

A Comparative Study of the Purposes of Education in the Twenty-First Century

Fernando M. Reimers and Connie K. Chung

As many scholars and observers have noted recently, we live in a “very turbulent moment—whether we are talking about technology, global politics, airline travel, world financial markets, climate change . . . Everywhere we turn, we are confronted with VUCA—volatility, uncertainty, complexity, and ambiguity.”¹ The field of education has not been immune to this turbulence, with rapid changes taking place both inside and outside traditional educational systems: the advent of customized, worldwide, online learning, for example, seems to make the boundaries of school buildings and even nation-states permeable; the idea of competency certification in education introduces new possibilities into a system largely driven by automatic academic promotion based on age; and the need to “learn to learn” and the demand to provide an education relevant to students’ lives are more pressing than ever in the face of rapid change around the globe.

Education is increasingly perceived as important by the public. A recent global survey of attitudes administered in forty-four countries identified having a good education as the most important factor for getting ahead in life, on a par with working hard and significantly more important than knowing the right people, being lucky, or belonging to a wealthy

family. Furthermore, a good education is considered very important to getting ahead in life by a greater percentage of the population in developing and emerging economies than in advanced economies. The percentage of the population who said having a good education was very important to getting ahead in life is 62 percent in the United States, 85 percent in Chile, 67 percent in Mexico, 60 percent in India, and 27 percent in China.²

Paradoxically, even as the perception of the importance of a quality education is growing, confidence in schools is dwindling. In the United States, for example, opinion surveys of representative samples of the population document a decline in the percentage of those who express “a great deal” of confidence in public schools, from 30 percent in 1973 to 12 percent in 2015. Today, there is considerably more confidence in the military (42 percent), business (34 percent), the police (25 percent), or organized religion (25 percent), than in schools.³

Ensuring that education is relevant to the demands that students will face over the course of their lives—such as the demand to live long and healthy lives, to contribute positively as active members of their communities, to participate economically and politically in institutions that are often local as well as global, and to relate to the environment in ways that are sustainable—is an adaptive challenge. This task requires reconciling multiple perspectives in defining the goals of education in response to different perceptions of what problems and opportunities merit the attention of schools, which are, after all, a relatively recent institutional invention, particularly in their aspiration to teach all children. This task is different from the technical challenge of seeking ways to improve the functioning of schools to help them better achieve their intended goals, once a certain consensus has been achieved about what those are. The adaptive challenge is one that educators and societies engage with from time to time, more episodically than the technical challenge of seeking continuous improvement in the effectiveness of schools. Clayton Christensen and his colleagues at the Harvard Business School have characterized the tension between these technical and adaptive challenges as that between sustaining innovation and disruptive innovation.⁴

Setting goals, reflected in narratives that provide direction and animate individual and collaborative effort, is central to any organized human endeavor. In part at least, the aspiration to achieve these goals is the reason organizations exist. The same is true for educational institutions, whether individual schools, school districts or local education jurisdictions, or state and national systems. In education, the question of defining goals typically concerns the definition of who should learn what.

For example, in the aftermath of World War II, nations made the effort to create a series of global institutions to ensure peace and stability, including the right of education as one of the necessary elements of such a strategy. The inclusion of the right to education in the Universal Declaration of Human Rights, drafted following the war with the aim of ensuring global security, sparked a global movement to achieve the goal of educating all children. This movement produced a remarkable transformation in educational opportunity, changing the world from one where most children did not have the opportunity to set foot in a school in 1945, to one where most children now enroll in school and have access to at least a basic education, with the majority transitioning to secondary education.⁵

This global movement sought to provide ALL students with the opportunity to gain a fundamental education. Not surprisingly, what should be included in a fundamental education has been, and remains, very much the subject of debate. This debate includes questions such as how much emphasis should be given to knowledge acquisition, relative to social and personal development. It also includes questions about the level at which knowledge should be mastered and skills developed. Literacy, for example, a fundamental skill that is one of the goals of basic education globally, can be developed at many different levels. Mathematical literacy, similarly, can include very different levels of content. In a seminal contribution to guiding how such goals can be formulated, Benjamin Bloom proposed a taxonomy of learning objectives that organized them in a hierarchy of cognitive complexity. He argued that learning objectives could be classified as cognitive, affective, and psychomotor, and

that each of those in turn could be organized in a hierarchy. The cognitive domain, for example, ranged from knowing facts, at the low end of cognitive complexity, to analyzing or evaluating them, and finally to using them in creative ways.⁶

