

CHAPTER 2

MINDS AT WORK

The image shows a classroom with rows of wooden desks and chairs. The desks are light-colored wood with attached writing surfaces, and the chairs are also wooden with curved backs. The chairs are arranged in rows, and the desks are attached to the front of each chair. The background is a plain, light-colored wall. The text 'MINDS AT WORK' is overlaid in large, white, bold, sans-serif font across the center of the image. 'MINDS' is on the top line and 'AT WORK' is on the bottom line.

The true purpose of education is to make minds, not careers. —William Deresiewicz, literary critic

Victorian schools were designed to meet the particular needs of the Victorian era. They were created to turn out “obedient specialists”: adults who could work in factories, assembling components, or as domestic servants, not people who needed to think for themselves.

—Sean McDougall, educational thinker and designer

Students who are not exposed to arts and music in school score lower on standardized tests and have worse communication skills than those who do.

A central challenge for the education system is to find ways of embedding learning in a range of meaningful contexts where students can use their knowledge and skills creatively to make an impact on the world around them. —Kimberly Seltzer, author and Tom Bentley, author and policy analyst

86% of voters believe that encouraging children to be creative and develop their imagination is necessary to maintain our competitive edge and ensure that we do not fall behind other countries.

Education must shift from instruction to discovery—to probing and exploration...

—Marshall McLuhan, educator and communications theorist

Sources (top to bottom): *The American Scholar*, “The Disadvantages of an Elite Education”; Futurelab, “The School of the Future”; Office of the Governor of the State of California, “Record Investment in Music, Arts & PE”; Kimberly Seltzer and Tom Bentley, *The Creative Age: Knowledge and Skills for the New Economy*; The Imagine Nation and Lake Research Partners, *The Imagine Nation Poll*; Marshall McLuhan, *The Medium Is the Message*

Logic will get you from A to B. Imagination will take you everywhere.

—Albert Einstein, theoretical physicist

By 2014, according to our estimates, the U.S. will add another 10 million creative sector jobs to the nation’s economy. The same pattern holds for virtually all of the advanced nations, where the creative class makes up 35% to 45% of the workforce, depending on the country.

The mind is not a vessel to be filled but a fire to be kindled.

