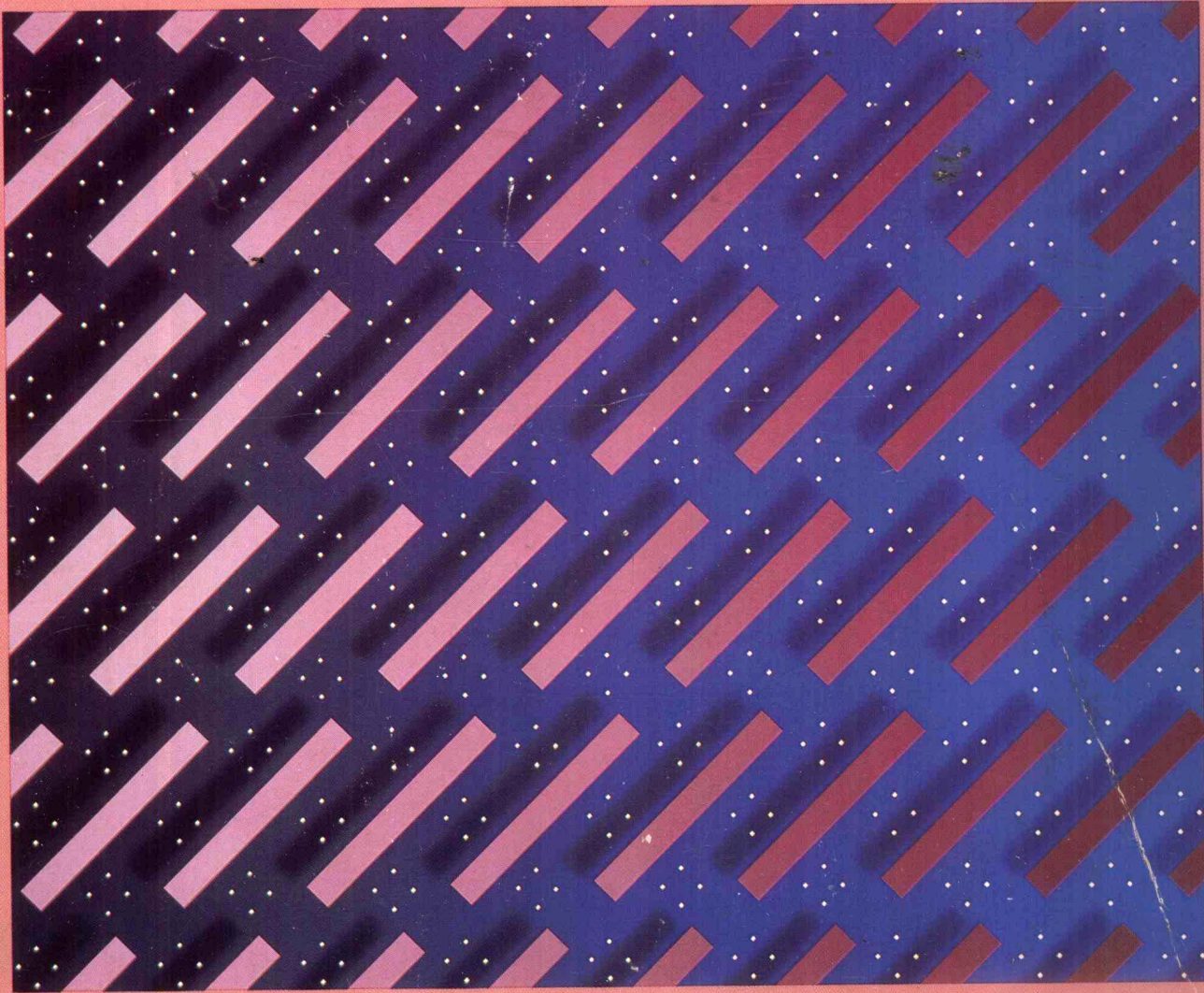


THINKING CRITICALLY

••• S E C O N D ••• E D I T I O N •••



John Chaffee

THINKING CRITICALLY

❖ S E C O N D ❖ E D I T I O N ❖

John Chaffee

DIRECTOR, CRITICAL THINKING AND REASONING STUDIES
LAGUARDIA COMMUNITY COLLEGE, CITY UNIVERSITY OF NEW YORK

HOUGHTON MIFFLIN COMPANY BOSTON

DALLAS

GENEVA, ILLINOIS

PALO ALTO

PRINCETON, NEW JERSEY

For Jessie and Joshua

Acknowledgments and credits begin on page 457.

