



# 9

# BILLION

# SCHOOLS

WHY THE WORLD NEEDS  
PERSONALIZED, LIFELONG  
LEARNING FOR ALL

LAUREN DELLA BELLA AND DICK THOMAS

This book is in pre-release form.  
It is still a work in progress.

We are distributing it at SXSW.edu 2017 in the hopes of inspiring attendees to share their comments and ideas so that we may improve the contents before formally launching the book later this year.

Please email your suggestions to:  
**[feedback@9BillionSchools.org](mailto:feedback@9BillionSchools.org)**.

Thank you!

# 9 BILLION SCHOOLS

Why the World  
Needs  
Personalized,  
Lifelong  
Learning for All

Lauren Della Bella and Dick Thomas

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We dedicate this book to all who have—  
or will—join us in realizing the vision  
of 9 Billion Schools.

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Join the movement at [9BillionSchools.org](http://9BillionSchools.org)

## PREFACE

“Education is a social process.  
Education is growth.  
Education is not preparation for life;  
education is life itself.”

JOHN DEWEY

*Philosopher, Psychologist, Education Reformer*

# This Book: What It Is and Why It Is

In essence, this book and the 9 Billion Schools movement are all about reimagining—and then recreating—education and learning for everyone the world over. Needless to say, this is an audacious vision, one that will no doubt raise some eyebrows and roll some eyes. So allow us to spend a few minutes providing some context for all that is to follow.

The 9 Billion Schools movement was first conceived at SHP Leading Design. For more than a century, our firm has been designing and engineering schools, colleges and other places of learning, such as businesses. We have been passionate advocates for how the spaces where learning occurs can be purposefully and creatively designed to facilitate and encourage learning.

We and our colleagues challenged ourselves to reimagine education so that everyone may stand a better chance of realizing his or her best and fullest self. Our professional and personal experiences, our research and our collaboration with partners have led us to this point of view:

As the debates, discussions and experiments pertaining to revitalizing education in the 21<sup>st</sup> Century occur, three foundational principles must always be considered:

1. Learning is nothing short of a “womb to tomb” journey and ideally, an adventure too. In recent years, others have been advancing the notion that learning needs to be “Life-long, Life-wide and Life-deep.”<sup>1</sup> (In this book, we shorthand it as “L3 learning.”)
2. Learning is a highly personalized experience and, in fact, no two people best learn exactly the same or with the exact same purposes and motivations.
3. The brain sciences are revealing new insights into how we best learn throughout life. We should apply these findings to how we teach kids at school, adults at work and ourselves throughout our lives.

We summarize these three principles like this:

*Learning should be:*

- 1. informed by mind, brain, education (MBE) science,*
- 2. unique as fingerprints, and*
- 3. as long, wide and deep as life itself.*

Perhaps now you can appreciate why we call our future-focused education movement—which we hope you will join—“9 Billion Schools.” It’s because the human population is projected to reach nine billion in 2050, and by then we want to see personalized, L3 learning for all. When the population hits nine billion people, we want to think of our planet as being home to nine billion “schools.” Not in the literal sense, of course, but in the sense of each person on earth being a school unto him- or herself, a “place” of near constant learning, teaching and growth.

Why do we believe that our firm has something to add to the broad, bright and bedazzling chorus of voices—coming from varying vantage points and different pedagogical perspectives—calling for the reinvention of education? Why do we believe that our firm has the “right” to launch this movement (which, we fully understand, goes nowhere without the support of you and thousands, if not millions, of others)? Those are fair questions. Here are our answers:

As already noted, our firm has been deeply involved in the education arena for decades. By our last count, we have designed and built more than 500 schools and other learning-related spaces. Along the way, we have communicated, collaborated and debated with an untold number of school and university administrators, principals, teachers, parents, students, community leaders, business executives and reformers. We have learned from—and been inspired by—virtually all of these encounters. In addition, over the years we have, of course, paid very close attention to the trends, promises and possibilities in how architecture and design can enable and empower learning. And we have been at the forefront of shaping some of that discussion.

Beyond SHP's 100-plus years of experience, during the past 18 months we have engaged in an especially deep study of what the future of education appears to be calling for. This has not only included the reading of hundreds and hundreds of books and articles, both mainstream and scholarly, but also deep conversations with thought leaders, most notably: Brian David Johnson, formerly a futurist with Intel and now one with the Center for Science and the Imagination at Arizona State University.

But there are two additional qualifications that are perhaps even more important than the preceding ones:

First, though our firm is made up of architects, designers, engineers, project managers, accountants, marketers and other key support personnel, it's also made up of parents, former business owners, school volunteers, adult learners, teachers at all educational levels, makers of all sorts, community organizers, etc. In other words, we don't just think about education as it pertains to our jobs, but also as it applies to our lives writ large.

Second—and very germane to the matters at hand—our company is entrenched in the much-touted “knowledge economy.” We have no meaningful physical assets. We don't manufacture anything. We don't sell a physical product. Our offering, our competitive advantage, our source of income is found between our ears: it's our know-how. The trends are absolutely clear: The knowledge economy—where value is found in data, ideas, analysis and the like—will continue to blossom. Our company's success—its *survival*—rests with our intellectual capital, the combined know-how of everyone at our company. The thing is, with so much changing so fast in our industry (just like virtually all industries) we must be learning new things all the time. So we understand the necessity, the challenges and the opportunities associated with creating a learning culture at work.

This said, it must be noted that not everyone at SHP Leading Design, nor our clients and collaborators, agrees with every thought, idea or recommendation expressed here. We suspect that you won't either. That's OK by us. In fact, the 9 Billion Schools movement welcomes the dialogue and debate; it's what will help move learning forward.

This book is divided into two sections. In the first, we provide the

philosophical underpinnings of the 9 Billion Schools movement and how the concept of personalized, L3 learning is the driving mechanism to achieving the vision. The second section is a diverse collection of essays that, in one way or another, speak to the possibilities and powers of the movement. And, in fact, we invite you to consider submitting an essay of your own to be considered for future editions of this book. (Details about this can be found in the final chapter.)

A few final points about the content to come: This is a book about better schools, companies and communities, yes; but more fundamentally it's about better people and a better world in which all can flourish. We make no apology for the hope and optimism infused throughout the pages ahead. But don't expect nothing but rainbows and unicorns. Realizing the 9 Billion Schools vision will be difficult, expensive and punctuated throughout with failed experiments and heartbreak. There is no other way. In the words of writer and school reformer Diane Ravitch: "...I have consistently warned that, in education, there are no shortcuts, no utopias and no silver bullets. For certain, there are no magic feathers that enable elephants to fly."<sup>2</sup>

If only, right?

For many, it's virtually impossible to think about such fundamental concerns as human dignity and potential without also considering their religious or spiritual beliefs. That said, out of respect for the mostly public nature of education, the workplace and the public square, we leave it to the reader to add their spiritual perspective to this discussion as he or she sees fit.

While our firm is absolutely committed to 9 Billions Schools as a global movement, this book was crafted specifically with an American audience in mind. We anticipate publishing books, reports and blog posts in the future that speak more specifically to other countries and cultures.

