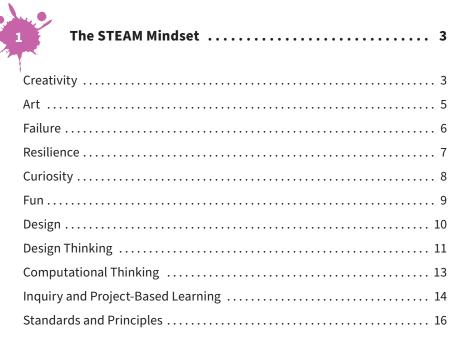
CONTENTS

Introduction xv Overcoming the Fear (and Leathing)

	XVI
How to Use This Book	viii
Why Add Art to STEM?	viii

PART I: STEAM FUNDAMENTALS



.



STEAM Implementation 19

Focus on Materials 19
Creative Challenges 20
The Realities of Technology 22
Makerspaces 24
Coaching STEAM
Building Mastery
Differentiated STEAM 28
Assessments
STEAM Safety and Digital Citizenship 31
Starting out with STEAM
STEAM Education Leaders 35
Evolving Technology 36

PART II: STEAM PROJECTS AND TECHNOLOGIES



Classic Construction, Cardboard, and Upcycling 39

Project: Upcycled Self-Watering Planter	.41
Project: Cardboard Chair Design	. 44



Project: Video Poem	50
Project: Educational Public Service Announcement	54

a series
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
and the state of the

-	Animation	••••	••••	••••	• • • • • •	••••	•••••	57

Project: Animation Games	59
Project: Collaborative Animation	62



Digital Photography	6	5

Project: Cyanotypes	67
Project: Light Painting	70



Wab	Design	Casial	Madia	المعدم		70
wep	Design,	Social	media,	ana	Podcasting	 15

Project: STEAM Trading Cards	75
Project: STEAM Podcast Interview	79





🔨 Digital Drawing and Design	 91

Project: Digital Self-Portrait	93
Project: STEAM Infographics	95



3D Design, Printing, and Construction	 99
0, 0,	

Project: 3D Architecture	101
Project: 3D Fashion Design	104



Robotics and Drones	 107

Project: Random Drawing Robot	109
Project: Drone Photography	112



Augmented and Virtual Reality	 115

Project: Augmented Reality Career Exploration	118
Project: Virtual Reality Drawing	121



Artificial Intelligence	•••••	125

Project: Creative Al	127
Project: The AI Classroom	130

PART III: NEXT LEVEL STEAM LEARNING

Connections	135
Sharing Success	136
Social Media and Engaging Professionals	137
STEAM Career Exploration	139

Virtual and Real-World Field Trips 140
Working with Professional Makerspaces, Maker Fairs, and Museums \dots 140
Conventions, Conferences, and Symposiums 142
Navigating the World of Educational Technology
Online Connections 143
Preparing for an Unknown Future 144
Jobs Without Titles 146
Project: Interview with a STEAM Professional 147



J.	Collaboration	 149
-		

Types of Collaborations 151
First-Time Collaborations 152
Collaboration Advice 153
Connecting with Collaboration Partners
Doing Projects for Your Community and the World
Creating with Professionals and Local STEAM Industries
Working with Other Disciplines
Collaboration and Technology 157
Project: STEAM Icebreaking 159



Authenticity	• • • • •	••••	• • • • • • •	 161

Future Ready Teaching 1	.62
Big Questions 1	.62
Reflecting Professional Atmospheres in the Classroom 1	64
Approaching Real-World Questions and STEAM Problems1	64
Everyday STEAM 1	.65
Project: Classroom Redesign 1	.66



Sustainability	 69

STEAM Project Variety 1	.69
Student Choice	170
Learner Autonomy 1	l71
Diversifying STEAM Technology 1	l71
STEAM Equity and Access 1	.72
Social and Emotional Learning 1	73
Decision Fatigue 1	175
Project: Environmental and Community Murals 1	176

PART IV: THE STEAM POWER CHALLENGE

	The STEAM Challenge .		
STEA	M Advocacy		182
	ging Edtech		
STEA	M Power Community		
The S	TEAM Power Challenge		
STEA	M Power Project Resources		188
ISTE S	Standards Project Mapping Guic	le	206
Index			210