Becoming a Creative Problem Solver

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Session One: Course Overview

Course Overview

We make decisions and solve problems continually. We start making decisions before we even get out of bed (shall I get up now or not?). Sometimes, we will have made as many as 50 decisions by the time we leave for work. Despite all the natural decision making that goes on and the problem solving we do, some people are very uncomfortable with having to make decisions. You may know someone who has a hard time making decisions about what to eat, never mind the internal wrestling they go through in order to take on major decisions at work.

Likewise, we've probably all looked at a solution to something and said, "I could have thought of that." The key to finding creative solutions is not just creativity, although that will certainly help. The answer rests in our ability to identify options, research them, and then put things together in a way that works. Having a process to work through can take the anxiety out of problem solving and make decisions easier. That's what this course is all about.

Learning Objectives

After you complete this course, you will be able to:

- Apply problem solving steps and tools
- Analyze information to clearly describe problems
- Identify appropriate solutions
- Think creatively and be a contributing member of a problem solving team
- Select the best approach for making decisions

Why did you take this course? Use this opportunity to consider your personal learning objectives and reasons for taking this course.

Definitions

What, specifically, is a problem? A problem can be a mystery, a puzzle, an unsettled matter, a situation requiring a solution, or an issue involving uncertainty that needs to be dealt with. You are dealing with problems every day.

Problems can be classified in three ways:

- Problems that have already happened
- Problems that lie ahead
- Problems you want to prevent from happening

There are three ways to approach problems:

- You can stall or delay until a decision is no longer necessary, or until the problem has become even greater.
- You can make a snap decision, off the top of your head, with little to no thinking or logic.
- You can use a professional approach and solve problems based on sound decision-making practices.

While doing some research on problem solving, we found some interesting arguments. There are quotes attributed to different people that say very different things about problems.

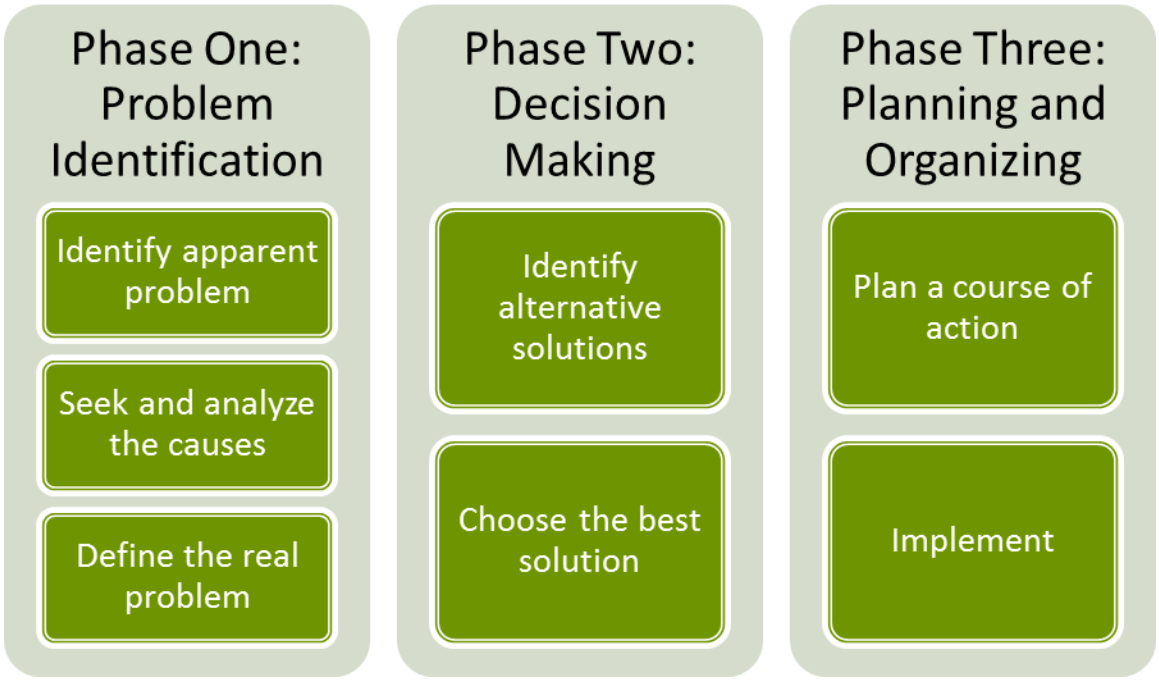
The Problem Solving Model

Whenever you read a book on problem solving, this model, in some form or other, is sure to be there. It may have six steps rather than seven, or it may have five steps. However, the model doesn't really change...just the authors' ways of breaking it down.