We hope you learn a thing or two in the pages ahead. You'll meet some familiar friends like IQ and EQ, but some potentially unfamiliar ones such as CQ. You'll encounter homo sapiens, but also homo ludens ("playing human"), homo empathicus ("empathetic human") and homo zappiens ("I'm-addicted-to-texting-and-surfing human").

We'll be covering some most serious ground ahead, but we hope you find the overall experience pleasant, with perhaps a smile or two

along the way. (Wait until you hear what sea squirts can do.)

May your own personalized, life-long, life-wide and life-deep learning journey bring you wonder, growth and fulfillment.

Lauren Della Bella and Dick Thomas  
March 2017

Join the movement at [9BillionSchools.org](http://9BillionSchools.org).

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# SECTION ONE



The Foundations of the  
9 Billion Schools Movement

# The 9 Billion Schools Manifesto

*Learning should be as unique as fingerprints  
and as long, wide and deep as life itself.*

It's time to radically rethink education and the places where learning occurs.

It's time to recognize that each and every learner is radically different in ability and interests, in hopes and dreams—and act upon that. Standardized anything should give us pause.

It's time to stop talking about learning as a lifelong, cradle-to-grave endeavor—and act upon that too. It's time to recognize that our world is never going to become any less complex and fluid, any less specialized and nuanced. In this still emerging new world of ours, school never ends. It can't. Learning must be life-long, life-wide and life-deep.

In short, it's time to conceive of—and deliver—education that recognizes the dignity and singularity of each learner and, to the fullest extent possible, caters to their specific needs and hopes, talents and dreams: Be it a 7-year-old with a learning disability and an interest in digital games or a 77-year-old Nobel laureate with an interest in Chinese art.

It's time to think of school not as a singular place or experience, but as many places and many experiences.

In fact, it's time to think of each person as needing a school unto him or herself, each with the exact right teachers and curriculum, guidance and opportunities. We'll soon have nine billion people on the planet, which means we should have nine billion schools.

Please join us and the 9 Billion Schools movement as we seek to take education to the next level, providing greater dignity and brighter futures to each and every learner. This will be a giant step forward for all of humanity—all nine billion of us.

## CHAPTER ONE

“Real education enhances the dignity of a human being and increases his or her self-respect. If...the real sense of education could be realized by each individual and carried forward in every field of human activity, the world [would be] a better place to live in.”

A.P.J. ABDUL KALAM  
*Former President of India*

# 9 Billion Schools: So That All May Flourish

There are seven billion of us on Earth. Come 2050, there will be nine billion. What is perhaps most astonishing about these facts is something we too often forget about or take for granted: Each and every one of us, as well as those to come, is unique, singular, one-of-a-kind. There are no duplicates. Even identical twins aren't really identical. Nor anything close.

As Princeton University professor George Kateb states it: "Every human being is unique and individual without [even] trying to be."<sup>1</sup> It's in our humanity, and our individual, one-of-a-kind expressions of it, where our dignity resides. A realization of, and a commitment to the honoring of, universal human dignity—something that Kateb suggests that each person "must claim for all, and all for each"<sup>2</sup>—is at the very core of the 9 Billion Schools movement. We want everyone to benefit from life-long, life-wide and life-deep (L3) learning that is highly personalized.

Donna Hicks, a worldwide authority on human potential, calls our innate desire for dignity "our highest common denominator."<sup>3</sup> In a world seemingly awash in an abundance of lowest common denominators, our hunger for dignity cries out.

An honest push for universal human dignity requires a commitment to providing all reasonable means to help people flourish—and that is impossible without learning of a type and magnitude largely unknown to most today.

Author Robert Schreiter<sup>4</sup> suggests that there are multiple ways of robbing others, or ourselves, of dignity. Two are particularly germane here: We can trivialize others by ignoring what makes them "disturbingly difficult." And we can homogenize people by claiming they are all the same. These ways of treating others rob them of dignity; and each also interferes with, if not totally eradicates, the possibility for meaningful learning and, therefore, maximum flourishing.

Providing a personalized, L3 education for all will be immensely challenging in general and particularly so with disadvantaged and disenfranchised people due to conditions beyond their control. To

throw our hands up to these difficulties, no matter how complex, is to trivialize others. As for homogenization, when people of whatever age or “type” are treated the same—as so much of traditional learning does today—it not only harms their dignity, it runs counter to common sense and scientific fact about how each of us varies as a learner.

Recognizing and celebrating the dignity and potential in each person should mean calling into question anything that smacks of homogeneity, sameness and, yes, standardization. As Steve Hilton, author of *More Human: Designing a World Where People Come First*, writes: “We have dehumanized our children’s education...Schools treat students like statistics...We obsess over how our students rank.”<sup>5</sup> When the focus is on numbers—whether in school, at work or in the community—individuals can be trivialized, homogenized and even vaporized.

The call for personalized learning is not new and some progress has been made. But not enough. Not by a long shot. Among the reasons for this is that it’s hard and expensive (even though technology can, in some ways at least, make it easier and cheaper). But should effort and expense interfere with human dignity and flourishing? Of course not.

The authors of *The Teaching Brain: An Evolutionary Trait at the Heart of Education* say it well: “We all learn differently, and understanding those differences opens a pathway to comprehending what it is we need to know about learning. Indeed the biggest, most important takeaway from all the recent research in the learning sciences—cognitive, pedagogical and neuroscientific—is in the incredible variability of how people learn.”<sup>6</sup>

Listen to how author Cathy Davidson explains the dangers of standard, cookie-cutter learning: “Part of the failure rate in contemporary education can be blamed on the one-size-fits-all model of standards that evolved over the course of the twentieth century, as we narrow the spectrum of skills that we test in schools, more and more kids who have skills outside that spectrum will be labeled as failures.”<sup>7</sup> Does that sound dignified? The answer is obvious.

Schools that have focused on educating children with special needs have long relied on more personalized learning approaches, painstakingly detailed in an Individualized Education Program, or IEP.

Every *student*, every *employee*, every person should have an IEP—and, most important, be making progress against it. (From the point of view of the 9 Billion Schools movement, another fitting name for IEPs would be *IFP*'s: Individualized *Flourishing* Plans.)

There is an emerging new field called the science of the individual. These scientists are shedding light on just how different we really are. They are also challenging the concept of what it means to be “average” and how that notion is not as simple, accurate—or benign—as it has seemed to date.