—Plutarch, Greek historian and biographer

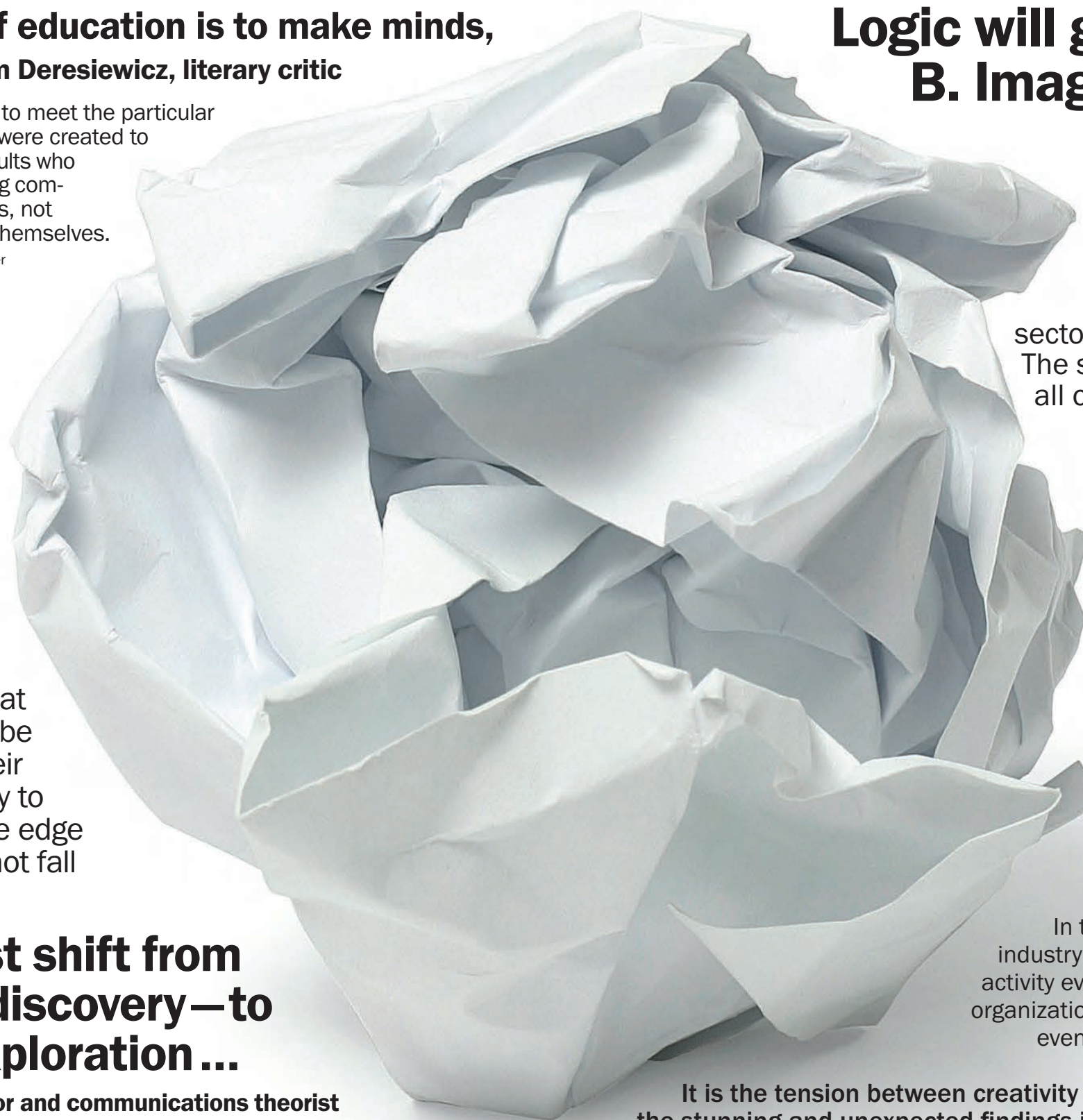
If you create a system where initiative and creativity is valued and rewarded, then you’ll get change from the bottom up.

—Paul Pastorek, superintendent

In the U.S., the nonprofit arts and culture industry generates \$166.2 billion in economic activity every year—\$63.1 billion in spending by organizations and an additional \$103.1 billion in event-related spending by their audiences.

It is the tension between creativity and skepticism that has produced the stunning and unexpected findings in science. —Carl Sagan, astronomer and author

Sources (top to bottom): *World of Quotes*, “Imagination”; Richard Florida, *Who’s Your City?*; *Creating Minds*, “Creative quotes and quotations: On the Mind”; *The New York Times Magazine*, “A Teachable Moment”; Americans for the Arts, *Arts & Economic Prosperity III: The Economic Impact of Nonprofit Arts and Culture Organizations and Their Audiences*; *Wisdom Quotes*, “Carl Sagan”



The principal goal of education is to create men who are capable of doing new things, not simply repeating what other generations have done—men who are creative, inventive, and discoverers.

—Jean Piaget

Five months after the first humans landed on the moon, *Time* magazine ran that quote in a feature article on Jean Piaget, the then 73-year-old Swiss philosopher and child psychologist. The occasion was ostensibly what *Time* called “a flood” of Piaget translations pouring into the American market, but the world was clearly ready for Piaget’s advice about educating discoverers. “His insights,” said *Time*, “are in growing vogue among U.S. educators, psychologists and some parents... His findings have given encouragement and innumerable specific suggestions to the ‘discovery method’ of teaching, now used in many schools across the U.S. and in Great Britain.”

A tour today of schools across the United States, Great Britain, and in fact most of the developed world would find little evidence of Piaget’s philosophy in action. Creativity is ghettoized, restricted to a single period or a couple of shabby rooms. The tools and tactics that encourage the creative thinking that is now, more than ever, so critical to success in higher education and the world at large have yet to be integrated into the standard curriculum or overall design of our schools.

