinkers let the results of their experiments show them what to work on next, not their preconceived ideas and assumptions.

This process is like the game of golf: Getting the ball in the hole is the ultimate goal or challenge. You set a next-target condition on the tee with your first swing as you think about the results you want, like where the ball should land. But while you're still on the tee, you can't set the target condition for all the strokes you'll take to get the ball in the hole. You must reassess the current condition after each stroke, then plan the next step – each subsequent swing – accordingly. Repeat this process until you knock the ball in the hole.

Compared with a traditional businessperson who may be in a hurry to lay out an action plan, a scientific thinker might say that a problem clearly defined is half solved.

Kata calls your next steps "elements" or "ingredients," because they describe how and when you'll achieve your target condition. Each target condition should have a "when, what and how,

as well as numeric goals that provide a metric. ”Think of a person whose overall goal is losing 20 pounds. He or she may set target conditions, such as reducing calories and getting exercise. In Kata, elements also describe what pattern to follow – for example, walking half an hour and incorporating a meal of steamed vegetables every day.

We don’t think and behave unscientifically because we lack information about the pattern of scientific thinking, but rather because unscientific thinking is our habit.

In addition to setting a numeric goal – lose 20 pounds – describe the process you’ll use to get there. This triggers experimentation – a scientific approach to achieving your goal. Don’t restrain your creativity by including solutions or action statements in your descriptions of your next-target condition. Consider the results you seek, not the solution. For example, a hospital might want complete current patient information in each room. Putting a smart board in every room presupposes a solution that needs no discussion, exploration or experimentation. So the smart board isn’t good Kata. Focus instead on the best way to achieve the desired outcomes.

Step Four: “The Executing Phase…Experiment Toward the Target Condition”
After establishing your next-target condition and your measurements for quantity and a smooth process, move to phase two: execution. Begin experimenting toward achieving your next-target condition. Take steps you think will get you closer. You don’t expect to get there with one experiment, but as you learn from each experiment, you’ll inch nearer.

Managers are by default the teachers – the coaches in our case – because what they say and do every day, deliberately or not, trains and shapes their people’s thinking.

Before your experiment, record what you think will happen. Then record what does happen. Compare the two and find clues as to what you should do in your next experiment. Take many rapid, small steps – experiments – to learn fast with low risk. In each daily coaching cycle, talk about what you learned, and then discuss your next experiment. Craft your proposed experiment and present it to your coach in the daily meeting.

While the learner is responsible for the doing, the coach is responsible for the results.

Your coach will ask you to describe the tales’ objectives and the updated conditions first. Then he or she will ask you to describe what you learned from your last experiment. Only then should your coach ask you what you have planned for your next experiment and how long it will take. Don’t proceed until you and your coach agree on the experiment and its timeline.

A target condition is a mind-set of moving toward something, rather than just reacting to problems.

Rapid experimentation and learning are the secrets to Kata effectiveness. Each experiment changes the current condition and gives you insight into the appropriate next experiment. For longer timeline goals, you may experiment less quickly. When possible, use a lab or simulations to accelerate experimentation. The ideal is one experiment per day, though you may not achieve that. Even so, continue the daily coaching cycle to go through pending questions as appropriate.

"The Five Questions" and "Four Reflection Questions"
Using a Coaching Kata card, your coach will ask you nine questions in every coaching cycle meeting. The card shows five main questions and has four sub-questions on the back.

1. "What is the target condition?"
2. "What's the actual condition now?" Here, the coach asks the questions on the back of the card to provoke reflection: "What did you plan as your last step? What did you expect? What actually happened? What did you learn?"
3. "What obstacles do you think are preventing you from reaching the target condition? Which one are you addressing now?"
4. "What is your next step (next experiment)? What do you expect?"
5. "How quickly can we go and see what we have learned from taking that step?"

A target condition is not something you are trying to reach right away, and you don't need to know in advance how you will reach it.

Performing a coaching cycle daily, ideally in the morning, allows the learner to conduct experiments every day. Also make your meetings daily at first to break old habits and form a new one, that of scientific thinking. Your coach will help you choose goals that build your skills gradually, to give you confidence and self-reliance through your journey of continual improvement. As you move from awareness of Kata to practicing it – and grow accustomed to the scientific and interactive process – Kata will become habit. To solidify your learning, coach Starter Kata and Improvement Kata while continuing to practice them as a learner.

The Kata Coach
The learner-coach relationship lies at the heart of the Improvement Kata process. Kata coaches help learners achieve their target conditions by observing, listening, asking questions and giving guidance. However, learners must arrive at their own solutions by using the Kata process. As in sports, the coach can't win the game for the team, but he or she takes responsibility for winning and guides the players to victory. They form an interdependent relationship: if the learner fails, the coach takes the blame for failing to teach. Coaches need their own coaches to make sure they gain the needed skills. The second coach – the first coach's boss or peer – observes, questions and advises the first coach.

Emphasizing small steps, one at a time, reduces the fear of failure and the stress of trying to do too much all at once.

Coaching takes time. Companies should model their structure on Toyota's, where a coach (manager) has five direct reports, and the second coach – a senior manager (group leader) coaches five other managers. This structure ensures that the whole firm participates, linking everyone to learning and building a common culture. Coaches might watch learners for a short time as they execute their experiments. The daily 20-minute coaching cycle should provide everything the learner needs each day. This eliminates additional meetings and frees up the manager's time.

We are all much more likely to act our way into a new way of thinking than to think our way into a new way of acting.

A good coach always goes through the nine questions. This establishes the pattern and emphasizes the importance of consistency, the scientific method and a systematic approach to problem solving. The coach ensures that learners create a large, physical "storyboard" that includes the longer-term target condition of the cycle (the challenge) and the completion date, the current condition, the results of the last experiment, the learnings, a record of the results and the next step. This acts as the ongoing story of the Improvement Kata cycle and provides a daily meeting reference point for the coach and learner.

Consider for a moment that any step you take, in all of life, is actually an experiment.

Coaches can go off-script to ask clarifying questions, especially about the last experiment. But they must listen well to assess their learners' thinking. Pay attention to what learners plan for the next experiment; if needed, help them adjust to maximize the potential to learn. Doing this daily helps learners develop the habit of doing small experiments from which to learn and advance.

A Successful Kata Culture

Not all companies succeed in building a culture of scientific thinking based on Improvement Kata. To make it work, firms must use the Kata methodology daily and companywide. Create a small team that tracks the big picture. Have the team adopt the challenge of changing the corporate culture and following Improvement Kata in the same way as everyone else. You'll know your firm has made solid progress when you hear employees talking about the scientific process rather than jumping to conclusions or solutions.

When employees and managers start questioning decisions and asking if there might be a better way, and when you hear people using Kata terms, your effort is working. As your firm grows used to the scientific method and makes it habitual, you can put your own stamp on the process. Until then, follow the Toyota Kata methodology as outlined.

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