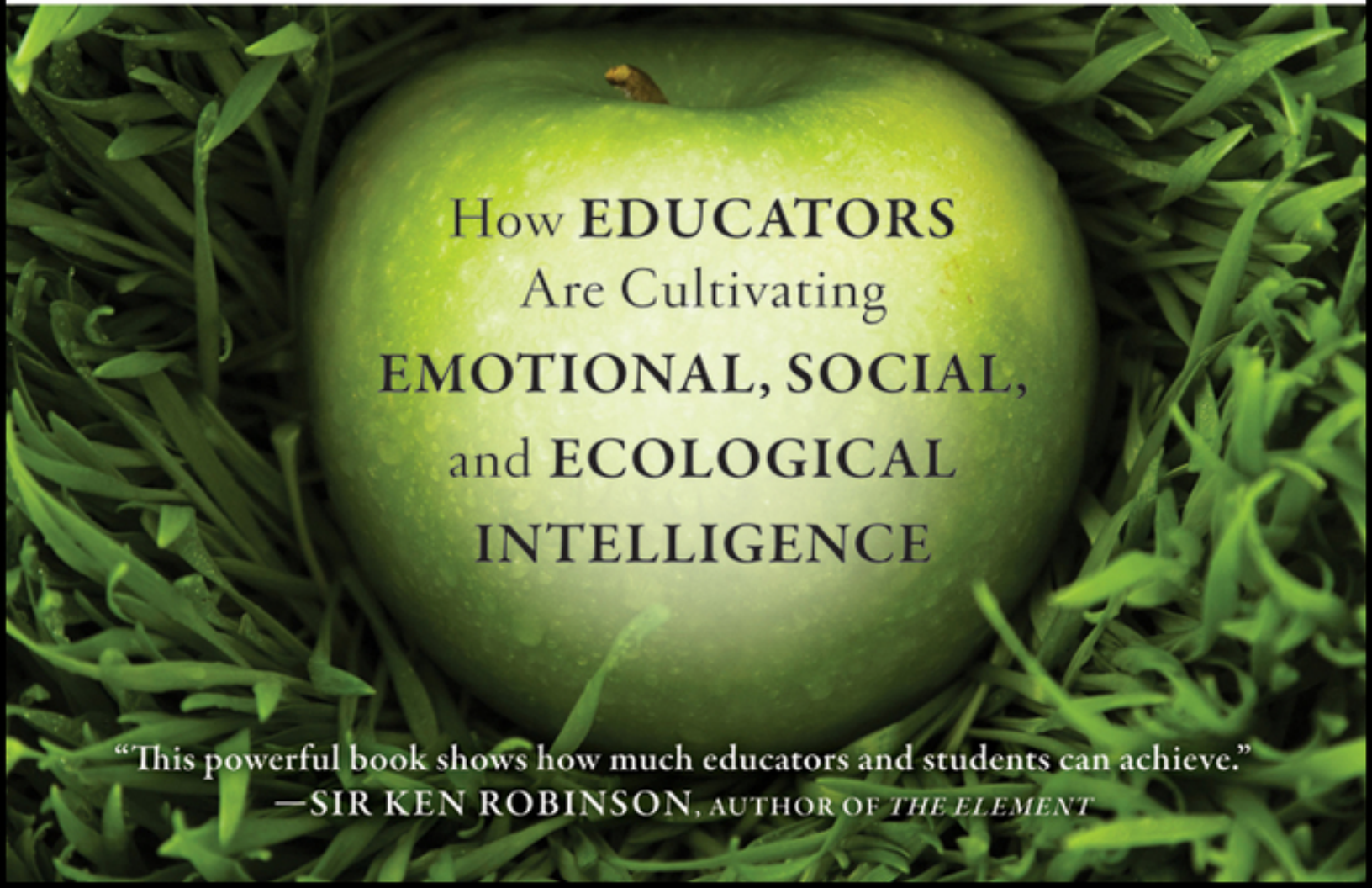


DANIEL GOLEMAN

LISA BENNETT ZENOBIA BARLOW

CENTER FOR ECOLITERACY

ECO LITERATE



How EDUCATORS
Are Cultivating
EMOTIONAL, SOCIAL,
and ECOLOGICAL
INTELLIGENCE

“This powerful book shows how much educators and students can achieve.”