In this chapter, a chorus of voices echo Piaget, each making their own point in support of his pioneering observations about the goal of education. Creativity expert Ken Robinson says that all subjects should be given equal weight, and comparable facilities. Leading psychologist Howard Gardner is a vocal proponent of education that embraces multiple intelligences and appeals to the diverse learning styles and intellects of our children. We hear from creative and courageous teachers who have turned theory into practice, gaining knowledge from the museum model of self-directed, interpretative learning—configuring their classrooms to stimulate active collaboration. They are employing lessons from the Third Teacher in their classrooms every day, and it is time to support them systemically, in the design of both education and schools. We must give children spaces and lessons that foster lifelong creativity, that teach them to take calculated risks, to innovate and experiment. What does the future have in store? Only the creative mind can speculate.



INTERVIEW

SIR KEN ROBINSON THE CREATIVITY CHALLENGE

Sir Ken Robinson is an internationally recognized leader in the development of creativity, innovation, and human resources. Now based in Los Angeles, he has worked with national governments in Europe and Asia, with international agencies, Fortune 500 companies, not-for-profit corporations, and some of the world's leading cultural organizations. He is the author of several influential papers and books, including his 1998 report for the U.K. government, *All Our Futures: Creativity, Culture, and Education*, and his latest book, *The Element: A New View of Human Capacity*. He argues that to meet the challenges ahead, we must redesign schools to nurture the creativity capacity in all of us.

You've pointed out that schools, as we know them, were designed at a particular time for a particular purpose. Can you talk about that? Well, the whole process of public education came about primarily to meet the needs of the Industrial Revolution in the 18th and 19th centuries, and the current system doesn't just represent the interests of the industrial model, it embodies them. To begin with, there's a very strong sense of conformity. Second, the pedagogical model is based on the idea of transmission. Teachers teach and students learn. That's buttressed by the idea that the efficient way to do this is to educate kids by age—as though the most important thing they have in common is their date of manufacture. And the third big feature is the hierarchy of subjects: You have science and math at the top, and languages, then the arts further down.

The school buildings represent all of that. You have separate facilities for different subjects. The classroom arrangements are people sitting facing the front where someone's speaking to them. And there are large examination rooms. It's the factory model.

You've been a professor, an author, a consultant, but you've said you were first struck by this as a teenager. What were you going through then? Much as I liked aspects of school, there were things I'd really have liked to do that I didn't get an opportunity to do. I never did music at school—it wasn't available for kids on my track. I wanted to do art but I couldn't because it clashed with other subjects people thought were more important. It was only when I was 16 that we managed to talk one of our teachers into putting some plays on. And that, to me, opened up a whole other door, a process of working with people differently from conventional academic work.

So I went off and did an English and theater degree, and trained as a teacher. The practice of the arts was thought to have lower status than academic work. And I never understood why that was, because it seemed to me that doing art is as complicated as doing art history; writing novels is a good bit more difficult than writing about them.

11.

Make it new

Look at your learning space with 21st-century eyes: Does it work for what we know about learning today, or just for what we knew about learning in the past?

MW: There's a values-based aspect to this discussion. It has to do with the way we see people and the way we think people should be treated. The industrial revolution model of education was actually very successful. It churned out carbon-copy mentalities at a time when society prized conformity. As we start to prize creativity instead, we need to look at how creativity can be fostered, and developed, and encouraged. There are technical and physical aspects to that, but also emotional and values-based ones.

TL: If we truly believe that creativity is an essential ingredient in a child's development, then we need to shift completely away from the "cells and bells" model of school design. So the other fundamental question we should be asking is: Does this learning environment support a child's natural instinct to learn through creation and discovery?

—Michael Waldin, BMD and Trung Le, OWP/P

14.

Multiply intelligences

Allow students time and space to choose what they want to do—their choices will illuminate their individual strengths.

HS: Sometimes, it is still appropriate for students to sit in rows listening to their teachers talk from the front of a classroom. But being the “sage on the stage” is only one way to teach. Brain research is giving us great insights into how we can vary teaching methods to meet the needs of different learning styles. Good lessons need exquisite design—so that teachers can stretch students in their dominant and preferred learning styles, and also in their non-dominant styles. And of course good lessons also get students to access their right- and-left-brain hemispheres.

RD: Howard Gardner’s Multiple Intelligences Theory is implicitly asking the designer of the learning environment to consider a variety of learning spaces—spaces in diverse sizes, materials, and colors, as well as spaces with different transparency, connectivity, and agility. The one-size-fits-all idea really isn’t acceptable any more.