As you work your way from problem to solution, you are actually shifting your focus.

- When you define a problem, you ask yourself: What is my problem?
- As you try to analyze the root causes you ask: Why is it a problem?
- When you are generating options, you ask yourself: What are some ways I can solve my problem?

The Problem Solving Model



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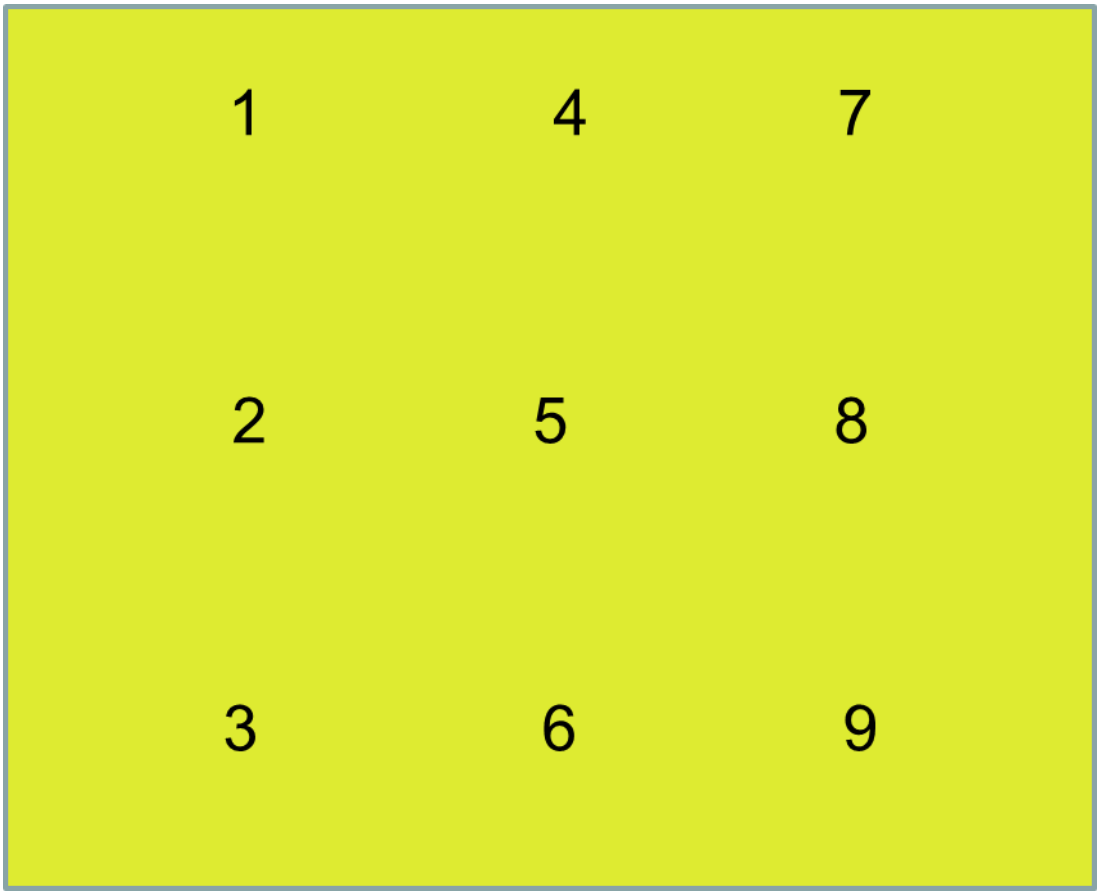
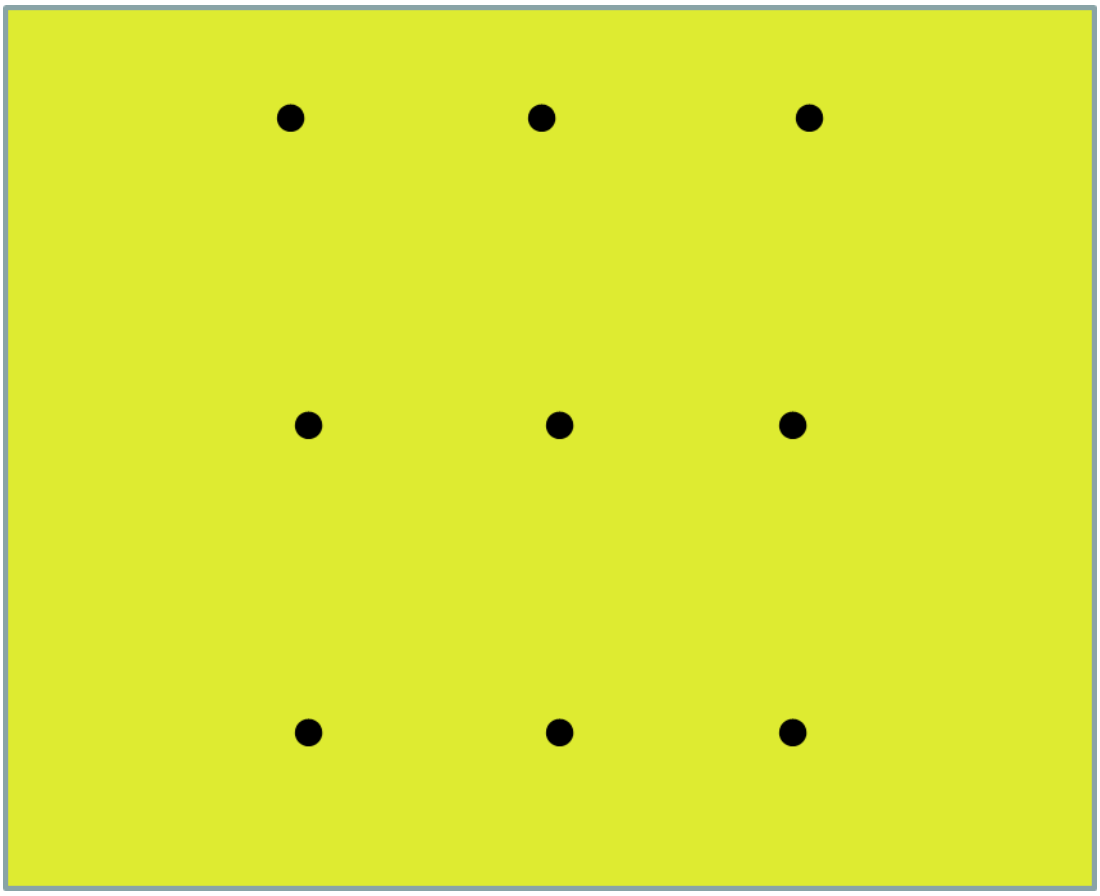
Solve the Problem