—SIR KEN ROBINSON, AUTHOR OF *THE ELEMENT*

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More Praise for *Ecoliterate*

“One of the most urgent issues facing humanity is fixing our broken relationship with the earth, on which all life depends. To do that, we have to think, feel, and act differently. With vivid examples and lucid analysis, this powerful and persuasive book shows just how much inspired educators and students can achieve together. It should enlighten and invigorate schools and communities everywhere.”

—**Sir Ken Robinson**, creativity expert and author of *The Element: How Finding Your Passion Changes Everything*

“The worlds of thought and action have been fundamentally changed by the delineation of emotional, social, and ecological intelligences. In this pioneering book, Dan Goleman and his collaborators demonstrate—in vivid and compelling fashion—how education can be transformed through a synthesis of these intelligences.”

—**Howard Gardner**, Hobbs Professor of Cognition and Education, Harvard Graduate School of Education

“Gutsy, eloquent, moving, *Ecoliterate* is a masterpiece of motivation and practical guidance. Yes, it is perfect for educators, but it is also perfect for students, parents, grandparents, and all of us yearning to contribute to life on our planet. *Ecoliterate* will help young people discover their own power—and that genie is impossible to get back in the bottle! I love this book.”

—**Frances Moore Lappé**, author of *EcoMind: Changing the Way We Think, to Create the World We Want*

“If there is one book on education that needs to be read by every teacher on the planet, *Ecoliterate* is that book. With extremely lucid prose that reflects decades of pioneering work, Goleman, Bennett, and Barlow provide the essential navigation points for a pedagogy that can begin to undo the damage of an antiquated educational and economic system. Theirs is an education for system change. An education infused with hope, passion, and beauty.”

—**Laurie Lane-Zucker**, cofounder and former Executive Director, The Orion Society, founder and CEO of Hotfrog

“This book is a treasure. Crucial for educators, a gift to the next generation, a realistic ray of hope for us all. So much ground is covered here—the watersheds where we live as well as the waters of consciousness, how we can change, how we do change, our children finding wisdom while saving this precious earth.”

—**Susan Griffin**, author of *Woman and Nature: The Roaring Inside Her*

“Beautifully written, accessible, and urgently important, *Ecoliterate* introduces us to individuals and communities around the country who in very real, practical ways are demonstrating that a new world is possible. No harangue here; this is about hope, embodied in educating our children—head, heart, and hands—to deeply understand how to take care of themselves, their neighbors, and the natural world on which we all depend.”

—**Michael Ableman**, farmer and author of *From the Good Earth, On Good Land, and Fields of Plenty*

“In the 21st century, we need a new relationship with nature, a redefinition of both environmentalism and

ecoliteracy. In *Ecoliterate*, Daniel Goleman, Lisa Bennett, and Zenobia Barlow offer a roadmap for educators—and the rest of us—to that future, one based on empathy, kinship, natural intelligence, and hope. We're in their debt for showing the way.”

—**Richard Louv**, author of *The Nature Principle and Last Child in the Woods*

“Socially and emotionally engaged ecoliteracy can lead to deeply meaningful, inspiring, and effective education. This book shares compelling stories about educators and students who demonstrate the capacity to understand and care about human actions and ecological challenges, and are motivated to take action to make positive differences in today's world. Implementing this vision of education will excite teachers and students, and also improve environments and quality of living in communities across the globe.”

—**Roger P. Weissberg**, NoVo Foundation Endowed Chair in Social and Emotional Learning, University of Illinois at Chicago, and president and CEO of the Collaborative for Academic, Social, and Emotional Learning (CASEL)

“*Ecoliterate* is the story of educators with heart, courage, and vision transforming lives, places, and minds. This is ‘education’ as it should be! Must reading...”