“We are on the brink of seeing the world in a new light,” writes Todd Rose, author of *The End of Average: How We Succeed in a World that Values Sameness*. “[It’s] a change driven by one big idea: individuality matters.” He goes on: “...if you build a theory about thought, perception or personality based on the Average Brain, then you have likely built a theory that applies to no one...There is no such thing as an Average Brain.”<sup>8</sup>

Rose rages against “averagarianism,” which “compels each of us to conform to certain narrow expectations in order to succeed in school, our career, our life...We have lost the dignity of the individual. Our uniqueness has become a burden, an obstacle or a regrettable distraction on the road to success.”<sup>9</sup>

The existence and rise of averagarianism can be blamed, in part, on math. As Rose points out, “The mathematics of averagarianism is known as statistics, because it is a math of static values—unchanging, stable, fixed values...[but] to accurately understand individuals one should turn to a very different kind of math known as dynamic systems—the math of changing, nonlinear, dynamic values.”<sup>10</sup>

In other words, when it comes to, say, intelligence or personality, simple scales and measures—“such as grades, IQ scores and salaries”—are insufficient at best and downright misleading at worst. Smart and applauded companies such as GE, Google and Deloitte have abandoned simple measures of employee evaluation. More companies should do the same. And more schools should follow suit.

When you think about it, doesn’t the idea of an average person ring hollow? Even young children have lived long enough to know that other people are not only different but, in their own ways, complex, layered and often unpredictable. In a study conducted by two

psychologists in 1936, they found 17,953 words in the dictionary that could be used to describe someone. Where's the average in all of that? Thankfully, nowhere.

When we apply averages to people, we lump them together. And we should resist such lumping and instead commit to “splitting.” This concept comes from Dr. Mel Levine, a recognized authority on learning, who writes: “I’ve noticed that people who study or work with kids can be divided into lumpers and splitters. I must confess to being a splitter, quite possibly a terminal case. That is to say, I am steadfastly unwilling to lump children into categories and then assume that all members of each category are pretty much alike. To the contrary, to me kids have more differences than resemblances. In fact, every time I meet a child in my office, I encounter some phenomenon that I have never seen before in another child. Each kid unrolls an original mural of mind traits.”<sup>11</sup>

Read that last sentence again. Wow.

Count the 9 Billion Schools movement among the splitters. And we would be remiss not to add: when it comes to children *and* adults. Think about your manager at work? Is he or she a lumper or a splitter? For your sake, we hope the latter.

Does anyone feel that their specific interests, hopes, dreams, fears—the nuance and richness of their “inner topography”—are quite like anyone else’s? Or anyone else’s quite like theirs? Of course not. As diverse and interesting (if, at times, maddening) we can all be on the outside, we’re all the more so inside. Conformity may be comfortable and convenient in education; but it’s disappointing, if not dangerous too.

In a dignified education, there must be room for people’s interests and passions. Science backs up common sense and everyday experiences on this point: We learn faster, deeper and for longer when we’re learning about something that matters to us, that “speaks” to us.

Think about how we dignify a person when education is, to the fullest extent possible, relevant to her life, when education at school, work and beyond is about celebrating and advancing what is already inside her—even if that’s just an inclination to know more about something in her world. Yes, we must all wrestle with some

classes and some information in which we have little interest, but those cases should be the exception, not the rule. In part, that's because the foundational facts and skills most everyone agrees that we need to know can be tied, with some imaginative teaching (and learning), to what we genuinely desire to know.

9 Billion Schools isn't calling for learning that is comfortable and unchallenging. To the contrary: It's a plea for stimulating learning that pushes the learner. Learning is difficult. In fact, neuroscience says it *must* be. As the celebrated psychologist Mihaly Csikszentmihalyi states: "This is what we mean by optimal experience...The best moments usually occur when a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile...For each person there are thousands of opportunities, challenges to expand ourselves."<sup>12</sup> The word "voluntary" may be the most important word in that quote. Voluntary implies choice, which implies freedom, which, in turn, implies dignity.

Too often we assume that a superb teacher can make anyone care about any topic at hand. Sure, some teachers are more engaging, but as educator William Glaser puts it ever so bluntly: "...there is no teacher, no matter how skilled, who can teach a student who does not want to learn."<sup>13</sup>

The 9 Billion Schools movement sides with Glaser and those who advocate for moving "from a compliance-oriented structure to a passion-filled learning structure..."<sup>14</sup> at school, work...everywhere. After all, motivation must come from within; it can't be imposed from the outside.

So much is made of grit today (thanks largely to the work of psychologist Angela Duckworth). Grit has been proven to have a powerful effect on learning, especially when it gets hard—which it must if we are to grow. But, as *The New York Times* columnist David Brooks notes: "Grit is...downstream from longing. People need a powerful why if they are going to be able to endure any how."<sup>15</sup> The "why" is deeply personal. The "why" that motivates you to achieve great things may put someone else to sleep.

To treat a learner with dignity is to provide and foster the right environments and resources for him or her to stretch, which is something we're all more inclined to do when we're engaged, when the "why" speaks in a voice that we not only understand and trust, but

that captivates us too.

To truly seek the dignity of all people, also requires that we resist the urge to pretend that we know what life has in store for anyone. 9 Billion Schools holds these two truths as self-evident: 1) the future is impossible to know in any precise detail; and 2) people *can* and *do* change; they *can* and *do* grow.

Take child prodigies, for instance. Most all of them do *not* go on to outperform their peers from families of similar economic means and educational experiences. And those people who do excel as adults weren't always the most successful children. In fact, when researchers did a deep dive into the data to determine what similarities, if any, existed among people of extraordinary achievement, they found only one common link. Want to take a guess? Was it IQ? Money? Good looks? No, nope and no again. It was, rather, the high likelihood that they spent an unusually large block of time *away from* their schooling.<sup>16</sup>

Let's not forget that there are countless ways to go through life in a manner that leads to flourishing. This is true of children and adults. Researchers have documented 28 different methods of learning to walk.<sup>17</sup> And think of all those adults who have switched careers or lifestyles to great success, some more than once. As Mike Rose writes in *Why School?*: "The fact that there is not a single, normal pathway for any type of human development—biological, mental, moral or professional—forms the basis of the...*pathways principle*. This principle makes two important affirmations. First, in all aspects of our lives and for any given goal, there are many, equally valid ways to reach the same outcome; and, second, the particular pathway that is optimal for you depends on your own individuality."<sup>18</sup>

To dignify each person, no matter his or her age, is to remain always open to the possibility of their continued personal growth and change, sometimes in spectacularly dramatic and surprising ways.

True, we're not all capable of mastering the advanced mathematics of quantum physics or demonstrating athleticism worthy of a Major League team, but we are all capable of getting better at virtually everything we already know and do, and we're all capable of learning many new things we'd like to know or do. And here we're not just talking about the young. Two researchers who write about

the science of expertise in their book *Peak*, underscore this point: “...since the 1990s brain researchers have come to realize that the brain—even the adult brain—is far more adaptable than anyone ever imagined, and this gives us a tremendous amount of control over what our brains are able to do. In particular, the brain responds to the right sorts of triggers by rewriting itself in various ways...and this adaptability makes it possible for adults, even older adults, to develop a wide variety of new capabilities.”<sup>19</sup>

When we shortchange others—or ourselves—by being too quick to assume learning and improvement are not possible, we snub our nose at science. And human dignity.