How these learning goals are taught and met is the purview of curriculum. As an instrument to organize and achieve such goals, the curriculum can vary widely. Across the world there are differences as to which levels of government attempt to influence curriculum, and at what level of specificity those influences are applied. In the United States, for example, states, districts, teachers, and the schools where they work traditionally had the autonomy to develop educational goals, including developing a specific scope and sequence and the lesson plans to translate those into actual classroom activities that create learning opportunities. In recent decades some national governments have taken on a greater role in defining goals, specifying a minimum set of standards to be taught and providing broad direction about the minimum level at which those standards should be taught. In the United States these are called education standards, and it is expected that specific curricula will still be developed by teachers, or groups of teachers, in ways that are aligned with those standards. In contrast, there are countries, such as Mexico, where a national curriculum has a much greater level of specificity, often to the level of prescribing specific lessons. In these cases, national textbooks and teacher guides are often the instruments that translate that curriculum into expected instructional routines.

These patterns in how various levels of education governance participate in the definition of curriculum can change over time. Colombia, for example, abandoned a highly prescribed national curriculum as part of a series of reforms in the 1990s, in favor of more general standards such as those used in the United States. Conversely, the United States has moved in the direction of adopting national standards for some subjects. As we conducted the research for this book, we found that the six countries we studied—Singapore, China, Chile, Mexico, India, and the United States—varied in the degree to which governments prescribed learning goals and

curricula. Accordingly, in our discussion we will use the term “curriculum frameworks” or “standards” to refer to learning objectives and goals, and the term “curriculum” to refer to specific scope and sequences.

EDUCATION IN THE TWENTY-FIRST CENTURY

The approach of the year 2000 caused a number of governments, development organizations, and other groups to examine the relevance of education given the social, economic, and political changes expected in the new century. Analyses of the US labor market, for example, show that over the last fifty years the number of jobs that require routine manual activities, and even routine cognitive tasks, has drastically declined, whereas jobs requiring nonroutine analytic and interpersonal tasks have increased.⁷

Over the last two decades there has been significant conceptual work and advocacy aimed at broadening the goals of education to better prepare students for the demands of the present millennium. UNESCO, for instance, which was created at the establishment of the United Nations in 1947 to support the right of education for the purpose of contributing to peace, published a milestone document in 1972. The Faure Report, also known as *Learning to Be*, argued for the necessity of lifelong education to develop capacities for effective functioning and participation in society, and for a society committed to supporting lifelong learning. In the last decade of the twentieth century, UNESCO commissioned Jacques Delors, former president of the European Commission, to head the preparation of a report outlining a framework for education in the twenty-first century.⁸ The Delors Report, titled *Learning: The Treasure Within*, was the result of a major global consultation that took place over several years in the 1990s, and argued that the four pillars of education should be to learn to know, to do, to be, and to live together.⁹

At the start of the twenty-first century, the Organization for Economic Cooperation and Development (OECD) undertook two related initiatives. One was an expert consultation on key competencies necessary for functioning in OECD member states—the Definition and Selection of

Competencies (DeSeCo) program.¹⁰ The second initiative was a periodic exercise assessing the knowledge and skills of fifteen-year-olds in the areas of literacy, math, and sciences—the Program for International Student Assessment (PISA).