—**David W. Orr**, Paul Sears Professor of Environmental Studies and Politics, Oberlin College

“Preparing our children to live resourcefully in a future few adults can scarcely imagine is daunting for even the most talented educators. Goleman, Bennett, and Barlow convincingly advance a new paradigm for educating children that is founded on the integration of emotional,

social, and ecological intelligence. *Ecoliterate* provides a veritable how-to guide for educators to creatively engage young people in the most important ecological issues of the day, helping them gain knowledge of and empathy for all living systems, which is bound to enrich their lives and protect the future of our planet.”

—**Gail Connelly**, Executive Director, National Association of Elementary School Principals

“To be ecoliterate is to be equipped to be Earth Citizens, to reach our full potential as human beings. This important book shows us how.”

—**Vandana Shiva**, founder, Navdanya International and author of *Soil Not Oil*

“Timely, important, healing, and hopeful—*Ecoliterate* is a ‘must read, must implement’ guide to a healthy and sustainable present and future.”

—**Cheryl Charles**, president and CEO, Children & Nature Network

“The Center for Ecoliteracy has for years been a preeminent thought leader for how we can educate our children in a way that creates generations of earth-stewards. *Ecoliterate* is a much-needed guide for exactly how to accomplish this goal and includes great examples that demonstrate the success of their approach.”

—**Oran B. Hesterman, Ph.D.**, president and CEO, Fair Food Network

“*Ecoliterate* is a must-have tool for the twenty-first-century educator seeking ways to connect learning and the environment.”

—**Cindy Johanson**, Executive Director, Edutopia

“With our educational system in drastic need of a makeover, *Ecoliterate* reveals that the key is helping our children understand themselves—their bodies, their communities, and their place in history—in a deep and meaningful way. This book can bring us and our children back to our senses—of taste, touch, and compassion. And its many lessons, resources, and websites help us do that, not someday, but Monday!”

—**Milton Chen**, senior fellow, the George Lucas Educational Foundation and author of *Education Nation*

“Ecological intelligence is more important today than ever before, and educators are the ideal leaders for this movement to attain a greater understanding of both the environment and ourselves. *Ecoliterate* is a practical and inspirational resource for all educators and communities.

—**Linda Darling-Hammond**, Charles E. Ducommun Professor of Education at Stanford University



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How **EDUCATORS**
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and **ECOLOGICAL**
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With Professional Development By

CAROLIE SLY

CENTER FOR ECOLITERACY

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To Wendy Williams,
for her heartfelt insight and perseverance

Acknowledgments

The three of us met for the first time in the spring of 2009—and immediately hit it off. We had different backgrounds, experiences, and expertise but also a passionate common ground of interest in the potentially great benefit to be realized in the marriage of social and emotional learning with an ecological view of life. The rich conversations and good humor that we have been privileged to share since then have been both a treasure and a delight. And we have many people to thank for the journey that has ultimately resulted in this book—not the least of which are the many educators from whom we have learned so much. While writing this book, our already abundant store of admiration and respect for the work you do has only grown.

We wish to thank the Center for Ecoliteracy's esteemed board members—Fritjof Capra, physicist and cofounder of the Center for Ecoliteracy, for his brilliant and pioneering work in systems thinking, ecological principles, and leadership; Peter K. Buckley, Center for Ecoliteracy cofounder, for his tremendous insight, skillful blending of hope and realism, and unwavering commitment to education for sustainable living; David W. Orr, who not only originated the phrase “ecological literacy” but has long offered his inimitable inspiration and loyal friendship; and, of course, Wendy Williams, to whom we dedicate this book.

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knowledge of the subject, a keen ability to spot flaws, and an utterly reliable knack for making things better with the utmost grace.

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Finally, we offer both thanks and love to our families, for their many shades of support, patience, and good humor.

Introduction

From Breakdown to Breakthrough

Students in a first-grade class at Park Day School in Oakland, California, spent several months transforming their classroom into an ocean habitat, ripe with coral, jellyfish, leopard sharks, octopi, and deep-sea divers (or, at least, paper facsimiles of them). The most in-depth project of their young academic careers, it culminated in one special night when, suited with goggles and homemade air tanks, the boys and girls shared what they learned with their parents. It was such a successful end to their project that several children had to be gently dragged away as bedtime approached.