Copyright © 1988 by John Chaffee. All rights reserved.

No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system without the prior written permission of Houghton Mifflin Company unless such copying is expressly permitted by federal copyright law. Address inquiries to College Permissions, Houghton Mifflin Company, One Beacon Street, Boston, MA 02108.

Printed in the U.S.A.

Library of Congress Catalog Card Number: 87-80616

ISBN: 0-395-43248-0

CDEFGHIJ-RM-9543210-898

Preface

Thinking Critically, Second Edition, is based on the conviction that thinking is an ability that can be developed and improved through guidance and practice. It is designed to help develop fundamental thinking abilities and attitudes that are needed for success in academic courses; for effective reading, writing, and speaking; and for competence in solving problems and making informed decisions in life. The book has grown out of my experiences over the past ten years in developing a nationally recognized interdisciplinary program in creative and critical thinking at LaGuardia Community College involving over eight hundred students each year.

Our success at LaGuardia supports my conviction that teaching thinking is accomplished through a synthesizing process: knitting critical thinking together with the fabric of students' experience — past, present, future; daily and academic. Critical thinking learned in this way becomes part of who our students are — how they perceive and understand themselves, others, and their world. *Thinking Critically* puts this theory into practice.

Features

This book has a number of distinctive characteristics that make it an effective tool for both instructors and students. *Thinking Critically*

- **teaches the fundamental thinking, reasoning, and language abilities that students need for academic success.** By focusing on the major thinking and language abilities needed in all disciplines, and by including a wide variety of readings, the text helps students perform more successfully in other courses.
- **presents foundational thinking, reasoning, and language abilities in a developmentally sequenced way.** The text begins with basic abilities and then carefully progresses to more sophisticated thinking and reasoning skills. Cognitive maps open each chapter to help students understand the thinking process as well as the interrelationship of ideas in that chapter.
- **engages students in the active process of thinking.** Interspersed exercises, discussion topics, readings, and writing assignments encourage active participation, stimulating students to critically examine their own and others'

thinking and to sharpen and improve their abilities. *Thinking Critically* provides structured opportunities for students to develop their thinking processes in a progressive, reflective way.

- **provides context by continually relating critical thinking abilities to students' daily lives.** Once students learn to apply critical thinking skills to their own experience, they then apply these skills to more abstract, academic contexts. Additionally, by asking students to think critically about themselves and their experience, the text fosters their personal development as mature, responsible critical thinkers.
- **integrates the development of thinking abilities with the four language skills so crucial to success in college and careers: reading, writing, speaking, and listening.** The abundant writing assignments (short answer, paragraph, and essay), challenging readings, and discussion exercises serve to improve students' language skills.

New to the Second Edition

I have made some significant changes in the second edition of *Thinking Critically*; these reflect my own experiences in using the first edition, as well as the suggestions of many faculty who adopted the text for use in a variety of classes.

- I have tightened and streamlined the text, making the organization of each chapter more explicit, and have increased the pacing of early chapters.
- I have increased the number of challenging exercises about current events and social issues, while retaining a foundation of exercises relating directly to students' experience.
- I have expanded the treatment of argumentation, adding a new chapter (Chapter Twelve, "Reasoning Critically"), that focuses on inductive reasoning as it is employed in the natural and social sciences. Chapter Eleven, "Constructing Arguments," introduces deductive forms of reasoning.