Other supranational efforts to redefine the competencies that schools should develop in the twenty-first century include the Assessment and Teaching of 21st Century Skills (ATC21S), sponsored by major technology companies Cisco, Intel, and Microsoft, an initiative focused on developing new assessment systems aligned with twenty-first-century skills; and enGauge, a framework of literacy in the digital age published in 2003 by the North Central Regional Educational Laboratory and the Metiri Group, an education consulting group. The enGauge report describes how technology is transforming work, and argues that it should also transform education by providing opportunities for students to develop technology literacy. The report outlines four broad twenty-first-century competencies, each encompassing multiple specific domains:¹¹

Digital literacy

- Basic, scientific, economic, and technological literacies
- Visual and information literacies
- Multicultural literacy and global awareness

Inventive thinking

- Adaptability, managing complexity, and self-direction
- Curiosity, creativity, and risk taking
- Higher order thinking and sound reasoning

Effective communication

- Teaming, collaboration, and interpersonal skills
- Personal, social, and civic responsibility
- Interactive communication

High productivity

- Prioritizing, planning, and managing for results
- Effective use of real-world tools
- Ability to produce relevant, high-quality products

More recently, a unit of the World Economic Forum produced a report examining skill gaps in various countries. They synthesized various literatures on twenty-first-century skills as follows:¹²

Foundational literacies

- Literacy
- Numeracy
- Scientific literacy
- ICT literacy
- Financial literacy
- Cultural and Civic Literacy

Competencies

- Critical thinking, problem solving
- Creativity
- Communication
- Collaboration

Character qualities

- Curiosity
- Initiative
- Persistence
- Adaptability
- Leadership
- Social and cultural awareness

In many of these documents, the competencies that were included in the list of “twenty-first-century skills” were in part determined by how framers perceived the “twenty-first century” and the major challenges and opportunities they saw associated with it. For example, the enGauge framework included the following “real-life” examples they saw taking place in the future:

- *The Workplace:* Farmers are checking soil moisture from their hand-held computers, and factory workers are guiding robots.
- *Education:* Teachers are serving as facilitators, exploring with their students the vast world of ideas and information.

- *Health Care*: More efficient systems are linking together county, state, and federal facilities, accelerating the study, diagnosis, and treatment of diseases through networked applications and medical databases.
- *Public Safety*: Officials are gaining access to instantaneous emergency-response information and interoperation of critical equipment regardless of jurisdiction.
- *Government*: Free and universal access to information is increasing for all citizens, whose informed opinions are in turn shaping policy and fostering greater global democracy.
- *Ethics*: Ethical issues are no longer just about right and wrong but also about informed choices between two rights—such as doing all we can to save lives and allowing people to die with dignity.¹³

These “goals for the twenty-first century” are also bound by the particular emphasis or the agendas of the organizations sponsoring them. For example, the recent report of the World Economic Forum referenced above identified competencies based on expectations for work to meet industry demands. The Program of International Student Assessment, developed by the OECD, also used normative criteria drawn from an analysis of life and work demands to define competencies. Literacy in PISA, for example, is understood as the level of literacy necessary “to function in a knowledge-based economy and in a democratic society.” Such normative criteria are helpful as benchmarks against which to examine the intended goals in national education systems. For example, the distribution of levels of student achievement in student assessments based on a national curriculum is typically very different from the distribution of those levels in the PISA studies. One interpretation of such difference is that the national curricula have different “ambitions” than those reflected in PISA. The testing of problem-solving competencies in PISA is in part a response to the outcry that the assessment instrument needs to be more complex.

However, as educational leaders have focused on developing more complex learning goals—increasing in cognitive complexity and in multidimensionality that includes cognitive as well as social and emotional

complexity—one could expect that the development of curriculum should draw not only on identification of demands for work and life, but also on a scientifically based understanding of how individuals develop over time in those multiple dimensions, and about the nature of the interrelationships in the development of these various dimensions. The great contribution of Swiss educator Henry Pestalozzi in the 1800s was precisely to point out that children were not little adults, but that development proceeded in “stages” and that teaching could be most effective if it were adapted to the particular stage of the learner, and hence that children should be taught differently than adults.¹⁴ This insight was perfected by Swiss psychologist Jean Piaget, whose theory of cognitive development was based on documenting the features of the type of cognitive processing that characterized different stages, and the nature of progression from one stage to another. Piaget’s theory caused a major paradigm shift in psychology, unleashing the cognitive revolution. The developments emerging from this revolution, most notably in the last three decades, were consequential for the design of curriculum. Howard Gardner, for example, a major contributor to cognitive psychology, in his challenge to a unified theory of intelligence with a multidimensional view of human development, sparked a series of educational developments toward greater personalization and differentiation of instruction in ways that helped cultivate different forms of intelligence, and not just one.¹⁵