By the next morning, however, something unexpected had occurred: When the students arrived at their classroom at 8:55 a.m., they found yellow caution tape blocking the entrance. Looking inside, they saw the shades drawn, the lights out, and some kind of black substance covering the birds and otters. Meeting them outside the door, their teacher, Joan Wright-Albertini, explained: “There's been an oil spill.”

“Oh, it's just plastic bags,” challenged a few kids, who realized that the “oil” was actually stretched-out black lawn bags. But most of the students were transfixed for several long minutes. Then, deciding that they were unsure if it was safe to enter, they went into another classroom, where Wright-Albertini read from a picture book about oil spills.

The children already knew a little bit about oil spills because of the 2010 accident in the Gulf of Mexico—but having one impact “their ocean” made it suddenly personal. They leaned forward, a few with mouths open, listening to

every word. When she finished, several students asked how they could clean up *their* habitat. Wright-Albertini, who had anticipated the question, showed them footage of an actual cleanup—and, suddenly, they were propelled into action. Wearing gardening gloves, at one boy's suggestion, they worked to clean up the habitat they had worked so hard to create.

Later, they joined their teacher in a circle to discuss what they learned: why it was important to take care of nature, what they could do to help, and how the experience made them feel. “It broke my heart in two,” said one girl. Wright-Albertini felt the same way. “I could have cried,” she said later. “But it was so rich a life lesson, so deeply felt.” Indeed, through the mock disaster, Wright-Albertini said she saw her students progress from loving the ocean creatures they had created to loving the ocean itself. She also observed them understand a little bit about their connection to nature and gain the knowledge that, even as six- and seven-year-olds, they could make a difference.

It was a tender, and exquisitely planned, teachable moment that reflected what a growing number of educators have begun to identify as a deeply felt imperative: To foster learning that genuinely prepares young people for the ecological challenges presented by this entirely unprecedented time in human history. We are, after all, living at the dawn of an age that has recently been called the “Anthropocene,” or “Age of Man.” Unlike all the periods that came before, this age is characterized primarily by the ways in which humans are changing nature's systems. And since all life depends on those systems for basic needs, including food, water, and a hospitable climate, there is clearly much at stake. There are also abundant opportunities to practice truly relevant schooling.

This book aims to support and inspire you in your efforts to foster the kind of learning that meets the critical needs of

the twenty-first century—and it offers an antidote to the fear, anger, and hopelessness that can result from inaction. It moves, again and again, from breakdown to breakthrough, revealing how the very act of engaging in some of today's great ecological challenges—on whatever scale is possible or appropriate—develops strength, hope, and resiliency in young people. And it presents a model of education for doing so that is founded on a new integration of emotional, social, and ecological intelligence.

“Ecoliterate” is our shorthand for the end goal, while “socially and emotionally engaged ecoliteracy” is the process that we have identified for getting there. We believe the new integration of intelligences it represents offers important benefits both to education and to our societal and ecological well-being. It builds on the successes—from reduced behavioral problems to increased academic achievement—resulting from the movement in education to foster social and emotional learning that has emerged during the past few decades. And it cultivates the knowledge, empathy, and action required for practicing sustainable living.

In the pages that follow, you will see socially and emotionally engaged ecoliteracy in action through stories about innovative educators, artists, activists, scholars, and students who have cultivated these capacities within themselves and are using them effectively to educate others about some of the most critical issues of our time, including food, water, and the two most widely used forms of energy—oil and coal. We recognize that we could have included many other issues, and we could have made many more connections among those we choose. But our goal is simply to illustrate, through these four issues, how socially and emotionally engaged ecoliteracy leads to deeply meaningful, inspiring, and effective education.

Through stories of community leaders putting engaged ecoliteracy into practice, you will meet indigenous Alaskan Sarah James, who is working to protect caribou and native communities from the effects of oil drilling in the Arctic wilderness; Aaron Wolf, a professor of geography who brings a deep spiritual sensibility to his work in helping nations resolve water conflicts; Teri Blanton, a coal miner's daughter who is attracting nationwide attention to the impact of mountaintop mining in Appalachia; and three young leaders, Cristina Dominguez-Eshelman, Rebecca Wiggins-Reinhard, and Aaron Sharratt, who are inspiring people to grow and cook their own food in southern New Mexico.