Perhaps nothing has robbed learners of dignity quite like the very notion of IQ and the tests that measure it. General intelligence is for real; and, yes, some people have brains that are better and faster at processing information. These are those who score better on IQ tests and standardized tests, like the ACT and SAT. As a general rule, those with higher IQs are more apt to do better in school and be more successful in their careers later. *But* that’s looking at IQ at a macro level, through the lens of the average, and we’ve already seen the problems with averagarian thinking.

Consider this: The average IQ score has been improving by about three points every decade over the past century or so. Pause to think about what this means. An IQ score of 100 in, say, 1990 would equate to a score of 60, which means mentally challenged, in 1900. Today, nearly everyone—98% to be exact—scores better than the average person did in 1900.<sup>20</sup> Was everyone mentally slow back then? Of course not. (Recall that IQ scores always fall on a curve.) So what’s made us, as a group, score higher? The scientific consensus is that our more complex world has required that we, on the whole, think more abstractly, more deeply. And thinking harder makes the brain stronger.

We often think of chess as a game for the really brainy types. However, champion chess players, even the celebrated grandmasters, don’t have higher IQs than others with similar educational backgrounds. And while IQ sheds light on which children will learn the game of chess *faster*, kids with lower IQs who practice more can beat those “smarter” kids—and do so regularly.

The idea of all scientists as brilliant nerds is another stereotype most of us cling to. There is some truth to it in that, *as a group*, scientists have higher IQs than most other groups. However, *among scientists*, having a higher IQ does not equate to more or better output.<sup>21</sup>

So we should all be cautious of placing too much emphasis on IQ and similar educational measurements. If you don't take our word for it, consider what the inventor of the IQ test, Alfred Binet, had to say: "[Some] assert that an individual's intelligence is a fixed quantity which cannot be increased. We must protest and react against this brutal pessimism."

When it comes to learning and flourishing, David Schenk, author of *The Genius in All of Us*, sums it quite well: "...I am not arguing that every human being can become a genius...I am not arguing that we all have exactly the same potential. I am not arguing that genes and genetic differences don't strongly influence who we are and what we can become...I am arguing that very few of us ever get to know our own true potential..."<sup>22</sup>

The time has come for a radical commitment to personalized, L3 learning for everyone. Our schools, workplaces, senior homes, museums, libraries and other communal gathering places need to embrace this dignified, scientifically driven approach. We all do. We have mastered and come to expect personalization in so much of our lives. We can customize eyewear, shoes, cars...most everything. There's no reason why we shouldn't start demanding it of our schools, employers and other institutions and places of learning.

Our individual and collective dignity depends upon it.

## CHAPTER TWO

“An adult friend of Lincoln’s:  
‘Life was to him a school.’”

DORIS KEARNS GOODWIN

*Team of Rivals: The Political Genius of Abraham Lincoln*

# The Driving Force Behind 9 Billion Schools: L3 Learning

We're born learners. In fact, we exit the womb already having learned a thing or two. Fetuses as young as 33 weeks are known to have a startle response when hearing a foreign language not typically spoken in their presence. Newborns will cry in a manner that mimics their parents' speech patterns.<sup>1</sup> We arrive into this world with hungry minds, but lifelong flourishing depends on retaining that hunger. The times we live in don't really give us a choice, do they?

The Polish academic Zygmunt Bauman, who studies and writes about our contemporary lives, expresses the core of this sentiment like this: "... in the liquid modern setting, education and learning, to be of any use, must be continuous and indeed lifelong. No other kind of education and/or learning is conceivable; the formation of selves or personalities is unthinkable in any fashion other than that of an ongoing and perpetual re-formation."<sup>2</sup> Each of us is an ongoing project, of sorts, never entirely done or complete, but always moving closer—assuming, that is, that we're learning.

The 9 Billion Schools point of view is that learning should not just be lifelong, but also, as already noted, "life-wide" and "life-deep." Life-wide means that the resources, systems, infrastructure and opportunities for learning should be such that they cover all aspects of our lives—academic, professional, recreational, etc. Life-deep means that learning should allow us to go as deep into any topic as we need or would like to. It also speaks to the need for us to explore the deepest subjects of all, such as ethics, philosophy and theology.

The broad establishment of L3 (**L**ife-long, **L**ife-wide, **L**ife-deep) learning means we must abolish the notion that learning is primarily for the young. It isn't. And it can't be. When parents ask their children what they've learned today, the norm should be that children answer—and then ask the same question of their parents.

To restrain the notion of school, education or learning to the young is a crime against human dignity and flourishing. Jeff Cobb, author of *Leading the Learning Revolution*, writes: "So much of the broader

public discussion about education focuses on the K-12 sector and higher education. But the reality for most people is that they will exit these systems with at least another fifty years ahead of them. To say there is significant—and growing—need for learning during these years would be a vast understatement.”<sup>3</sup>

We now understand in ways that we didn’t just decades ago that the older brain, while not as nimble as the younger one, is still *plenty* capable of learning. And producing. A study by the economist P.H. Franes notes that the average age of when the most esteemed artists create their most valued works at about 42. And the researcher Benjamin F. Jones found that “Great achievements in knowledge are produced by older innovators today than they were a century ago. Nobel Prize winners and great inventors have become especially unproductive at *younger* ages.”<sup>4</sup>

The point is: As our society’s knowledge base expands and so much of what we do and think about becomes increasingly complex, it takes more time to develop the foundations and intuitions necessary for breakthroughs. But the data also suggest something of even greater importance to all of us who are *not* sought-after artists or prize-winning scientists: Learning, achieving and personal growth are available to us well beyond the traditional school-going years.

In writing about the practical applications of what is known as Mind, Brain and Education (MBE) science, educator Tokuhamas-Espinosa reminds (and encourages) us by noting: “The brain...learns throughout the life span...Popular wisdom tends to view the brain in old age as fragile because of the onset of many neurodegenerative diseases, but the brain can and does learn ‘until death does it part.’”<sup>5</sup>

And let’s not forget that the Grim Reaper is, mercifully, arriving at most of our doors later and later. Between 1950 and 2010, the average life expectancy in the developed world rose from 65.6 to 75.1 years. That number is expected to reach nearly 80 (78.9, to be exact) in 2030. In the United States there are now 7 million adults over the age of 85; in 2050, that number will reach 20 million. For virtually all of us, lifelong will be longer than it was just several decades ago.

Thing is, learning doesn’t necessarily get easier as we get older. It still takes effort, and often more of it. Perhaps that’s why many seem to turn a cold shoulder to learning. It’s a tempting and easy thing to

do at times. We stagnate. We become, metaphorically speaking, like, well, sea squirts. These creatures navigate the ocean early in life with a brain; but once they anchor to a piece of coral to live out the rest of their lives, they digest their brain.