Instructor's Handbook

Major work has produced a completely new *Instructor's Handbook* designed to help instructors tailor this book to their own courses. The first section, "Using *Thinking Critically*," contains chapter-by-chapter suggestions and exercises of interest to teachers using this text, written by John Chaffee and Cecilia Macheski of LaGuardia Community College. Susan Huard (Community College of the Finger Lakes) has developed "Critical Thinking and Reading," and Cecilia Macheski and Leonard Vogt (also of LaGuardia Community

College) have written “Critical Thinking and Writing.” These last two sections present useful suggestions and syllabi for using *Thinking Critically* in reading and writing courses. The *Handbook* concludes with an annotated bibliography for each chapter of the text.

Acknowledgments

Many people from a variety of disciplines have contributed to this book at various stages of its development. I would like to give special thanks to the following colleagues for their thorough scrutiny of the manuscript and their incisive and creative comments: Nancy Nager (Wheaton College), Thomas Fink (LaGuardia Community College), Janet Lieberman (LaGuardia Community College), Karsten Struhl (Adelphi University), Diane Ducat (LaGuardia Community College), Daniel Lynch (LaGuardia Community College), Susan Lowndes (Rockland Community College), James Friel (SUNY at Farmingdale).

The following reviewers also provided detailed and systematic evaluations that were of great help in preparing the first and second editions:

Stanley Andrychowicz, *Honolulu Community College*
 Terry Bullock, *University of Cincinnati*
 Alison H. Chase, *Passaic Community College*
 Ronald P. Drucker, *University of California, Berkeley*
 Robert D. Hackworth, *St. Petersburg Junior College*
 Sharon K. Hahs, *Metropolitan State College*
 Mary Kay Harrington, *California Polytechnic State University*
 Harold Hild, *Northeastern Illinois University*
 Susan Huard, *Community College of the Finger Lakes*
 Margaret A. Hyde, *Evergreen Valley College*
 Michael J. Galgano, *James Madison University*
 Kay Krans, *Mississippi State University*
 Alexandra G. Linett, *Delaware Technical and Community College*
 James L. Litwin, *Bowling Green State University*
 Frank Louis Mauldin, *University of Tennessee at Martin*
 Curtis Miles, *Piedmont Technical College*
 Michael O’Hara, *Muscatine Community College*
 Becky Patterson, *Anchorage Community College*
 Michele Payne, *Kirkwood Community College*
 John R. Price, *Kingsborough Community College*
 Michael W. Radis, *The Pennsylvania State University, University Park*
 Magdalena M. Rood, *University of Texas at Austin*
 Rodger D. Slater, *Scottsdale Community College*

Patricia A. Stevens, *Monroe Community College*
Susan Stone, *Cal State University, Bakersfield*
William E. Tinsley, *Foothill College*
Daisy Yang, *Kyung Hee University, Seoul*

Special acknowledgment is given to Curtis Miles, Director of the Center for Reasoning Studies at Piedmont Technical College, who generously provided both materials and guidance when I first began working in the area of critical thinking. His pioneer work in problem solving provided the original basis for Chapter Three, "Solving Problems." I am also indebted to Professor Eric Linder Mayer of Suffolk County Community College for his work in the area of concept development. His teaching materials provided a basis for key ideas in Chapter Seven, "Forming Concepts."

I would also like to thank the following colleagues for their valuable contributions: Anita Ulesky (Suffolk Community College), Harriet Schenk (Caldwell College), Ana Maria Hernandez (LaGuardia Community College), Joan Richardson (LaGuardia Community College), Daniel Kurland (Johns Hopkins University), Mary Beth Early (LaGuardia Community College), Neil Rossman (LaGuardia Community College), Robert Millman (LaGuardia Community College), Gilbert Muller (LaGuardia Community College).

My grateful acknowledgment is extended to the National Endowment of the Humanities for their generous support of the Critical Thinking and Reasoning Studies program at LaGuardia. In addition, I would like to offer my deepest gratitude to the faculty members who have participated so creatively in the program; to the administrators at LaGuardia for their steadfast support of the program's development; and to the countless students whose enthusiasm and commitment to learning are the soul of this text.

I have been privileged to work with very special people at Houghton Mifflin Company who have respected the purposes of this book while giving it the kind of wise and imaginative attention that every author hopes for.

