## HANDBOOK OF RESEARCH ON SCIENCE EDUCATION

EDITED BY

Sandra K. Abell

and

Norman G. Lederman

## Contents

	Prefaceix		
	Sandra K. Abell and Norman G. Lederman		
PART I: SCIENCE LEARNING			
1	Perspectives on Science Learning		
2	Student Conceptions and Conceptual Learning in Science		
3	Language and Science Learning		
4	Attitudinal and Motivational Constructs in Science Learning		
5	Classroom Learning Environments		
6	Learning Science Outside of School		
PART II: CULTURE, GENDER, SOCIETY, AND SCIENCE LEARNING			
7	Science Education and Student Diversity: Race/Ethnicity, Language, Culture, and Socioeconomic Status		
8	Postcolonialism, Indigenous Students, and Science Education		
9	Issues in Science Learning: An International Perspective		
10	Gender Issues in Science Education Research: Remembering Where the Difference Lies		

11	Special Needs and Talents in Science Learning			
12	Science Learning in Urban Settings			
13	Rural Science Education			
PART III: SCIENCE TEACHING				
14	General Instructional Methods and Strategies			
15	Learning and Teaching in the School Science Laboratory: An Analysis of Research, Theory, and Practice			
16	Discourse in Science Classrooms			
17	Digital Resources Versus Cognitive Tools: A Discussion of Learning Science with Technology			
18	Elementary Science Teaching			
19	Interdisciplinary Science Teaching537 Charlene M. Czerniak			
20	High School Biology Curricula Development: Implementation, Teaching, and Evaluation from the 20th to the 21st Century			
21	Teaching Physics			
22	Teaching and Learning the Many Faces of Chemistry			
23	Learning Earth Sciences			
24	Environmental Education			
PART IV: CURRICULUM AND ASSESSMENT IN SCIENCE				

25	Scientific Literacy/Science Literacy	
	Douglas A. Roberts	

26	History of Science Curriculum Reform in the United States    and the United Kingdom    J Myron Atkin and Paul Black
27	Inquiry as an Organizing Theme for Science Curricula
28	Nature of Science: Past, Present, and Future
29	Humanistic Perspectives in the Science Curriculum
30	Systemic Reform: Research, Vision, and Politics
31	Review of Science Education Program Evaluation
32	Classroom Assessment of Science Learning
33	Large-Scale Assessments in Science Education
	PART V: SCIENCE TEACHER EDUCATION
34	Science Teacher as Learner
35	Science Teacher Attitudes and Beliefs
36	Research on Science Teacher Knowledge
37	Learning to Teach Science
38	Teacher Professional Development in Science  1177    Peter W. Hewson  1177
39	Science Teachers as Researchers
	Author Index
	Subject Index
	About the Author