Salman Khan of Khan Academy writes: “Some studies suggest that that most people stop learning something new in their thirties... The learning curve flattens out. Except for the laziest or most incurious among us, it doesn’t flat-line altogether. We get blips here and there from travel, from hobbies, from a new everyday technology that forces us to stretch our awareness of how things work. But for the most part we confront life equipped with things we’ve learned before—sometimes long before.”<sup>6</sup>

But older people shouldn’t assume there’s no reason to keep learning, that their efforts wouldn’t pay off because, for instance, too many brain cells have been lost. The truth is that, after an initial growth spurt in our very early years, we do continually lose neurons, *but* only at a rate of one-millionth a day, which means “...even with a life-span of 100-plus years, the cumulative loss is inconsequential in terms of our capacity to learn and change.”<sup>7</sup> Read that again. Ponder it. Let it inspire you, whether you’re already an older learner or a younger one anticipating living to 100. Or beyond.

On a related note, the physical challenges of adulthood are also often exaggerated in our own minds. While clearly there are those adults who face debilitating physical issues, nearly 75% of Americans between the ages of 65 and 74 have “no severe vision or hearing problems, no cognitive difficulties, no trouble walking or caring for themselves, fully able to live independently.”<sup>8</sup>

It comes down to this: We retard our own flourishing when we live like sea squirts, our bodies and minds still.

L3 learning is in some very real ways the fountain of youth.

While some level of choice in learning options is important for all ages, it’s especially critical for the adult learner. This is a fundamental difference between pedagogy, the teaching of children, and andragogy, the teaching of adults. While pedagogy typically focuses on the teacher, andragogy puts the emphasis and responsibility on the learner. (This is a lesson that many pedagogies can learn from andragogy.)

Older learners need confidence in, of all things, the “ability to unlearn,” what author Cathy Davidson describes as the ability “to switch assumptions, methods or partnerships in order to do better.”<sup>9</sup> We can all get set in our ways, and that’s not a good thing when it comes to personal development. It takes courage to admit to oneself that certain things we thought we knew, we don’t (at least not any longer) or that certain beliefs are not as grounded in reality and truth as we had thought.

Business leadership expert Erika Anderson expands on this idea in the *Harvard Business Review*: “...pushing yourself to acquire radically different capabilities—while still performing your job...requires a willingness to experiment and become a novice again and again: an extremely discomfoting notion for most of us...”<sup>10</sup>

But we must push back hard against the discomfort and fear. And those of us in a position to do so must help others do the same.

Another roadblock to L3 learning is that too many of us harbor up-setting memories and bad experiences from our traditional schooling. We weren’t encouraged. We weren’t engaged. We weren’t inspired. In short, we didn’t connect learning with flourishing. We weren’t given a reason to. Science tells us that the brain has an inherent negativity bias, meaning it’s designed to focus on and remember negative experiences. (This goes back to humanity’s early days, when staying alive was largely about avoiding the negative: poisonous plants, man-eating animals, etc.) One adult educator put it this way: “When, as adults, people participate in courses and training programs, they typically use the phrase ‘going back to school,’ and this phrase reflects the feeling of reversion to childhood, lack of empowerment and perhaps even humiliation that lies just below the surface...”<sup>11</sup>

Andragogy also recognizes that adults have different learning needs and motivations. Malcolm Knowles, author of *The Adult Learner*, writes that “...the richest resources for learning reside in the adult learners themselves. Hence, the emphasis in adult education on experiential techniques...group discussions, simulation exercises, problem-solving activities.” This should be of special relevance to those responsible for planning or teaching work-based or other adult learning. Knowles adds: “Adults are responsive to some external motivators (better jobs, promotions, higher salaries and the like),

but the most potent motivators are internal pressures (the desire for increased job satisfaction, self-esteem, quality of life and the like)."<sup>12</sup>

Eduard Lindeman, a leading voice in adult learning, elaborates on this point: "Adult education is an attempt to discover a new method and create a new incentive for learning; its implications are qualitative, not quantitative. Adult learners are precisely those whose intellectual aspirations are least likely to be aroused by the rigid, uncompromising requirements of authoritative, conventionalized institutions of learning...Adults are motivated to learn as they experience needs and interests that learning will satisfy...adult orientation to learning is life-centered; therefore, the appropriate units for organizing adult learning are life situations, not subjects; adults have a deep need to be self-directing; therefore, the role of the teacher is to engage in a process of mutual inquiry...individual differences among people increase with age..."<sup>13</sup>

Certainly the realities of the contemporary workplace, which we'll look at in greater detail in Chapter 4, require L3 learning. The best-selling business writer Don Tapscot summed it up so well when he said: "Yesterday you graduated and you were set for life—only needing to 'keep up' a bit with ongoing developments. Today when you graduate you're set for, say, 15 minutes." A bit of an exaggeration? Maybe. But only a bit, as those who are fully situated in "knowledge work" and in the "knowledge economy" can attest.

Despite the obvious and necessary discussion of L3 learning for work- and career-related implications, we believe it to be far more than that and, in many ways, primarily so. As essential as work and income are to our overall well-being, there is value in learning when it has nothing to do with our jobs, and everything to do with our lives and worlds beyond work. We understand—and agree with—those who warn against an exclusive emphasis on adult learning within an economic framework. There's a need to recognize the difference between "learning for a living" and "living for a learning."

The United Nations Educational, Scientific and Cultural Organization (UNESCO) expresses well the benefits of L3 learning beyond the obvious economic ones: "There is a need to rethink and broaden the notion of lifelong education. Not only must it adapt to changes in the nature of work, but it must also constitute a continuous process

of forming whole human beings—their knowledge and aptitudes, as well as the critical faculty and the ability to act. It should enable people to develop awareness of themselves and their environment and encourage them to play their social role at work and in the community.”<sup>14</sup>

With L3 learning, there must be some way to document, verify and showcase what we’ve learned, particularly, though by no means exclusively, after we leave traditional schooling. The Bill and Melinda Gates Foundation and other leading voices in education reform have been advocating for the need for digital badges, credentials and other evidence in a learning portfolio.

Everyone should have a digital learning portfolio providing third-party, credible verification of what he or she has learned or can do. Such a portfolio could include traditional school transcripts, as well as professional certifications, adult learning classes and knowledge gained from real-life experiences, hobbies and other passions. In addition, the digital portfolio would house, when and where appropriate, samples and demonstrations of our know-how via written documents, video demonstrations and the like.

For adults, at least, LinkedIn could provide a natural home for such L3 learning portfolios. Each of us could give the people we choose access to our portfolios on an ongoing or as-needed basis.

The authors of Harvard’s *Pathway to Prosperity* position paper advocate for something similar, specifically from the angle of young people who don’t go to college: “The U.S. does a poor job of certifying that young people are qualified for particular jobs and occupations. Even when they exist, credentials are often narrowly defined and not portable between firms, industries or job markets. The result is inefficiency: Young people remain unemployed and job vacancies unfulfilled longer than they would if qualifications could be easily communicated. In addition, if certifications were systematically defined and widely recognized, the incentives to invest in acquiring them would be greater.”<sup>15</sup>

The notion of credentials’ being portable from one company to another, from one institution or community of learning to another, is a necessity, but the credentials need a watchdog of sorts. An overabundance of credentialing and badging systems could lead to

confusion and uncertainty, and work against their intended aim: to motivate people to learn and to verify for themselves and others what they have mastered.