In spite of the obvious need for a theoretical underpinning to the design of curriculum, most conversations about “twenty-first-century education” to date have failed to draw a connection between the proposed twenty-first-century competencies and any psychological theories of how those competencies are developed, in particular in relationship to one another, as a unified developmental process. A recent effort in the direction of bridging this gap is a report of the National Research Council in the United States, an organization established in its original form by President Abraham Lincoln to help inform issues of public concern with scientific evidence. The National Research Council convened an expert group led by Margaret Hilton and James Pellegrino to produce a report on twenty-first-century skills. Titled *Education for Life and Work: Developing*

Transferable Knowledge and Skills in the 21st Century, this report synthesized psychological and social science research evidence on skills that have demonstrated short- or long-term consequences for individuals.¹⁶ The report draws on other literature to identify those competencies, and then synthesizes psychological evidence on what is known about how they develop and about their outcomes for individuals. The report summarizes those skills in the following framework:

1. Cognitive Competencies

1.1 *Cognitive Processes and Strategies*

Critical thinking; problem solving; analysis; reasoning and argumentation; interpretation; decision making; adaptive learning; executive function

1.2 *Knowledge*

Information literacy, including research using evidence and recognizing bias in sources; information and communication technology literacy; oral and written communication; active listening

1.3 *Creativity*

Creativity and innovation

2. Intrapersonal Competencies

2.1 *Intellectual Openness*

Flexibility; adaptability; artistic and cultural appreciation; personal and social responsibility; cultural awareness and competence; appreciation for diversity; adaptability; continuous learning; intellectual interest and curiosity

2.2 *Work Ethic/Conscientiousness*

Initiative; self-direction; responsibility; perseverance; grit; productivity; type 1 self-regulation (metacognitive skills, including forethought, performance, and self-reflection); professionalism/ethics; integrity; citizenship; career orientation

2.3 *Positive Core Self-Evaluation*

Type 2 self-regulation (self-monitoring, self-evaluation, self-reinforcement); physical and psychological health

3. **Interpersonal Competencies**

3.1 *Teamwork and Collaboration*

Communication; collaboration; teamwork; cooperation; coordination; interpersonal skills; empathy/perspective taking; trust; service orientation; conflict resolution; negotiation

3.2 *Leadership*

Leadership; responsibility; assertive communication; self-presentation; social influence with others

Because it is the most systematic and comprehensive review of scientifically based research on twenty-first-century skills, we draw on this NRC taxonomy in this book, and use this categorization to examine national curricular frameworks in the various countries we study. In some ways, these competencies identified as being necessary for the twenty-first century—for example, critical analysis, innovation, creativity, scientific thinking, self-knowledge and self-management, and the interpersonal, social, and perspective-taking skills to work in teams—are not new, and perhaps were needed as early as our primitive ancestors first devised ways to live and work together. However, what has been identified as being unique to our times is the fact that these skills are necessary not just for the elite few but are for everyone. Indeed, these competencies are increasingly important not just for individual and national economic well-being but also for promoting vibrant civic spheres, solving pressing issues, and nurturing effective collaborative organizations—all necessary in the turbulent times of the new century.

One reason to engage in the systematic examination of the intended goals for education is that over the last several decades, many nations around the world have embraced educational strategies that include the assessment of student knowledge and skills. Those include assessments of

student knowledge based on national curricula, as well as participation in comparative studies of assessment. Measurement of what students know and of what they learn in school is helpful, but unless what is measured aligns with what schools are trying to teach, and unless those results are interpreted in the context of the goals schools are trying to achieve, measurement can distort those goals. This unintended detrimental effect of assessment is reflected in the expression “what gets measured is what gets taught.” As assessment results play a greater role in the national discussions about education, it is especially important that conversations be framed in terms of what education goals are driving schools. Test results should not drive goals, nor should they substitute for them.

