TABLE OF CONTENTS

ACI	(NOWLEDGMENTS	ix
FOF	REWORD	хі
INT	RODUCTION	χv
	OUT THE AUTHORS	
ADI	JUI THE AUTHORS	. XIX
1.	THE SEARCH FOR INTERDISCIPLINARITY: MOVING FROM BIOLOGY,	
	CHEMISTRY, AND PHYSICS TO STEM AND BEYOND	
	Introduction	
	Background	
	Author's Best Practices: What Do I Do?	
	Adaptation of Best Practices	
	Conclusion	
	Works Cited	22
2.	BUILDING A FOUNDATION FOR SUCCESSFUL STEM EDUCATION AT THE	
۷.	ELEMENTARY LEVEL	24
	Introduction	
	Background	
	Best Practice	
	Conclusion	
	Works Cited	
	Appendix	
	••	
3.	ENGAGING GIRLS IN STEM CAREERS	
	Introduction	
	Background	
	STEM Best Practice: Girls Exploring Technology (GET) Club	
	How Others Can Adapt This Best Practice	
	Conclusion	
	Works Cited	
	Appendix	80
4.	TEACHING MATHEMATICS TO AT-RISK STUDENTS	. 81
	Introduction	
	Background	
•	My Best Practices and How Others Can Adapt Them	
	Conclusion	



	Works Cited	94
	Appendix A	96
	Appendix B	97
	••	
5.	THE STUDENT-CENTERED SHELTERED INSTRUCTIONAL APPROACH AND	
	GROWTH (SSIAG) MODEL	98
	Introduction	
	Background: Components of the SSIAG Model	102
	Best Practice: The SSIAG	
	Strong Evidence Supporting the SSIAG Model	109
	Conclusion	114
	Works Cited	115
_	DUTTING THE WALTHENTIGHT INTO COMMON LEADNING	110
6.	PUTTING THE "AUTHENTICITY" INTO SCIENCE LEARNING	
	Introduction	
	Background	
	Coming to Know Science: My Personal Story Best Practices: Authentic Science in Action	
	Implementing Authentic Science Outside the Regular Classroom	
	Getting Started with the Authentic Science Rating Instrument	
	Conclusion	
	Works Cited	
	Appendix	
	ASRI Score Sheet	
	ASM Score Sheet	1)(
7.	ENGAGING YOUNG MINDS TO BE TOMORROW'S INNOVATORS	.158
	Introduction	
	Background	160
	Best Practices	164
	Adapting Best Practices in Your Classroom	175
	Conclusion	177
	Works Cited	178
_	EVENING THE HODIZONG OF VOLID CTHEFNITE BY EVENING VOLIDS	100
8.	EXPAND THE HORIZONS OF YOUR STUDENTS BY EXPANDING YOURS	
	Introduction	
	Background	
	Best Practices	
	Expanding Your Horizons	
	Conclusion	
	Works Cited	
	Appendix	198

9.	RESEARCH EXPERIENCES FOR TEACHERS CAN ENHANCE THE	100
	TEACHING OF SCIENCE	
	Introduction	
	Background	
	Best Practices	
	Adaptations of the Best Practices	
	Conclusion	
	Works Cited	220
10.	. ALTERNATIVE REALITY: GAMIFYING YOUR CLASSROOM	222
	Introduction	222
	Background	223
	Best Practices	229
	Structuring Classes Like a Game	231
	Additional Thoughts: MMOGs	239
	Conclusion	240
	Works Cited	241
	Appendix	243
	IN HIGH SCHOOL: IMPROVING STUDENTS' ATTITUDES & MOTIVAT IN SCIENCE	244
	Introduction	245
	Background	250
	Case Study	256
	Ideas for Adaptation by Others	267
	Conclusion	269
	Works Cited	269
	Appendix A	272
	Appendix B	273
12	. USING WHITEBOARDS TO CREATE A STUDENT-CENTERED,	
	COLLABORATIVE CLASSROOM	275
	Introduction	
	Background	
	Best Practices: How to Adapt Whiteboarding to Your Classroom	
	Conclusion	
	Conclusion	298
	Works Cited	

13.	INTEGRATING INFORMAL STEM LEARNING INTO YOUR CURRICULUM	300
	Introduction	300
	Background	301
	Best Practice	303
	Adapting the Best Practice	307
	Conclusion	
	Works Cited	311
	Appendix A	313
	Appendix B	
	Appendix C	315
	Appendix D	322
14.	MODELING SUSTAINABILITY THROUGH STEM SERVICE-LEARNING	324
	Introduction	324
	Background	326
	Best Practice	332
	Modeling Sustainability in Your School and Community	338
	Conclusion	342
	Works Cited	343
	Resources	345
4-	OUTDOOD FOOLOODAL INQUIRY PRINCE CTUDENTS AND MATURE	
15.	OUTDOOR ECOLOGICAL INQUIRY BRINGS STUDENTS AND NATURE	0.47
	TOGETHERIntroduction	34/
	Background	
	Best Practice	
	Conclusion	
	Works Cited	
	Appendix	3/1
16.	APPLICATIONS OF SATELLITE IMAGERY, REMOTE SENSING, AND	
	COMPUTER VISUALIZATIONS: OBSERVING THE EARTH AND VISUALIZII	
	THE FUTURE	376
	Introduction	376
	Background	378
	Best Practice	
	Adoption of Best Practice	386
	Conclusion	388
	Works Cited	391