

Contents

Preface	xv
Acknowledgments	xix
Part I: Understanding Creativity	1
1 Creativity and Classrooms	3
It's Time for Creativity	4
<i>Creativity for Learning</i>	6
<i>Creativity for Motivation</i>	9
<i>Creativity for Joy</i>	11
<i>In Case There's Any Doubt: Creativity for Everybody</i>	12
Getting Started: Defining Creativity	13
<i>Definitions of Creativity</i>	13
<i>Levels and Domains of Creativity</i>	18
Why Do People Create?	19
Teaching for Creativity	21
<i>Who's Being Creative Here?</i>	21
<i>Authentic Problems and Processes</i>	22
<i>Teaching for Creativity in a Time of Standards</i>	23
<i>Is Creativity Really Good for Us?</i>	24
<i>Choosing the Creative Road</i>	25
Structure of the Book	26
Think About It	27
Try It Tomorrow	27
Tech Tips	28

2	Models and Early Thoughts	31
	The Creative Process	32
	<i>Dewey and Wallas: To Incubate or Not to Incubate</i>	32
	<i>Guilford: Diverge and Transform</i>	35
	<i>Sawyer and Eight Stages</i>	37
	<i>Problem Finding: A Few More Thoughts</i>	37
	Early Views and Research	41
	<i>Mysteries and Muses</i>	41
	<i>Psychoanalytic Theories</i>	42
	<i>Behaviorist Theories</i>	43
	<i>Humanist Theories</i>	44
	<i>Sociocultural Analysis: Getting Ready for Systems</i>	46
	Creativity Across Cultures	48
	Think About It	52
	Try It Tomorrow	52
	Tech Tips	53
3	Theories Today: Context, Systems, and Cognition	55
	Systems of Creativity	56
	<i>Creativity, Culture, and Csikszentmihalyi</i>	57
	<i>An Investment Model, a Triangular Model, and Thoughts About Wisdom</i>	60
	<i>Simonton and an Evolutionary Model</i>	62
	<i>Amabile, Motivation, and a Model of Creativity</i>	62
	<i>Systems in the Classroom</i>	67
	<i>Systems Continue</i>	68
	Creativity and Cognition	69
	<i>Creative Cognition</i>	69
	<i>The Ultimate Mechanics: Creativity and Computers</i>	70
	<i>The Neuroscience of Creativity</i>	71
	Collaborative Creativity	78
	Think About It	81
	Try It Tomorrow	82
	Tech Tips	82
4	Creative People and Their Lives	85
	Characteristics Associated With Creativity	86
	<i>Creativity and Intelligence</i>	86
	<i>The IPAR Studies: In Search of Human Effectiveness</i>	88

<i>Creative People and “Messy Minds”</i>	89
<i>Creativity and Complexity</i>	100
<i>Creativity and Mental Illness</i>	102
Creativity Across a Lifetime	103
<i>Biographies of Eminent Creators</i>	103
<i>Lifespan Creativity</i>	105
<i>Creativity, Multicultural, and Diversifying Experiences</i>	107
<i>Creativity and Talent Development: What Do Teachers Do?</i>	109
<i>Disciplinary, Gender, and Cultural Differences</i>	112
Play, Curiosity, and Creative Children	114
<i>Play, Playfulness, and Creativity</i>	115
<i>Curiosity</i>	117
<i>Research on Creative Young People</i>	121
<i>Creative Activities and Misidentification</i>	122
Think About It	124
Try It Tomorrow	124
Tech Tips	125
Part II: Creativity and Classroom Life	127
5 Building Creative Classrooms	129
Three Keys to Creativity in the Classroom	130
Creative Environments, Business, and the Classroom	131
Guarding the Flames Within: Psychological Safety, Intrinsic Motivation, and Self-Beliefs	135
<i>Psychological Safety</i>	135
<i>Intrinsic Motivation</i>	138
<i>Creative Self-Beliefs</i>	147
<i>Flow</i>	150
<i>Creative Mortification</i>	152
Social Emotional Learning for Creativity	153
<i>Be Empathetic</i>	154
<i>Stay Curious</i>	155
<i>Take Risks</i>	155
<i>Learn From Failure</i>	156
<i>Challenge the Rules—or Better Yet, Invent Them</i>	156
<i>Collaborate</i>	157
Classroom Organization, Motivation, and Autonomy:	
Teaching for Independence	159