Educational opportunity is created when students and teachers engage in purposeful learning activities that help students develop in various ways. This requires clear goals, the skills to translate those goals into sound curriculum and pedagogy, and the leadership of teachers and school administrators to focus their work in supporting the creation of those opportunities. In a nutshell, educational opportunity requires an effective system to support learning, including supportive organizations, resources, and sound policies.

THE GLOBAL EDUCATION INNOVATION INITIATIVE AND LEARNING IN THE TWENTY-FIRST CENTURY

In this context, we notice two important gaps in how education systems create opportunities for students to learn what they need to be self-authoring in the twenty-first century. One is that teacher education programs and education leadership preparation programs in many of the world’s developed and emerging economies are not only based on theories of the past, but are delivered in outmoded ways such as rote classroom instruction. The other is that we lack a unified theory of how the various twenty-first-century competencies relate to one another to inform the design of curriculum and pedagogy to promote their development.

We convened the Global Education Innovation Initiative at the Harvard Graduate School of Education, with partners from around the world,

because we believe that the ability of leadership to support the development of students' twenty-first-century competencies is one of the key levers to improving student learning. We made this effort, believing that the innovation gap in education leadership preparation is dire, and that a knowledge gap hinders educational practice and policy worldwide, as no trusted source exists of which leadership approaches are most effective. We believe we risk a huge lost opportunity to build leadership for the education systems that serve the majority of the world's children, if we do not marshal the resources at our disposal to research and practice effective education suited for the challenges and opportunities of this century. In particular, we are seeking answers to the question of what it takes to lead schools and education systems to lasting improvement in terms of helping students develop the competencies they will need in the latter half of the twenty-first century.

The discussion about how to prepare students for citizenship and economic participation in the new century must address the need to acquire key competencies and to learn skills beyond the basics, such as digital, civic, self-knowledge, and interpersonal competencies. While discussions about educational priorities and policies are not new, there has been little research into the mechanisms by which these objectives are enacted into policy and prioritized to help develop and support relevant competencies in students; we know even less about how these processes and skills may be influenced by social, political, and other system contexts.

In this book we wanted to examine how instructional priorities are represented in national curricular frameworks, and how these frameworks reflect the competencies that students need to thrive in the twenty-first century, as identified by research. In the following chapters, researchers and practitioners from Chile, China, India, Mexico, Singapore, and the United States discuss these questions and the findings from their respective studies in this area. This book seeks to address the knowledge gaps described above by adding to the body of international comparative research on educational policy and curriculum studies.

We chose the countries for this study in part because four of them (China, India, Mexico, and the United States) have large education systems enrolling large student populations. Together, the education systems

in these four countries include about 40 percent of the total world student population. In addition, we selected these countries, including Chile and Singapore, because we know that they have each made education an important development priority over a sustained period of time. In selecting countries in this way we thought we would be able to learn about how nations where education is a social priority frame their educational goals, and to identify what they do to help educators translate those goals into actual opportunities to learn. The countries include countries at various levels of economic development, in various regions of the world, reflecting diverse educational traditions. By necessity, we included countries in which we were able to identify institutions interested in joining the research consortium that forms the Global Education Innovation Initiative. Like the selection of countries in any cross-national study, this one reflects intentionality and practicality, design and opportunity. Not all countries we had hoped to include in the study are included, nor has our intent been to have a group of countries that is representative of the world.

Table I.1 summarizes a few selected indicators for the countries included in the study. The countries clearly vary in terms of the number of students served but are similar in that they reflect relatively high levels of access to primary and secondary education. In addition, there are obvious differences in level of economic development, as reflected in income per capita.

Table I.1 shows that there are important differences among the countries we are comparing, which should be kept in mind when we analyze the results of the study. One noticeable difference is the size of the education system. The relatively small system of Singapore, for instance, and the very high levels of per capita income, represent a rather different context than those experienced by the significantly larger system of India, with much lower levels of per capita income. Other differences among these countries, which will not be part of our analysis in this book, concern the expectations adults have for children, schools, and the ways in which they support school learning and education more generally.