—Helen Hirsh Spence, educational consultant to VS Furniture and Rick Dewar, OWP/P

INTERVIEW

HOWARD GARDNER

SMART SPACES FOR ALL LEARNERS

Howard Gardner is professor of cognition and education at the Harvard Graduate School of Education. In 2005, he was selected by *Foreign Policy* and *Prospect* magazines as one of 100 most influential public intellectuals in the world. The author of more than 20 books and several hundred articles, Gardner is best known for his Theory of Multiple Intelligences, a critique of the notion that there exists but a single human intelligence that can be assessed by standard psychometric instruments.

On the implications for learning environments of Multiple Intelligences Theory:

It is important that those ideas, concepts, theories that are worth teaching and understanding be presented in lots of different ways. By doing so, one arouses the various intelligences of young people and also reaches more students. And so, in addition to the traditional schools that prioritize linguistic and logical intelligence, learning environments should allow students to exercise their musical, spatial, bodily, naturalist, interpersonal, and intrapersonal intelligences. The actual materials, or layout of the spaces, are less important than the provision of ample opportunity to use these intelligences. So, for example, one need not devote extra space to encourage the use of spatial intelligences; rather one should make imaginative pedagogical use of the spatial arrays that are available—large, small, 2D, 3D, material, virtual, etc.

On what schools would look like if we took seriously the fact that there are differences between children:

School would be far more individualized than ever before. In the past, only the wealthy had personalized education. They could hire individual tutors and they could travel wherever they wanted to (though we can do it faster these days!). To start with, each child would have his own computer (laptop, desktop, whatever) and would be able to learn ideas and materials in ways that are comfortable for that child.

Young people would also be able to keep their own records of what’s been learned, what’s been produced, critiqued, etc. Some of these materials would be stored digitally, but it is also important to display scientific, artistic, and historic works that have been fashioned by students and teachers. In that way, I think that schools in the future are more likely to resemble children’s museums or exploratoria.

In this context, I call your attention to the Explorama, part of the remarkable Danfoss Universe in Sønderborg, Denmark. This theme park is the best venue that I’ve seen for observing the various intelligences at work.

The Explorama features dozens of games, exercises, and challenges that draw on different intelligences or combinations of intelligences. These exhibits can be used by children as well as adults of all ages. While the Explorama is not a formal learning environment, individuals can learn a great deal about their own profile of intelligences at the site.

On what learning will be like in future:

Much of learning going forward will occur virtually, at all hours of the day and night, rather than in classrooms from 8–3:30. Also, the role of media centers, and the teaching of capacities needed for effective expression in the new digital media, will continue to increase. **Adapted from:** Interview with Angelica Fox, BMD, and “Why Multiple Intelligences Theory Continues to Thrive”

For more: www.dpu.dk

CASE STUDY

MINISTRY OF EDUCATION NEW HIGH SCHOOLS CAYMAN ISLANDS



In 2005, the Cayman Islands government made a pledge to transform their country's education system. Leveraging the advantages of a small population and a thriving economy, the Cayman Islands Ministry of Education has embraced the ambition of providing a framework of opportunities for all learners on the Islands, and promoting 21st-century teaching and learning that will equip students to compete on the international stage. With that ambition in mind, OWP/P has been developing a prototype plan for Cayman Islands high schools that is being constructed at three schools. The plan embraces the concept of project-based learning, a learning approach where students develop interdisciplinary skills for living in a knowledge-based, highly technological society.

I came to this job as the permanent secretary in the Ministry of Education of the Cayman Islands with a passion for development. What are the core elements of national development? It doesn't start with the state of our economic health; it starts with the home, and the quality of experience we provide the family. Education is the extent to which all members of the family understand that concept as a process of lifelong learning.

The success of the transformation of an education system is not in the bricks and mortar. It is in your ability to engage the hearts and minds of all stakeholders in the dialogue of a new way of looking at life and defining education. If you use those very clear words about the aspirations you have for the learners who come out of your system, then that's the basis on which you then move to the question, "How do we effect a learning space that will engender these possibilities to occur?" That's very different from, "We need four classrooms and a science lab."

—Angela Martins, Cayman Islands