Finally, I want to thank my wife, Heide, my daughter, Jessie, and my parents, Charlotte and Hubert Chaffee, for their ongoing understanding and support.

Although this is a published book, it continues to be a work in progress. In this spirit, I invite you to share your experiences with the text by sending me your comments and suggestions. I hope that this book serves as an effective vehicle for your own creative and critical thinking resources. Address your letter to me % Marketing Services, College Division, Houghton Mifflin Company, One Beacon Street, Boston, MA 02108.

J. C.

Contents

Preface	ix
CHAPTER ONE • Thinking	1
Solving Problems	2
What Is the Problem?	3
What Are the Alternatives?	3
What Are the Advantages and/or Disadvantages of Each Alternative?	3
What Is the Solution?	4
How Well Is the Solution Working?	4
Working Toward Goals	6
What Is the Goal?	6
What Are the Steps to Take?	8
From <i>The Autobiography of Malcolm X</i> , by Malcolm X with Alex Haley	8
Authentic Goals	12
Understanding Information	15
What Is the Main Idea?	16
What Reasons, Evidence, and Examples Are Given?	16
Evaluating Other Viewpoints	19
Making Sense of People	21
Qualities	22
Reasons and Evidence	23
A Working Definition of <i>Thinking</i>	25
Thinking Can Be Developed and Improved	26
CHAPTER TWO • Thinking Critically	28
Thinking Actively	30
Influences on Our Thinking	31
<i>The Effects of Watching Television on Gorillas and Others</i>	32
Thinking for Ourselves	35
Carefully Exploring Situations or Issues	38
Being Receptive to New Ideas	40

Supporting Our Viewpoints with Reasons and Evidence	43
Seeing All Sides of an Issue	43
<i>Lawyers' Silence: Wrong . . .</i> , by Stephen Gillers	49
. . . <i>Wrong? Silence Is Right</i> , by Monroe H. Freedman	51
Discussing Our Ideas in an Organized Way	53
Listening	55
Asking Questions	56
Increasing Our Understanding	56
<i>Deciding When Death Is Better Than Life</i> , from <i>Time</i>	59
CHAPTER THREE • Solving Problems	64
Step One: What Is the Problem?	67
What Are the Results I Am Aiming for in This Situation?	68
How Can I State the Problem Clearly and Specifically?	68
Step Two: What Are the Alternatives?	69
What Are the Boundaries of the Problem Situation?	69
What Alternatives Are Possible Within These Boundaries?	70
Step Three: What Are the Advantages and/or Disadvantages of Each Alternative?	71
What Are the Advantages of Each Alternative?	71
What Are the Disadvantages of Each Alternative?	72
What Additional Information Do I Need to Evaluate Each Alternative?	73
Step Four: What Is the Solution?	75
What Alternative(s) Will I Pursue?	75
What Steps Can I Take to Act on the Alternative(s) Chosen?	76
Step Five: How Well Is the Solution Working?	77
What Adjustments Are Necessary?	78
<i>"A Legal, Moral, Social Nightmare,"</i> from <i>Time</i>	81
CHAPTER FOUR • Perceiving	89
Actively Selecting, Organizing, and Interpreting Sensations	91
People's Perceptions Differ	97
Viewing the World Through "Spectacles"	100
Selecting Our Perceptions	103
Organizing Our Perceptions	105
Interpreting Our Perceptions	106
Experiences Shape Our Perceptions	113
<i>Migrant Worker</i> , by Roberto Acuna	113
Thinking Critically About Our Perceptions	125

