Contents

	List of Figures	page viii
	List of Tables List of Contributors	x xi
	Preface R. KEITH SAWYER	xv
1	An Introduction to the Learning Sciences R. KEITH SAWYER	1
	Part I Foundations	
2	Foundations of the Learning Sciences MITCHELL J. NATHAN AND R. KEITH SAWYER	27
3	Scaffolding IRIS TABAK AND BRIAN J. REISER	53
4	Project-Based Learning JOSEPH S. KRAJCIK AND NAMSOO SHIN	72
5	Metacognition and Self-Regulated Learning PHILIP H. WINNE AND ROGER AZEVEDO	93
6	A History of Conceptual Change Research: Threads and Fault Lines	
7	Learning in Activity	114
	YRJÖ ENGESTRÖM	134
8	Cognitive Apprenticeship ALLAN COLLINS AND MANU KAPUR	156
	Part II Methodologies	
9	Design-Based Research: A Methodological Toolkit for Engineering Change	
	SASHA BARAB	177

10	Analyzing Collaboration NOEL ENYEDY AND REED STEVENS	196
11	Microgenetic Methods BRUCE L. SHERIN AND CLARK A. CHINN	217
12	A Learning Sciences Perspective on the Design and Use of Assessment in Education JAMES W. PELLEGRINO	238
13	Learning Analytics and Educational Data Mining RYAN S. BAKER AND GEORGE SIEMENS	259
	Part III Grounding Technology in the Learning Sciences	
14	Video Games and Learning CONSTANCE STEINKUEHLER AND KURT SQUIRE	281
15	Embodiment and Embodied Design DOR ABRAHAMSON AND ROBB LINDGREN	301
16	Tangible and Full-Body Interfaces in Learning NARCIS PARES AND MICHAEL EISENBERG	321
17	Augmented Reality in the Learning Sciences BERTRAND SCHNEIDER AND IULIAN RADU	340
18	Mobile Learning ROY PEA AND MIKE SHARPLES	362
	Part IV Learning Together	
19	Knowledge Building and Knowledge Creation MARLENE SCARDAMALIA AND CARL BEREITER	385
20	Computer-Supported Collaborative Learning GERRY STAHL, TIMOTHY KOSCHMANN, AND DANIEL SUTHERS	406
21	Arguing to Learn JERRY ANDRIESSEN AND MICHAEL BAKER	428
22	Informal Learning in Museums PALMYRE PIERROUX, KAREN KNUTSON, AND KEVIN CROWLEY	448
	Part V Learning Disciplinary Knowledge	
23	Research in Mathematics Education: What Can It Teach Us about Human Learning?	
	ANNA SFARD AND PAUL COBB	467

24	Science Education and the Learning Sciences: A Coevolutionary Connection NANCY BUTLER SONGER AND YAEL KALI	486
25	Complex Systems and the Learning Sciences: Educational, Theoretical, and Methodological Implications MICHAEL J. JACOBSON AND URI WILENSKY	504
26	Learning History MARIO CARRETERO AND EVERARDO PEREZ-MANJARREZ	523
27	Learning to Be Literate PETER SMAGORINSKY AND RICHARD E. MAYER	543
28	Arts Education and the Learning Sciences ERICA ROSENFELD HALVERSON AND KIMBERLY M. SHERIDAN	560
	Part VI Moving Learning Sciences Research into the Classroom	
29	Learning as a Cultural Process: Achieving Equity through Diversity NA'ILAH SUAD NASIR, ANN S. ROSEBERY, BETH WARREN,	
	AND CAROL D. LEE	581
30	Designing for Meaningful Learning: Interest, Motivation, and Engagement K. ANN RENNINGER AND SANNA JÄRVELÄ	602
31	Advances in Teacher Learning Research in the Learning Sciences	
	BARRY J. FISHMAN, CAROL K. K. CHAN, AND ELIZABETH A. DAVIS	619
32	Engagement	
	WILLIAM R. PENUEL, JAMES P. SPILLANE, AND MIN SUN	638
33	The Learning Sciences in the 2020s: Implications for Schools and Beyond	< #O
	R. KEITH SAWYER	658
	Index to approximate the second of the secon	687