

Building Expertise

Cognitive Methods for Training and
Performance Improvement

Third Edition

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About This Book

Why Is Building Expertise Important?

This is a book about the psychology of expertise and how instructional professionals can leverage mental processes to grow expertise in the workforce.

Whether you are a class facilitator, course developer, or both, your job is to build expertise. There are many books available on the how's of training, full of useful tips and techniques. But for the most part, these books don't explain the why's behind the how's. Unlike what's in these books, I present guidelines based on how people learn and on evidence of what works during learning. What distinguishes a professional from a paraprofessional approach to education and training is a depth of understanding of how learning occurs and how to adapt evidence-based guidelines to unique situations.

What's New in the Third Edition?

In the 21st Century, the global economy has become a reality. To stay competitive, organizations must increasingly rely on innovation—innovation emerging from expertise that can be adapted to diverse and unpredictable contexts. Throughout this new edition, I draw on evidence about how to build innovative forms of expertise and translate that evidence into useful guidelines for instructional professionals.

I have rewritten all of the chapters that appeared in the second edition. In some cases, I divided chapters to reduce the mental load. In my rewrite, I updated the research on the various techniques discussed throughout the book. Since the second edition, we have seen growth in e-learning with expansions into synchronous as well as asynchronous delivery methods. I have incorporated new examples to reflect these changes.

Finally, this is the first time Building Expertise has benefited from a professional production effort. Newly published by Pfeiffer, this edition reflects professional editing and layout.

What Can You Achieve with This Book?

If you are a designer, developer, facilitator, or evaluator of instructional environments for classroom or digital delivery, you can use the guidelines in this book to ensure that your courseware meets human psychological learning requirements. In particular you can learn the best ways to build expertise by:

- Reducing unproductive mental load during learning
- Directing attention
- Leveraging prior knowledge of your learners
- Helping learners build new mental models through implicit and explicit training methods
- Supporting transfer from the instructional environment to the workplace
- Using guided discovery design architectures that build problem-solving skills
- Building mental monitoring and learning management skills
- Motivating learners to invest the effort needed to build expertise

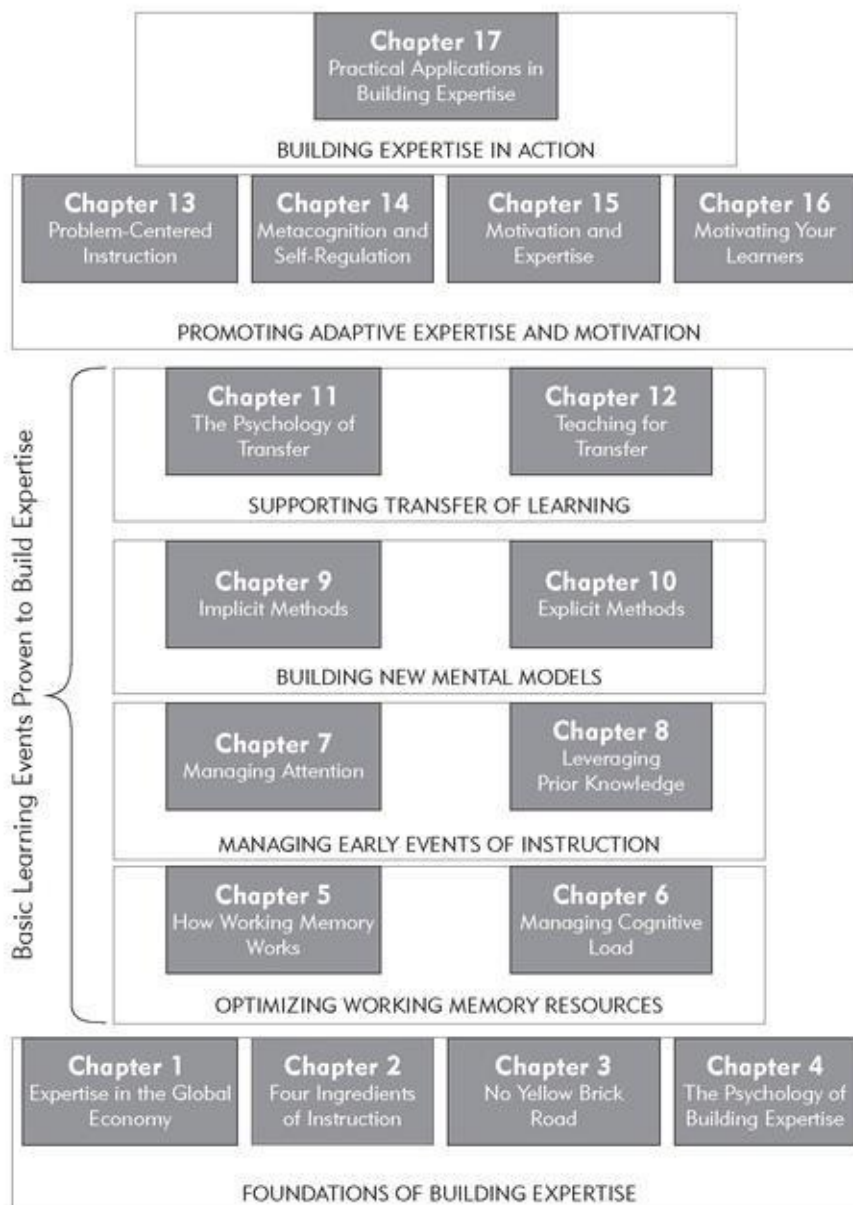
How Is This Book Organized?