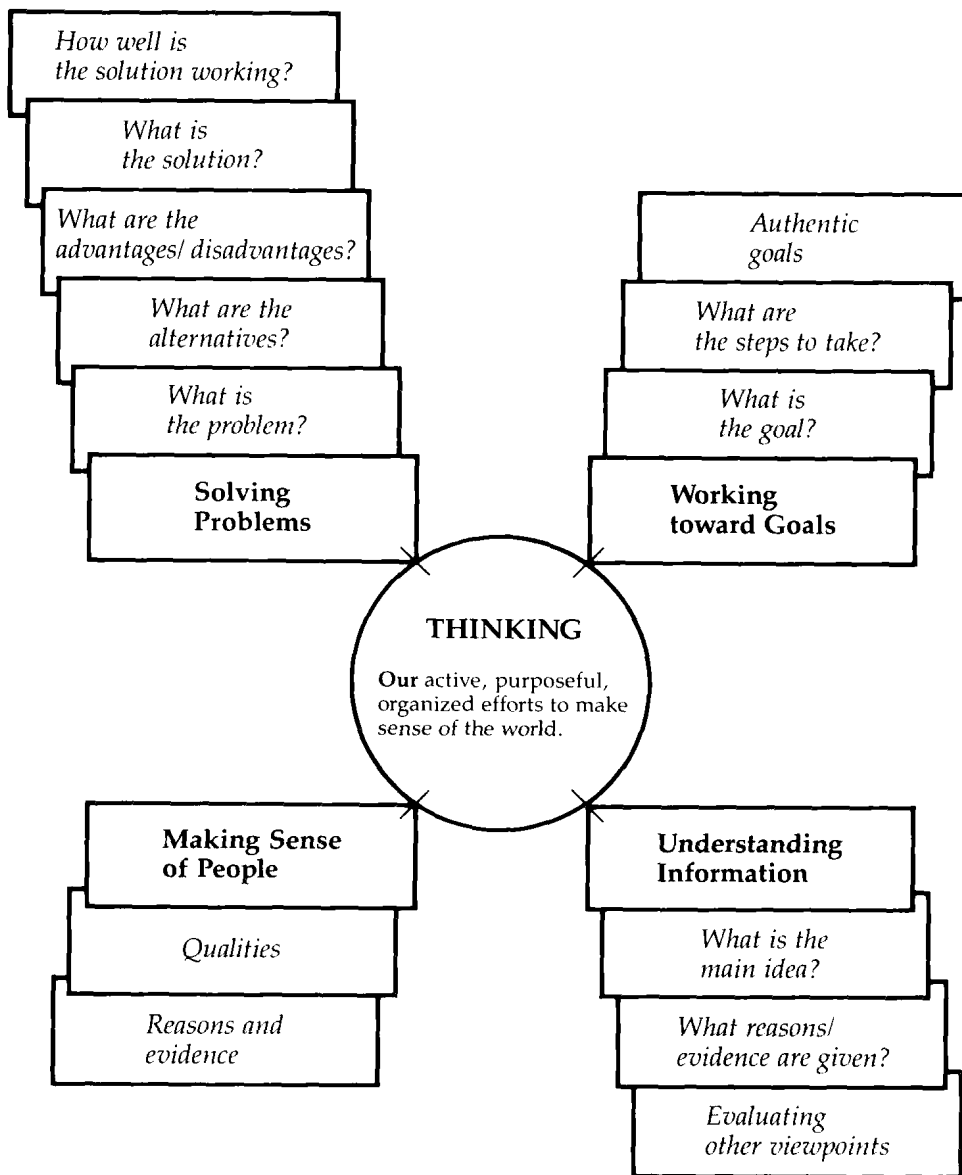
CHAPTER FIVE • Believing & Knowing	130
Beliefs Based on Direct Experience	131
<i>Why I Quit the Klan</i> , by C. P. Ellis	135
Believing and Knowing	140
Beliefs Based on Indirect Experience	144
How Reliable Are the Information and the Source?	146
<i>Two Historical Accounts of the Vietnam War</i> , by Kevin O'Reilly	155
Thinking Critically About Our Beliefs	165
CHAPTER SIX • Language	166
Communicating with Others	167
Words and Symbols	169
The Symbolic Structure of Language	170
Using Language Effectively	172
Passages from <i>Blue Highways</i> , by William Least Heat Moon	173
Naming and Describing	177
<i>Learning to Name</i> , by Anne Sullivan	178
<i>Woodworking Joints</i>	181
Vague Language	182
Clarifying Vague Language	185
<i>Bringing the War Back Home</i> (Review of <i>Platoon</i>), by David Denby	185
Ambiguous Language	190
Clear Language/Clear Thinking	192
Language Influences Thinking	192
Using Language to Influence	194
Euphemistic Language	195
Emotive Language	196
The Language of Advertising	200
From <i>The Language of Advertising</i> , by Charles O'Neill	201
<i>Two Advertisements for Analysis</i>	211
CHAPTER SEVEN • Forming Concepts	213
What Are Concepts?	214
Forming Concepts	217
Classifying	218
Concepts Change	218
Applying Concepts	222
Generalizing and Interpreting	223