	<i>Teaching Skills of Independent Learning</i>	159
	<i>Materials and Structures for Independent Learning</i>	162
	<i>Classroom Environment and Routines</i>	170
	<i>Flexible Grouping and Organization</i>	173
	Think About It	176
	Try It Tomorrow	177
	Tech Tips	177
6	Creativity in the Content Areas: Language Arts and Social Studies	179
	Curriculum for Creativity	181
	<i>Thinking About the “What?”</i>	182
	<i>Thinking About the “How?”</i>	186
	<i>Thinking About the “Why?”</i>	187
	<i>Thinking About the “How Do You Know?”</i>	188
	<i>What Is a Problem?</i>	188
	Creativity and Curriculum Standards	190
	<i>Standards Principle 1: They Are Not the Whole Curriculum</i>	191
	<i>Creativity and Standards Principle 2: They Don’t Tell You How to Teach</i>	191
	<i>Creativity and Standards Principle 3: They Don’t Tell You</i>	
	<i>What Students Should Do With the Content</i>	192
	Finding and Solving Problems in the Language Arts	193
	<i>Creativity in Language Arts</i>	194
	<i>Finding Purpose and Technique for Communication</i>	195
	<i>Language Arts: Creative Strengths</i>	203
	Finding and Solving Problems in Social Studies	204
	<i>Creativity in the Social Sciences</i>	204
	<i>Flexible Thinking Through Points of View</i>	205
	<i>Students as Historical Researchers</i>	207
	<i>Students as Participants in Democracy</i>	214
	<i>Social Studies: Creative Strengths</i>	217
	Think About It	217
	Try It Tomorrow	218
	Tech Tips	218
7	Creativity in the Content Areas: Science, Math, and Engineering	221
	Finding and Solving Problems in Science	221
	<i>Creativity in Science</i>	221
	<i>Working Toward Conceptual Change</i>	223
	<i>Teaching With Real Science</i>	225

<i>Problem-Based Learning</i>	228
<i>Variety in Science Reporting</i>	230
<i>Science: Creative Strengths</i>	231
Finding and Solving Problems in Mathematics	232
<i>Creativity in Math</i>	232
<i>Thinking Like a Mathematician</i>	235
<i>Planning Math Activities</i>	240
<i>Mathematics: Creative Strengths</i>	244
Thinking Like an Engineer	244
<i>Design Thinking</i>	245
<i>Thinking About the Content Areas</i>	247
Additional Strategies for Content Teaching	247
<i>Inductive Approaches</i>	248
<i>Simulation and Role-Play Activities</i>	252
Thinking About It	255
Try It Tomorrow	255
Tech Tips	256
8 Teaching Creative Thinking Skills and Habits	259
Tools for Creative Thinking	260
Problem Finding	262
Students as Questioners	267
<i>Question Formulation Technique (QFT)</i>	270
<i>A More Beautiful Question</i>	271
<i>Questioning Habits of Mind</i>	271
Divergent-Thinking Strategies	272
<i>Brainstorming</i>	275
SCAMPER	279
<i>Attribute Listing</i>	284
<i>Morphological Synthesis</i>	286
<i>Random Input and Other Techniques of Lateral Thinking</i>	287
<i>Using Divergent Thinking in Creative Problem Solving</i>	291
Using Metaphors and Analogies	298
<i>Synectics</i>	299
<i>Other Uses for Metaphorical Thinking</i>	305
Visualization and Creative Dramatics	308
<i>Visualization</i>	308
<i>Creative Dramatics</i>	311

Commercial and Competitive Programs	313
<i>Future Problem Solving Program International</i>	313
<i>Destination ImagiNation</i>	314
<i>Odyssey of the Mind</i>	314
<i>Inventing and Invention Conventions</i>	314
<i>Science Olympiad</i>	316
<i>Science Fairs in Cyberspace</i>	317
<i>Makers and More</i>	317
<i>Commercial Products, Transfer, and the Real World</i>	318
Think About It	319
Try It Tomorrow	319
Tech Tips	320
9 Assessment and Creativity	323
Creativity and Assessment for Learning	324
Assessment for Creativity	325
<i>Building a Sense of Competence</i>	326
<i>Choice and Meaningful Tasks</i>	328
<i>Using Content in New Ways</i>	334
Assessment of Creativity	336
<i>Why Assess Creativity?</i>	336
<i>Difficulties Associated With Assessing Creativity</i>	337
<i>Instruments for Assessing Creativity</i>	340
<i>Assessing Creative Processes</i>	341
<i>Assessing the Creative Person</i>	346
<i>Instruments Assessing Creative Products</i>	349
<i>Assessing Creative Press: Environments for Creativity</i>	353
<i>Combinations and Other Types of Assessment</i>	354
<i>Assessing Creativity in and About Schools</i>	355
<i>Challenges and Recommendations</i>	356
What's Next?	358
Try It Tomorrow	359
Tech Tips	359
10 Building Creative Schools	361
Creativity in Organizations	362
Developing a Culture of Creativity in Schools	365
<i>Innovation for Creative Community</i>	365
<i>What Does a Creative Community Look Like?</i>	366

Creative Leadership	371
<i>Leading for Creativity</i>	371
<i>The Road to Get There</i>	374
<i>What If I'm Not in Charge?</i>	376
Blind Men, Elephants, and Farewell	377
Think About It	379
Try It Tomorrow	380
Tech Tips	380
Appendix: Problem-Finding Lessons	383
Bibliography	399
Author Index	427
Subject Index	435