The *Pathways to Prosperity* authors also argue for digital credentials to be “stackable” and “vendor neutral.” Stackable means that the lessons offered are broken into manageable, “digestible” pieces and have been designed in “coherent combinations and sequence.” In addition, the authors say: “...credentials should be vendor neutral, which means that businesses throughout the sector will recognize them. The shift...to vendor neutral...credentials on a widespread basis will not be easy to achieve. it will require business, labor and public sector leadership.”

The market competition (and profits) to provide L3 learning is likely to attract some unqualified people and companies seeking to score a quick profit. All the more reason for third-party verification and oversight. One adult-learning advocate suggests that “the only ‘continuous education’ courses that should be, experimentally, allowed to be offered by an institution with no proper credentials are courses in dentistry—on condition that the teachers register as patients in their graduates’ surgeries.”<sup>16</sup> We like the sentiment. To those lowlife’s seeking to take advantage of L3 learners, we say: Open wide.

9 Billion Schools is intrigued by the notion of learning portfolios and is encouraged by the do-it-yourself credentialing available through such digital tools as Degreed, Pathbrite and openbadges.com. While the establishment of such a widely available, highly regarded and trusted credentialing system will by no means be easy to create, there’s nothing about it that is in any way beyond our capabilities. It’s only a matter of will.

L3 learning is the essential core of a true learning society, something every culture and community, the globe over, should strive for. After all, as the authors of *Creating a Learning Society: A New Approach to Growth, Development & Social Progress* write: “...what separates developed from less-developed countries is not just a gap in resources but a gap in knowledge.”<sup>17</sup>

“We are moving into a learning economy where the success of individuals, firms, regions and countries will reflect, more than anything else, their ability to learn,” says a report from the Organization

of Economic Cooperation and Development (OECD).<sup>18</sup>

The European community has established the goal of having 15% of adults participating in lifelong learning by 2020. We applaud them for it and suggest that the United States set an even more ambitious goal: 50% adult participation in lifelong learning by 2030; 100% by 2050.

So much of creating a learning society rests with the ability to inspire the joy of learning in people. In their white paper *Learning: The Treasure Within*, UNESCO states: "The truth is that every aspect of life, at both the individual and social level, offers opportunities for both learning and doing...school should impart both the desire for, and pleasure in, learning...and intellectual curiosity."<sup>19</sup>

UNESCO also suggests four key aspects of L3 learning which we believe capture the essence of why, as individuals and as communities, we need to invest in creating and cultivating learning societies: Learning to live together, learning to know, learning to do and learning to be.

All four types of learning are critical to flourishing in the decades to come at school, work and play. The impact of L3 learning in each of these areas is the focus of the following three chapters.

## CHAPTER THREE

“The illiterate of the 21<sup>st</sup> Century are not those who can't read or write, both those who cannot learn, unlearn and relearn.”

ALVIN TOFFLER

*Futurist*

## 9 Billion Schools and Traditional Education

The 9 Billion Schools movement hopes to help create a world where learning is no longer corralled into the traditional slice of time known as school, meaning pre-K through high school or college. An over-emphasis on traditional schooling distracts and detracts from the idea that learning never ends, and from the fact that truly flourishing depends on what we learn *after* our conventional schooling. That said, the importance of the traditional school-going years can't, of course, be understated. It's so, well, foundational. And while learning is—*must* be—womb to tomb, there's no escaping the fact that what happens during school goes a long way toward setting one up for L3 learning success. So, with those caveats in mind, let's discuss traditional education.

As most consider the state of conventional schooling, the general consensus seems to be that we need to make some serious, if not dramatic, changes. A driving thrust behind the call for change is to better align our education system with the world, and work, as we know it now—and as it appears to be hurtling our way in the coming decades.

How most seem to feel about the current status was well summed up by the late educator and reformer Ted Sizer: “We are for the public schools (and nonpublic schools as well), but we appear to be against much of what they are doing. That is, we love the people in the schools, and the idea of schooling, even as we know the places we have do not work all that well.”<sup>1</sup>

9 Billion Schools is, in no small measure, about aligning learning with what we know of the world and what flourishing within it requires. Big, bold experiments and equally daring changes are necessary. However, we don't agree with those who seem to suggest that our current educational system is horribly broken and painfully deficient in *every* single way imaginable. Some facts clearly suggest that many teachers, administrators, parents and students are doing *a lot* of things right. For instance, in 2012, the high-school graduation rate was greater than 80% for the first time in our nation's history.

More than 20% of the graduation class of 2013 scored honor grades of 3 or above on the Advanced Placement (AP) tests. And those participating in the AP program totaled more than a million, setting yet another high mark.<sup>2</sup>

Another batch of statistics, published in the book *Most Likely to Succeed: Preparing Our Kids for the Innovation Era*, provides additional evidence that we're doing a pretty good job educating at least many of our citizens:

|                                  | US   | China | Japan | India           |
|----------------------------------|------|-------|-------|-----------------|
| <b>Nobel Prizes</b>              | 353  | 8     | 21    | 11              |
| <b>100 Most Innovative Co's</b>  | 38   | 6     | 7     | 4               |
| <b>Patents (last five years)</b> | 619K | 21K   | 240K  | 7K <sup>3</sup> |

But it's not all good news, or anything close. Beyond the shortcomings of our educational system that are rooted in race and poverty, there are statistics and metrics about the current state of youth today that should deeply worry us all.

Before reviewing some of them, we feel compelled to acknowledge that it is downright unfair—and horribly inaccurate—to blame schools for all our social ills. As the education commentator Diane Ravitch says it: “Opportunity leaves much to individuals; it is not a guarantee of certain success. The schools cannot solve all of our societal problems; nor are they perfect. But in a democratic society, they are necessary and valuable for individuals and the commonwealth.”<sup>4</sup>

She goes on to write: “Our schools cannot be improved if we use them as society's all-purpose punching bag, blaming them for the ills of the economy, the burdens imposed on children of poverty, the dysfunction of families and the erosion of civility. Schools must work with other institutions and cannot replace them.”<sup>5</sup>

We concur. Wholeheartedly. But, nonetheless, certain facts can't be ignored, including:

- Every day, 7,000 kids drop out of school. (As horrific as this number is, it begs the question of how many kids are *in* school physically, but mentally checked *out*.)
- Since 1950, high-school suicides have tripled and college suicides have doubled.

- Research suggests that more than a few college students leave knowing *less* than when they entered.<sup>6</sup> (Yes, you read that correctly: some leave knowing *less*.) And only 11% of business executives believe that college properly prepares students for work success.<sup>7</sup>

- A NASA creativity test found that 98% of 5-year-olds scored “creative genius,” but only 12% of 15-year-olds. (And only 2% of adults.)<sup>8</sup>

We could go on. In fact, and unfortunately, we could go on *and* on.

Schools can work better. Much better. Far too many of our schools have gotten stuck in old habits and dated ways of thinking, stuck, that is, between the industrial past and the hyperdigital future. This isn't new news and seems widely accepted, yet progress has been slow. The 9 Billion Schools movement hopes its voice and its ideas will help create a tipping point.