Finding the Right Concept	226
Creating Definitions	233
From <i>Creative Thinking and Critical Thinking</i> , by Gardner Lindzey, Calvin S. Hall, and Richard F. Thompson	236
From <i>Passages</i> , by Gail Sheehy	240
CHAPTER EIGHT • Mapmaking & Composing	250
Creating Maps	251
Mapping Relationships	253
Mapping Personality Patterns	255
Mapping and Outlining	256
Creating Maps for Reading, Speaking, and Listening	259
<i>Our Two-Sided Brain</i>	260
Maps for Writing	262
Maps and the Composing Process	266
Generating Ideas (What Ideas Come to Mind?)	266
Defining a Main Idea (What Is Your Point?)	272
Supporting a Main Idea (Prove It to Me!)	275
Drawing a Conclusion (So What?)	279
Revising (Can You Explain Your Meaning More Clearly?)	280
<i>Open Admissions and the Inward "I,"</i> by Peter J. Rondinone	281
CHAPTER NINE • Relating & Organizing	293
Chronological and Process Relationships	295
Chronological Relationships	295
<i>Back, But Not Home</i> , by Maria Muñiz	296
Process Relationships	298
<i>From Popping the Question to Popping the Pill</i> , by Margaret Mead	301
Comparative and Analogical Relationships	306
Comparative Relationships	306
Analogical Relationships	309
<i>On Societies as Organisms</i> , by Lewis Thomas	314
Causal Relationships	318
Causal Chains	319
Contributory Causes	321
Interactive Causes	322
<i>Second Strike</i> , by Henry Kendall	324

CHAPTER TEN • Reporting, Inferring, Judging	336
Reporting Factual Information	339
<i>Big Mac and the Tropical Forests</i> , by Joseph K. Skinner	344
Inferring	351
Complicated Inferences	355
<i>Evolution as Fact and Theory</i> , by Stephen Jay Gould	357
Judging	365
Differences in Judgments	368
<i>I Listen to My Parents and I Wonder What They Believe</i> , by Robert Coles	370
Distinguishing Reports, Inferences, and Judgments	376
CHAPTER ELEVEN • Constructing Arguments	380
Recognizing Arguments	383
Cue Words for Arguments	385
Arguments Are Inferences	387
We Construct Arguments to Decide	387
We Construct Arguments to Explain	388
We Construct Arguments to Predict	388
We Construct Arguments to Persuade	389
Evaluating Arguments	389
How True Are the Supporting Reasons?	390
Do the Reasons Support the Conclusion?	391
The Soundness of Arguments	393
Forms of Arguments	394
Deductive Arguments	395
<i>Death and Justice: How Capital Punishment Affirms Life</i> ,	
by Edward I. Koch	402
<i>The Death Penalty</i> , by David Bruck	407
Inductive Arguments	412
CHAPTER TWELVE • Reasoning Critically	413
Empirical Generalization	415
Is the Sample Known?	416
Is the Sample Sufficient?	416
Is the Sample Representative?	417
Fallacies of False Generalization	419
Hasty Generalization	420
Sweeping Generalization	421
False Dilemma	422

Causal Reasoning	423
The Scientific Method	424
Controlled Experiments	428
<i>For a National Effort to Develop a Vaccine to Counteract AIDS,</i> by Robert E. Pollack	434
Causal Fallacies	436
Questionable Cause	437
Misidentification of the Cause	437
<i>Post Hoc Ergo Propter Hoc</i>	438
Slippery Slope	438
<i>Teen Pregnancies Involve More Than Sex,</i> by Caryl Rivers	440
Fallacies of Relevance	442
Appeal to Authority	443
Appeal to Pity	443
Appeal to Fear	444
Appeal to Ignorance	445
Appeal to Personal Attack	445
Thinking Critically	446
<i>Critical Thinking and Obedience to Authority,</i> by John Sabini and Maury Silver	447
Index	461