Phase One: Problem Identification

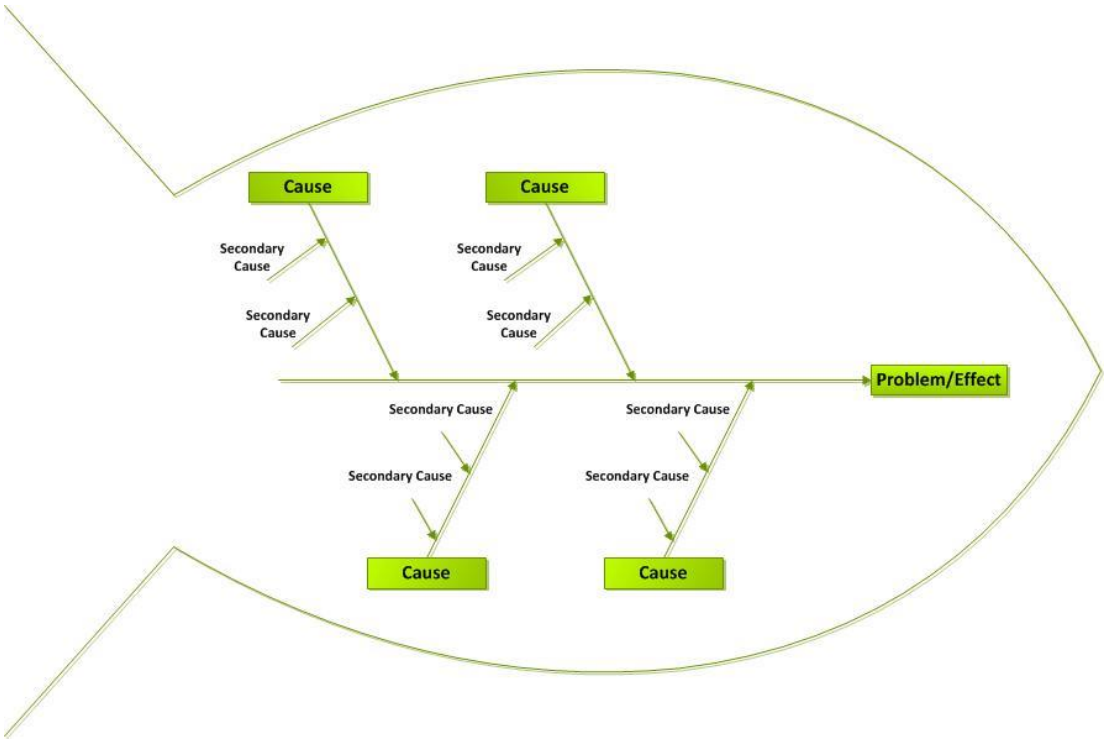
Problem Identification

The first and most important undertaking of your problem solving efforts needs to be defining the problem. You cannot work on something if you don't know what it is. You have to resist the tendency to start working on the problem as soon as you know one exists, and instead develop an understanding of whether we are addressing the problem or merely a symptom of it.

We should go after the problem rather than attack symptoms. This way, we can create higher quality solutions that in turn will eliminate or reduce the symptoms. As well, this will resolve the problem much more easily than when you attack the surface only. Most importantly, you'll also know that you are taking on a worthwhile problem.

The Fishbone

The fishbone problem solving tool visually organizes information:



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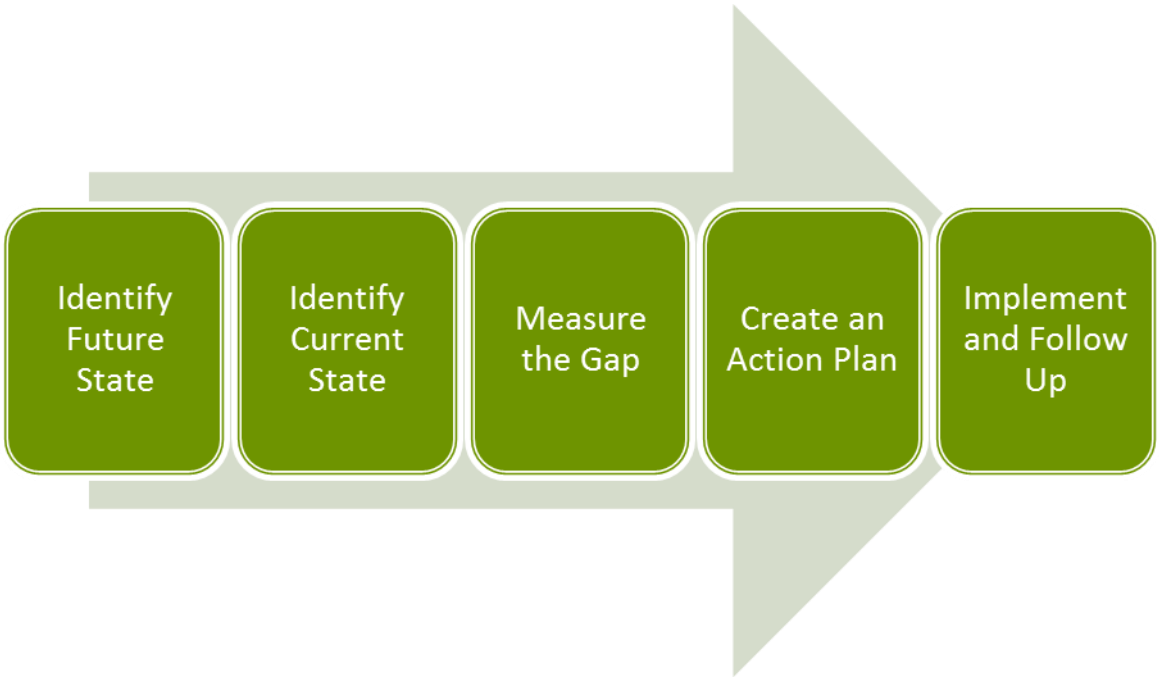
Defining Gap Analysis

What is Gap Analysis?