It's easy to settle into the status quo with just about anything, but especially when it comes to those historically rooted, social- and cultural-shaping institutions such as education. In fact, the author of *21st Century Skills: Learning for Life in Our Times* describes one of the “forces of resistance” as “the preference of parents, who as children learned through traditional approaches and as adults have been successful in their own careers, to have their children learn in the ways they did.”<sup>9</sup>

Kevin Carey, author of *The End of College*, says much the same thing: “Many of those who have lived and learned in colleges as we know them cherish their memory and institutions. But the way we know them is not the only way they can be. Our lifetimes will see the birth of a better, higher learning.”<sup>10</sup> Carey is right. He *has* to be right.

Familiarity and comfort are almost always enemies of progress. We all know this. The *allies* of progress include imagination and asking tough questions, such as these:

*How can schools do a better job at instilling a true love of learning, one that lights a fuse that sparks, crackles and gets ever hotter and brighter throughout life?*

*How can school be more relevant to students' lives, current and future?*

*Why do we teach what we teach and why do we teach it the way*

*we teach it? Does this still make sense?* As Sizer suggests: "...the so-called disciplines or subjects are convenient arrangements...not discoveries...There are a number of ways that we might invent new subjects for the curriculum..."<sup>11</sup>

Let's take just one standard subject: math. Think about the math that many of us struggled, if not suffered, through in high school. Should this well-entrenched piece of the curriculum—which, remember, is an arrangement, *not* a discovery—continue as it has? Maybe. But maybe not. Consider the research conclusion reported in *Most Likely to Succeed: Preparing Our Kids for the Innovation Era* by authors Tony Wagner and Ted Dintersmith: The math that helps most college students isn't high-school math, it's *middle-school* math.<sup>12</sup> We doubt this surprises anyone.

Perhaps traditional schooling should be less about building experts and more about inspiring "expert amateurism." David Perkins, the author of *FutureWise: Educating Our Children for a Changing World*, thinks so: "The expert amateur understands the basics and applies them confidently, correctly and flexibly. The expert amateur in statistics and probability may not know anything about such advanced topics as multiple linear regression or factor analysis. But the expert amateur does have a sharp sense of what means and standard deviations signify...aspects of statistics and probability like these cover almost all everyday uses."<sup>13</sup>

The experts—not to mention parents, students and the business community—virtually all agree that our standardized-test-obsessed education system has gotten out of hand. "Our choice is stark," write Wagner and Dintersmith. "We can continue training kids to be proficient at low-level routine tasks and to memorize content they won't remember on topics they'll never use. Or we can embrace the reality that much of what school is about today can be 'outsourced' to a smartphone, freeing up time for kids to immerse themselves in challenges like the following: Learning how to learn, communicating effectively, collaborating productively, creative problem-solving, managing failure, managing projects and achieving goals, building perseverance and determination, leveraging passions and talents to make the world better."<sup>14</sup>

There's a delightful and revealing story told in *A New Culture of Learning* based on a survey in which 63% of Americans ages 18 - 24

could *not* find Iraq on a map. However, when the authors sat students of that same age range in front of a computer and asked them to find Iraq, *100%* of them could. Furthermore, the students were prepared to provide evidence in the form of maps and imagery, including street and aerial views.<sup>15</sup>

The point: “In the new information economy, expertise is less about having a stockpile of information or facts at one’s disposal and increasingly about knowing how to find and evaluate information on a given topic.”<sup>16</sup>

Do our schools reflect this reality?

It’s beyond the scope of this book to examine and comment upon the shortcomings and opportunities across the entire pre-K through college spectrum. However, we wanted to share some commentary about career and technical education (CTE), as well as higher education, to provide further context into the 9 Billion Schools philosophy.

As for CTE, we think the following insights from reformer Mike Rose in *Why School?* are profound: “In our schools and industries as well as in our informal talk, we tend to label entire categories of work and the people associated with them in ways that overgeneralize, erase cognitive variability and diminish whole traditions of human activity...One of the most unfortunate of the cognitive dichotomies I’ve been discussing, particularly in the lives of young people, has been the distinction between the academic and the vocational...It is the academic curriculum, not the vocational, that has gotten identified as the place where intelligence is manifest...This bias will continue to limit a creative rethinking of the academic-vocational divide.”<sup>17</sup>

When we belittle and demean certain career and life paths, we homogenize and trivialize people, stealing their dignity, a mortal sin within 9 Billion Schools.

Here’s an unpleasant reality of today’s system: “We’ve largely removed hands-on activities from the K-12 curriculum. For instance, almost all kids are now pushed into college tracks in high school, while almost no schools still offer shop, even though it’s a powerful way to learn to apply math. Vocational education, in the eyes of many middle- and upper-class parents, is one step removed from juvenile delinquency. Instead, students spend years studying things like the proper placement of French accent marks, the capital of North Da-

kota (or, in more advanced schools, Kenya), the Avogadro constant factoring polynomials, or conjugating gerunds—none of which they'll remember or need as an adult.”<sup>18</sup>

The answer isn't about funneling “smart” kids toward college and the “less bright” toward CTE. It's about options, interests and passions. Writer David Conley makes a spot-on point: “The new reality is that students need a program that integrates high academic challenge with the exploration of a range of career options and opportunities.”<sup>19</sup> With greater and greater frequency, this is happening. CTE is now just as likely to be a path to higher education as traditional college-prep curriculums. There is a proliferation of high-school programs in engineering and nursing, as well as digital and graphic design, to name just a few, that are leading students—with high levels of interest and passion—to college and careers.

Too many subscribe to the old-school idea that CTE leads to low-pay, dead-end jobs. Not anymore. Let's stop thinking of certain careers through the lens of the past. In *The 4<sup>th</sup> Revolution: How the Infosphere is Reshaping Human Reality*, Luciano Floridi notes that as our cars become ever more complex and digital, “Mechanics are becoming computer engineers.”<sup>20</sup> And, by the way, they're getting compensated accordingly.

Ponder this powerful fact found in *Most Likely to Succeed: A* master chef or electrician can expect a lifetime income on par with a physicist with a Princeton PhD or a chemist with a Harvard MS!<sup>21</sup> (Take that, Ivy!)

Michael D'Ambrose, an executive at the Archland Daniels Midland company, recently said: “We pay an electrician \$90K, which is \$30K more than we pay an electrical engineer. I think employers have a deep responsibility to make sure that kids get an opportunity to both experience and know about all the wonderful career tracks that exist.”<sup>22</sup>

So much for the so-called second-class shop kids, right?

9 Billion Schools stands in solidarity with this commentary from reformer Richard DuFour: “There are...twenty-nine million ‘middle jobs’ in the American economy, or one in every five jobs, that pay between \$35,000 and \$90,000 and offer opportunities for career advancement. These careers require education and training beyond

high school but less than a bachelor's degree. The five pathways to these jobs are associate degrees, postsecondary certificates, employer-based training, industry-based certification and apprenticeships.