Thinking



THINKING IS THE EXTRAORDINARY PROCESS we use every waking moment to make sense of our world and our lives. Successful thinking enables us to solve the problems we are continually confronted with, to make intelligent decisions, and to achieve the goals that give our lives purpose and fulfillment. It is an activity that is crucial for living in a meaningful way.

This book is designed to help you understand this complex, incredible thinking process. You might think of this text as a map to guide you in exploring the way your mind operates. This book is also founded on the conviction that we can *improve* our thinking abilities by carefully examining our thinking process and working systematically through challenging activities. Thinking is an active process, and we learn to do it better by becoming aware of and practicing the thought process, not simply by reading about it. By participating in the thinking activities contained in the text and applying these ideas to your own experiences, you will find that your thinking — and language — abilities are becoming sharper and more powerful.

In this chapter we will examine four areas of our lives in which we use the thinking process to understand our world and make informed decisions:

1. Solving problems
2. Working toward our goals
3. Understanding information
4. Making sense of people

Solving Problems

I'll never forget that Saturday afternoon. I was driving home with a friend of mine and the roads were slippery. As we came around a curve, we saw a smashed-up car resting on its side with the engine running wildly. We stopped to investigate and found that the driver, a young man, was still in the car. He looked like something out of a horror film, with blood covering his face and drenching his clothes. We climbed up on the side of the car, and while my friend held the door open, I pulled the driver out of the car and laid him on the ground. My friend turned the engine off and then helped me carry the man to a nearby house since it was so cold. The people in the house helped us lay him on the kitchen floor and cover him with a blanket. At this point he became hysterical, shaking all over and shouting, "I'm going to die, I know I'm going to die." While someone called the ambulance and police,

we tried to calm him down. After about thirty minutes the ambulance came and took him away.

In working through this problem, the student who wrote this description had to think in a careful and systematic way in order to reach a solution. When we think effectively in situations like this, we usually ask ourselves a series of questions, although we may think and act so quickly that we are not aware of the process.

1. What is the *problem*?
2. What are the *alternatives*?
3. What are the *advantages* and/or *disadvantages* of each alternative?
4. What is the *solution*?
5. How well is the solution *working*?

We will look at these questions further by applying them to the problem described above. Put yourself in the position of the student encountering the wrecked car.

What Is the Problem?

In this situation, the problem is obviously rescuing the man from the wrecked car and seeing that he gets proper medical treatment.

What Are the Alternatives?

In dealing with this problem, you have a wide variety of possible actions to consider before selecting the best choices. Identify some of the alternatives you might consider:

1. Pull the man out of the wrecked car.
2. _____
3. _____
4. _____

What Are the Advantages and/or Disadvantages of Each Alternative?

For each of the alternatives you identified, evaluate the strengths and weaknesses so you can weigh your choices and decide on the best course of action.

1. Pull the man out of the wrecked car.

Advantage: This removes the victim from further danger and enables us to take him to a safer and more comfortable location.

Disadvantage: The car may explode or catch fire while we are removing the victim. Also, he may have injuries that would be made worse by moving him.

2. _____

Advantage: _____

Disadvantage: _____

3. _____

Advantage: _____

Disadvantage: _____

4. _____

Advantage: _____

Disadvantage: _____

What Is the Solution?

After evaluating the various alternatives, select what you think is the most effective alternative for solving the problem and describe the sequence of steps you would take to act on the alternative.

Alternative: Pull the man out of the wrecked car.

Steps:

1. _____

2. _____

3. _____

How Well Is the Solution Working?

The final step in the process is to review the solution and decide whether it is working well. If not, we must be able to modify our solution, or perhaps choose an alternate solution that we had disregarded earlier. Describe what