Gap analysis is a process tool that allows you to compare actual performance with desired performance. For example, let's say that your customer service department is currently taking 80 calls an hour but their expected volume is 100 calls per hour. Gap analysis can give you the tools to identify why this gap exists and help you identify ways to bridge it.

Gap analysis consists of five basic steps.



Phase 2: Making Decisions

Making Winning Decisions

Whether you are making a decision as an individual or as a group, some ground rules of the decision making process are:

- Encourage everyone to participate.
- Encourage new ideas without criticism, since new concepts come from outside our normal perception. Without considering new decisions, things remain the same.
- Build on each other's ideas.
- Whenever possible, use data to facilitate problem solving.
- Remember that solving problems and making decisions is a creative process. This means that new ideas and new understandings often result from the process.

In order to reach decisions, the group should agree to the following standards:

- Make decisions based on the best data available.
- Research and locate required information or data.
- Discuss criteria for making a decision (cost, time, impact, etc.) before choosing an option.
- Encourage and explore different interpretations of data.

Types of Decisions

Three Types of Decisions

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Creative Alternatives

Brainstorming

About Brainstorming

We talked very briefly about brainstorming earlier to get you started thinking about it. Brainstorming is the first thing that comes to most people's minds when we talk about creative thinking. In a brainstorming session, people are encouraged to say what comes to their mind, and all the ideas generated are recorded. People are encouraged to say whatever they are thinking, and are not to fear looking foolish since wild ideas are explicitly encouraged. There is no one right way to run a brainstorming session. Rather, you should tailor it to your needs and resources.

The Delphi Technique

This technique is very useful when you have people who are considered experts on a topic and when you are looking for information to help with forecasting or resource allocation. This technique works by using cycles of anonymous, individual written discussion and argument, and is coordinated by a facilitator.

Anonymity and remoteness of the process (which could also be managed using an online survey tool) helps to avoid personality issues and groupthink. It also gives people the opportunity to think things through on their own time, to consider other arguments adequately, to gather any background information that is required, and avoid the emotional energy that can be generated during an in-person debate.

The process requires an effective and strong facilitator. One of the weaknesses to the method is that participants are not always provided with adequate background information, and sometimes when the information is made available, the experts do not access it. The facilitator has to make sure that participants are engaged and that they do not put off responding.

Facts vs. Information

Decisions combine fact and theory. They are the choices we make in the light of how we interpret the events we observe. We can consider “facts” as basic ingredients and “information” as a supplement to the facts.

Basic Ingredients

- Facts
- Knowledge
- Experience
- Analysis
- Judgment

The Supplements

- Information
- Advice
- Experimentation
- Intuition

Eight Ingredients for Good Decision Making

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Decision-Making Traps

We just finished discussing what can substitute for cold, hard facts. In the absence of good data, the people making decisions must fall back on available information, and sometimes that kind of information is heavily influenced by opinion. This isn't necessarily a bad thing if the sources are informed opinions. However, as information is being gathered, we must be aware of decision-making traps and avoid as many as possible.

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Be Strategic

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Decision Making Techniques

Decision Tree	• Choosing between options by projecting likely outcomes
Force Field Analysis	• Analyzing the pressures for and against change
Six Thinking Hats	• Looking at a decision from all points of view
Cost / Benefit Analysis	• Seeing whether a change is worth making
Decision Matrix	• Evaluates and prioritizes a list of options, using pre-determined weighted criteria
Stepladder Technique	• Encourages individual participation within a group before they can be influenced by others.

Phase Three: Planning & Organizing

After the problem has been identified and a solution has been chosen, it's time to plan and organize your course of action and implement it. Depending on the size of the decision you've made, these tasks may take minutes, or they might require a full project team to make sure things are implemented effectively.