“The challenge facing the United States is that the percentage of high-school students pursuing the CTE programs that align with these pathways has been declining for decades. The United States now lags behind other advanced economies in CTE training. For example, whereas 25 percent of Canadian students pursue postsecondary education that leads to sub-baccalaureate attainment, only 10 percent of Americans take that path, ranking our nation 16<sup>th</sup> in the world. Only three of one thousand jobs in civilian employment in the United States are held by apprentices compared to forty-three in Switzerland, forty in Germany and thirty-nine in Australia—countries where apprenticeship is a major element of the transition from school to work.”<sup>23</sup>

Clearly we not only need newer pathways, we need more of them, too. This is a necessity for realizing the 9 Billion Schools vision.

Lack of personalized learning is an issue on college campuses as much as at elementary, middle and high schools. In *The End of College*, the author writes: “The future of higher education is not one in which everyone sits by herself in her pajamas, pallid and goggle-eyed, being taught by a machine....Just as information technology has made it much cheaper to create a start-up technology company in Silicon Valley, it will make it much cheaper to create a start-up college almost anywhere...Which means that, in addition to a profusion of digital learning environments online, the University of Everywhere will include tens of thousands of new higher-education organizations—they won't be colleges in the traditional definition of the term—that are physically located in places but have few attributes in common with the traditional...university...The future of higher education is one in which educational organizations shrink back to a human scale.”<sup>24</sup> Doesn't that sound just delightful—and at odds with the situation today?

Charles Murray of the American Enterprise shared this thought-provoking, if hyperbolic, vision in a newspaper editorial: “We should prick the B.A. bubble. The bachelor's degree has become a driver of class

divisions at the same point in history when it has become educationally meaningless...Almost everybody needs more education after high school. What they don't need is to chase after this fraudulent, destructive, antediluvian piece of paper called a B.A.”<sup>25</sup>

Beyond the lack of personalized learning on most campuses, the other big issue with higher ed is the one that gets a lot of attention these days: its price tag. The combined volume of student debt has risen to stratospheric heights, now close to \$1 trillion (\$1,000,000,000,000). And here's another statistic that should alarm us all: There are two million people in the United States over the age of 60 who *still* have college debt, despite having likely gone to college when it costs were meaningfully lower. (The authors of *Most Likely to Succeed* make this so-true-it-hurts comment: “Sadly, our high schools almost never include financial literacy in their curriculums.”<sup>26</sup> What irony.)

To add cognitive insult to financial injury, a 2015 study found that 40% of college seniors fell short of the necessary reasoning skills for today's workplace. And 44% of recent college grads have jobs that don't actually require a college degree.

A key factor in college's shortcoming could be one of its universal and seemingly benign elements: the credit hour. A bachelor's degree—virtually *all* bachelor's degrees at virtually all colleges—require 120 credit hours. How is it—why is it?—that *every* bachelors degree takes *exactly* 120 hours?

Another reason to cast a suspicious eye toward credit hours is that, as Jeffrey Selingo notes in *There is Life After College*: they don't “...actually measure how much students learn. It's simply an arbitrary measure of time spent in a seat, and it certainly doesn't tell employers much about the college graduates they're hiring except that they had the discipline to make it through four years of courses.”<sup>27</sup> This is all the more true today, given the documented grade inflation rampant on many campuses.

Is it any wonder, then, that companies as smart, prominent and competitive as Google are no longer looking at their job applicants' college transcripts?

Much has been written about the “21<sup>st</sup>-century skills” that our education system should be fostering. What's interesting is the broad consensus about what those skills are. For example, here are a few

of the often-cited lists for lifelong success:

- Curiosity
- Creativity
- Criticism
- Communication
- Collaboration
- Compassion
- Composure
- Citizenship<sup>28</sup>

- Communication
- Collaboration
- Critical thinking
- Creativity<sup>29</sup>

- Self Knowledge
- Observation
- Feedback
- Analysis
- Mirroring
- Expression
- Judgment
- Adding value<sup>30</sup>

- The disciplined mind
- The synthesizing mind
- The creative mind
- The respectful mind
- The ethical mind<sup>31</sup>

- Personalization
- Collaboration
- Communication
- Informal learning
- Productivity
- Content creation<sup>32</sup>

The common threads running through these and other lists are easy to spot. One of these is the ability to learn, unlearn and relearn. The writer Zygmunt Bauman uses a military metaphor to illuminate

this point: “Smart missiles, unlike their ballistic elder cousins, learn as they go. So what they need to be supplied with at the outset is the ability to learn, and learn fast. This is obvious. What is less visible, however, though no less crucial than the skill of learning quickly, is the ability to instantly forget what was learned before. Smart missiles wouldn’t be smart if they were not able to ‘change their mind’ or revoke their previous ‘decisions’ without a second thought and without regret...All the information they acquire ages rapidly and if it is not promptly dismissed it may be misleading instead of providing reliable guidance. What the ‘brains’ of smart missiles must never forget is that the knowledge they acquire is eminently disposable, good only until further notice, and only temporarily useful, and that the warrant of success is not to overlook the moment when acquired knowledge is of no more use and needs to be thrown away, forgotten and replaced.”<sup>33</sup>

Another common thread among the 21st Century skills is critical thinking. Are our schools doing enough to guide and inspire students in this area? Critical thinking is necessary for coming to terms with that which makes our lives so deep: our values, our ethics, our worldview.

9 Billion Schools believes that schools can do more to help students truly appreciate that thinking is, well, hard. Really hard. Just like the celebrated American philosopher Mortimer Adler said: “Anyone who has done any thinking, even a little bit, knows that it is painful. It is hard work—in fact, the very hardest that human beings are ever called upon to do. It is fatiguing, not refreshing. If allowed to follow the path of least resistance, no one would ever think.”

(One of our favorite T-shirts speaks beautifully to this idea. It reads: “*Don’t believe every thing you think.*” That’s good advice for us all.)

Critical-thinking abilities are necessary not only for personal and professional success, but for meaningful civic engagement too. Civic duties aren’t new to this century, of course; but some have argued that in our 24-hour-news-cycle, social-media-crazed, highly partisan culture, there is an even a greater need for citizens who can think about public policy and social issues deeply and critically—and then act and vote accordingly.

And what about the civic duty of sitting on a jury? How confident would you be in a typical high school, or even college, graduate to

render the right verdict if *you* were on trial?

Another commonality in the various 21<sup>st</sup>-century skills list is the ability to communicate and collaborate well with others, often in the pursuit of creativity and innovation.

Our traditional schools need to do a better job setting students up for 3 learning success. The evidence is overwhelming: We need to move our traditional school system *fully* into the 21<sup>st</sup> Century, a century that, it bears reminding, will soon be 20% over.

Tick. Tock.



# NINE BILLION S C H O O L S <sup>TM</sup>

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Thank you for your interest in the  
9 Billion Schools movement!

We hope you have enjoyed the first three  
chapters of our book and invite your comments  
and suggestions by email:

**[feedback@9billionschools.org](mailto:feedback@9billionschools.org)**

We also invite you to read our blog for all the  
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