You will meet teachers and students—from New Orleans, Louisiana; Spartanburg, South Carolina; Oakland, California, and elsewhere—who are demonstrating the capacity to understand and care about the interrelationship between human actions and natural systems, and who are moved to act upon their knowledge, values, and understanding in both small ways and ways as large as saving a mountain. You will learn about five core processes of socially and emotionally engaged ecoliteracy, and some strategies for using this book as a guide for professional development in formal and informal study.

The basic idea is this: At times of instability in a system—be it a school, a nation, or the biosphere—there is always the possibility of breakthrough to new forms and ways of thinking and acting.^{[1](#)} In these times of instability—in our schools, our nation, *and* our biosphere—this book reflects our core belief that educators are ideally situated to lead a breakthrough to a new and enlivening ecological sensibility for the twenty-first century.

Why We Need a New Ecological Sensibility

We humans, of course, have always affected the natural world on which we depend. But with 7 billion of us—up from about 1.6 billion in 1900—now tapping the Earth's resources, we are having an impact like never before. Consider the growing scarcity of fresh drinking water, the decline of healthy soil in which to grow our food, and global climate change. With the world's population projected to increase to 9 billion by the middle of this century, we have to ask, Is there a breaking point?²

In 2009, Johan Rockström, director of the Stockholm Environment Institute in Sweden, set out to answer that question with the help of more than two dozen of the world's leading scientists, including Nobel Laureate Paul Crutzen and NASA climate scientist James Hansen. They identified nine life-support systems essential for human survival, including biochemical cycles such as carbon and water, and physical circulation systems such as our climate and oceans.³

For each of these life-support systems—later dubbed “Earth's Nine Lives”⁴—the scientists described a safe zone within which human development can securely operate. Somewhere beyond these boundaries—but no one knows exactly how far—we risk triggering “abrupt or irreversible environmental changes that would be deleterious or even catastrophic for human well-being.”

So how are we doing? For seven of Earth's nine “lives,” the evidence is clear: We have far exceeded the safe boundary levels of two of these life-support systems (biodiversity and the nitrogen cycle).⁵ We recently surpassed the boundary on a third (climate change). And we are projected to hit the

boundary on three more (ocean acidification, freshwater cycles, and land use) by mid-century. (Rockström and his colleagues were unable to determine boundary levels for chemical pollution and aerosol loading.)

Thankfully, none of this means that the sky is falling—yet. On the condition that we have not transgressed these boundaries for too long, the authors suggest, humanity appears to have some room to maneuver. But there is considerable uncertainty as to how long or far we can go beyond the boundaries and still be able to return to safe levels. Consequently, we need to urgently put the brakes on before we reach the tipping points where systems spin out of control and crash.

The good news is there is reason to be hopeful. After all, humans have shown that when they grasp that their actions are threatening one of life's support systems—and do so on a deep level that taps both the cognitive and the feeling ways of knowing—they can take effective action. (The response to the hole in the ozone layer is a case-in-point. “The ozone hole that formed in the stratosphere over Antarctica in the 1970s was a classic example of an environmental tipping point,” Fred Pearce wrote in *New Scientist* magazine. Nobody had seen it coming. But once people realized the severity of the problem, they acted quickly to ban most ozone-destroying chemicals, and we began moving back into the safe zone on this essential life-support system.) Developing emotional, social, and ecological intelligence can help us now effectively address the remaining threats to our Earth's life support systems.