You've talked, planned, looked at all the options from every angle, and now it's time to put things to the test. Since you have spent the time needed to define the problem and make your decisions, this phase should be quite straightforward. Once you have developed your plan, assembled the people and supporting resources necessary, and get things started, it's all downhill! Of course, we're not quite finished yet.

Follow-Up Analysis

There is nothing like hindsight to let us know how well we have done. After your decisions are implemented, review the outcomes and determine your results.

What questions would you ask in a formal follow-up analysis to this process?

Case Study

When Mike took out the company truck last week, he thought he heard an unusual sound, but the radio was loud enough to drown it out, so he didn't think about it again. The next day Alan took the truck out, but the radio was really loud from the time he started the truck, so he didn't notice anything.

Yesterday, Dave signed out the truck. Dave doesn't like the radio station that was playing, so he turned it off. He could hear something rattling underneath the truck. When he finished his errands, he told the fleet supervisor, Bruce, that there was a sound coming from underneath the truck."

"What did it sound like?" Bruce asked.

"A rattling sound underneath somewhere," Dave said, gathering a double tray of hot coffees for his friends in the office.

"Can you tell me anything else about it?" Bruce probed. "Rattling in the center, rear end? Metal on metal kind of sounds, or transmission?"

"No idea," Dave replied. "I'm not really a truck guy, y'know? If you start it up and drive around the yard a little, I'm sure you'll hear it."

Dave took the coffee and left the room, thinking that if Bruce would just do his damn job and maintain the fleet, he'd know what kind of rattle it was already.

Bruce knelt down to look underneath the truck looking for loose parts, thinking to himself, "These guys in the office have no idea how hard I work at maintaining these vehicles. They think it's a joke or something that they can hop into a truck and go get coffee without putting mileage on their own cars. They always come back with an armload of coffee, but they never offer to pick one up for me."

Bruce couldn't see anything hanging down below the truck, but he needed to finish putting the winter tires on the car that was already on the hoist. The truck would have to wait.
An hour later, Bruce came back to look at the truck but it was gone. He went into the office and asked around for who had taken the truck. No one knew, and so then he asked who wasn't at their cubicles. Dave and Nick were missing. Bruce stormed into the boss' office, mad.

"Jessie," he said. "I'm getting to the end of my rope. Dave knew there was a problem with the truck, and yet he is out in it right now. These guys have no respect for those vehicles."

"Sorry Bruce, I think he went to get lunch for the guys. They are putting in a lot of hours to get this project done."

"Jessie, they all bring their own cars to work. There was no need for them to take that truck, except that they like joy riding around in it. I've spent 14 hours on maintenance in the last quarter. Dave told me today that there was a noise that needed looking at, and then he took the truck anyway!"

Then the phone rang. Seeing that it was Dave's cell phone, Jessie put it on speakerphone. "Jessie, it…it's Dave. I don't know what to do and I don't have Bruce's number. Me and Nick are in the truck and we've b...been in an accident. Nick's hurt bad. What do I do?"

Jessie looked at Bruce. "Open the glove box," Bruce said tersely. "All the emergency numbers are listed right there. Call for police and ambulance, and then call me back so I know where to meet you."

Making Connections

Answer the following questions about the case study.

What is the problem?

What is its root cause or the real problem?

How does it feel to Dave? How does it feel to Bruce?

Recommended Reading List

If you are looking for further information on this topic, we have included a recommended reading list below.

Adair, John. *Decision Making and Problem Solving Strategies.* Kogan Page, 2010.

Browne, Neil M., and Stuart M. Kelley. *Asking the Right Questions: A Guide to Critical Thinking (10th Edition).* Longman, 2011.

Davenport, Thomas, Brook Manville, and Laurence Prusak. *Judgment Calls.* Harvard Business Review Press, 2012.

Michalko, Michael. *Thinkertoys: A Handbook of Creative-Thinking Techniques.* Ten Speed Press, 2006.

Roam, Dan. *The Back of the Napkin (Expanded Edition).* Portfolio Hardcover, 2010.

Sibbet, David. *Visual Meetings: How Graphics, Sticky Notes and Idea Mapping Can Transform Group Productivity.* Wiley , 2010.

VanGundy, Arthur B. *Getting to Innovation.* AMACOM, 2007.

Problem Solving and Decision Making and other resources may be ordered from:

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