From music to chess to programming, psychologists have learned a great deal by studying experts in various domains. Part I includes Chapters 1 through 4, which lay the foundation for the book by summarizing what recent research tells us about expertise—what it is and how it grows. These chapters introduce key concepts relevant to the rest of the book, including the features of expertise, four learning architectures, and an overview of how learning happens.

Part II is the heart of the book, containing eight chapters that focus on the core psychological learning events proven to build expertise. These chapters explain the psychology of each learning event and describe techniques to:

- Minimize unproductive mental load in working memory
- Support early events of instruction, including focus of attention and activation of prior knowledge
- Help learners build mental models through implicit and overt activities
- Create an environment that promotes transfer of learning to the workplace

Figure I.1. The Structure of Building Expertise



In Part III, I shift the focus to adaptive forms of expertise that are the basis for creative and critical thinking skills. In Chapter 13, you will learn about problem-centered learning environments that lead to adaptive expertise. In Chapter 14, I focus on how to build mental monitoring skills called metacognition. Finally, motivation fuels the engine that drives the effort required to build expertise. In Chapters 15 and 16, I look at recent research findings on instructional strategies you can use to promote optimal motivation.

The final chapter integrates the ideas of the book by describing instructional programs I have designed based on three of the instructional architectures introduced in Chapter 2 and summarizes guidelines for building adaptive forms of expertise through exploratory learning environments that encourage critical and creative

thinking.

About Pfeiffer

Pfeiffer serves the professional development and hands-on resource needs of training and human resource practitioners and gives them products to do their jobs better. We deliver proven ideas and solutions from experts in HR development and HR management, and we offer effective and customizable tools to improve workplace performance. From novice to seasoned professional, Pfeiffer is the source you can trust to make yourself and your organization more successful.



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Pfeiffer also recognizes the remarkable power of new technologies in expanding the reach and effectiveness of training. While e-hype has often created whizbang solutions in search of a problem, we are dedicated to bringing convenience and enhancements to proven training solutions. All our e-tools comply with rigorous functionality standards. The most appropriate technology wrapped around essential content yields the perfect solution for today's on-the-go trainers and human resource professionals.



Essential resources for training and HR professionals

Building Expertise

Cognitive Methods for Training and
Performance Improvement

Third Edition

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Introduction to the Third Edition
GETTING THE MOST FROM THIS RESOURCE

Purpose

Building expertise is the central challenge of all instructional practitioners. Yet few know the psychology or the evidence underlying training methods that lead to expertise. The training field is evolving from a craft based primarily on fads and folk wisdom to a profession that integrates evidence into the design and development of its products. A professional knows not only what to do but why she is doing it and how she might adjust techniques to accommodate different learners or diverse learning outcomes. Professionals can summarize the research behind their recommendations to their stakeholders. Because everyone who has gone to school considers him- or herself a learning expert, instructional practitioners face a unique challenge to establish themselves as professionals to their clients and their learners. In this book you will learn techniques to build expertise. But just as important, you will learn the psychological reasons and the evidence for those techniques.

Audience

If you are a facilitator, designer, developer, evaluator, or consumer of training, you can use the guidelines in this book to identify learning environments that accelerate expertise. Although most of my examples are drawn from workforce learning, I believe that educational professionals can also benefit from these guidelines.