Making the Connections

However important ecological sensibility is today, the fact is that most of us do not truly grasp how our everyday actions—our engagement in the systems of energy, agriculture,

industry, commerce, and transportation on which we rely—can threaten the health and well-being of the Earth. For example, ask your students (maybe even your colleagues): Where does your electricity come from? What is the connection between your container of apple juice and the lives of baby sea birds thousands of miles away? How many environmental impacts result from the production of the steel used to make your “eco-friendly” water bottle? (Hint: It is a four-digit answer.[6](#))

Very few people know the answers to these or thousands of similar questions for one fairly straightforward reason: The complexity of the web of connections that characterize our global society has created a vast collective blind spot about the effects of human behavior on natural systems. Imagine, for a moment, what it would be like if you, your students, and their families lived in a small, isolated community—say, in the Arctic, the Sahara Desert, or the mountains of Tibet—where you relied on each other alone for all your basic needs. Say food, for example, was not flown in from half a world away but grown and shared right where you live. If your community decided to farm in ways that were expedient one year but failed to leave the soil healthy for the next, experience would soon teach you about the interconnections between human behavior and the health of natural systems. And you would be much more likely to be aware that the resilience of future generations ultimately depends on the wise use of natural resources and adaptation to our ecological niche.

Today, however, the vast majority of us do not live in small, isolated communities but in cities and suburbs,[7](#) where we depend on people and processes from around the world to meet most of our basic (and not so basic) needs. Our use of resources and the ensuing ecological impacts are dispersed across the entire planet—often seeming invisible or too far away for us to fully recognize.

Moreover, even when a young person's knowledge and empathy have been awakened, it can be a magnificent challenge to help him or her understand how to make a positive difference in the world today. Yet it is a magnificent challenge that we believe can be met through the cultivation of socially and emotionally engaged ecoliteracy.

From Emotional to Ecological Intelligence

Nearly thirty years ago, Howard Gardner's groundbreaking book, *Frames of Mind: The Theory of Multiple Intelligences*, effectively moved a generation of educators beyond the narrow notion of "IQ" that had dominated much of the twentieth century. Schools, he argued, must not educate to one narrow notion of intelligence but to seven (later eight) forms of intelligence: bodily-kinesthetic, interpersonal, verbal-linguistic, logical-mathematical, intrapersonal, visual-spatial, musical, and, most recently, naturalistic.

In 1995, Daniel Goleman explored another significant dimension of intelligence in his book *Emotional Intelligence: Why It Can Matter More than IQ*. Drawing on brain and behavioral research, he examined the factors at work when people of high IQ flounder and those of modest IQ do surprisingly well. Those factors included five critical aspects of emotional intelligence that could be nurtured in schools: the abilities to know one's emotions, manage those emotions, motivate oneself, recognize emotions in others, and develop successful relationships.

In his next book, *Social Intelligence: The Revolutionary New Science of Human Relationships*, Goleman advanced a second model of intelligence that comes into play in our relationships with others. He reported on research demonstrating that our brains make us "wired to connect,"

and showed how this, too, is a key ingredient for success in life—and a “neural key to learning.”

These two books helped inspire the rapid growth of a movement for social and emotional learning (SEL), which emphasizes the development of knowledge, attitudes, and skills around these intelligences. To date, tens of thousands of schools have adopted social and emotional learning programs. The state of Illinois currently has comprehensive, free-standing learning goals and benchmarks for social and emotional learning. And four other states—Pennsylvania, New York, Washington, and Kansas—are considering or adopting similar policies. One reason that educators have been drawn to SEL is that research has shown that nurturing these understandings, values, and abilities contributes to significant improvements in academic achievement. (See “Benefitting Academic Achievement and Ecological Well Being” below.)

Building on this work, Goleman introduced a third and related kind of intelligence in the 2009 book, *Ecological Intelligence: The Hidden Impacts of What We Buy*. While social and emotional intelligence extend students' abilities to see from another's perspective, empathize, and show concern, ecological intelligence applies these capacities to an understanding of natural systems and melds cognitive skills with empathy for all of life.

The findings of these studies of emotional, social, and ecological intelligences paralleled the practical experience of the Center for Ecoliteracy. For the past twenty years, the Center for Ecoliteracy has applied theories of leadership and systems thinking to its mission of advancing education for sustainable living in primary and secondary schools, through a pedagogy steeped in the process of social and emotional learning. Cofounded by systems thinker Fritjof Capra, executive director Zenobia Barlow, and environmental philanthropist Peter Buckley, the Center has launched