Using data from the 2015 World Values Survey, a cross-national study of values, Table I.2 shows how the countries included in this study vary

TABLE I.1 Student enrollment numbers* in Chile, China, India, Mexico, Singapore, and United States, relative to the world

	TOTAL STUDENTS ENROLLED				PERCENTAGE OF STUDENTS ENROLLED				GNP Per Capita (PPP)
	Primary		Secondary		Net Enrollment		Gross Enrollment**		
			Primary	Secondary	Primary	Secondary	Primary	Secondary	
Chile	1,472,348	1,571,374	92%	87%	100%	99%		21,942	
China	98,870,818	94,324,415	n.a.	n.a.	126%	92%		11,907	
India	139,869,904	119,148,200	93%	n.a.	114%	71%		3,813	
Mexico	14,837,204	12,467,278	96%	68%	105%	88%		16,370	
Singapore	294,602	232,003	n.a.	n.a.	n.a.	n.a.		78,763	
United States	24,417,653	24,095,459	91%	87%	98%	94%		53,042	
Sum	279,762,529	251,838,729							
World	712,994,323	567,831,226							
Percentage	39%	44%							

*Figures are for 2013 or nearest available year.

**Gross enrollment counts students of all ages, including students whose age exceeds the official age group. Thus, if there is late enrollment, early enrollment, or repetition, the total enrollment can exceed the population of the age group that officially corresponds to the level of education, leading to ratios greater than 100 percent. (<https://data-helpdesk.worldbank.org/knowledgebase/articles/114955-how-can-gross-school-enrollment-ratios-be-over-100>)

Source: <http://data.worldbank.org/>

TABLE I.2 Important child qualities (percentage of respondents who mentioned each quality)

	Chile	China	India	Mexico	Singapore	United States
Independence	49	70	63	39	72	54
Hard work	31	75	63	38	61	66
Feeling of responsibility	77	66	66	75	70	65
Imagination	22	17	51	24	19	31
Tolerance and respect for other people	82	52	62	78	54	72
Thrift, saving money and things	36	51	58	35	47	32
Determination, perseverance	54	26	65	27	44	36
Religious faith	28	1	61	35	26	43
Unselfishness	43	29	55	43	26	33
Obedience	46	8	57	55	38	28
Self-expression	36	11	40	19	14	18

Calculated using data from World Values Survey (2010–2014).

in terms of expectations that people have for the education of children. Adults were asked to identify important qualities that should be cultivated among children, and Table I.2 shows the percentage of adults who mentioned each of the qualities listed. In China and Singapore, for example, a much greater percentage of the population values independence, followed by India and the United States. That percentage is lower in Chile and Mexico. Hard work from children is highly valued in China, India, Singapore, and the United States, but less so in Chile and Mexico. Responsibility is highly valued in all countries. Imagination is not valued by most people, but it is most highly valued in India, and least valued in China, Singapore, Chile, and Mexico. Tolerance and respect for others is valued by most people, but less so in China, India, and Singapore. Self-expression is not highly valued by most people, but more so in India, and significantly less so in China, Singapore, Mexico, and the United States.

The qualities that adults consider important in children are reflected in the views parents, as well as teachers and school administrators, have

about what should be taught in schools. A recent survey in the United States of parental views on the qualities that are most important to teach children underscores responsibility and hard work, but assigns relatively less priority to curiosity, obedience, tolerance, persistence, empathy, or creativity.¹⁷ Consistent with these findings, when asked what skills are most important for children to get ahead in the world today, Americans emphasize communication (90%), reading (86%), math (79%), teamwork (77%), writing (75%), and logic (74%), while placing lesser emphasis on science (58%). Significantly fewer people emphasize athletics (25%), music (24%), or art (23%).¹⁸

These differences in parental expectations are likely to influence the way in which families engage with schools, their degree of satisfaction with and support for schools and schoolwork, as well as the additional activities they arrange for their children to supplement what schools do in cultivating qualities parents consider important. A survey examining the perceptions of the pressure parents place on students, conducted in twenty-one countries, shows important differences. Americans are the most likely to say that parents do not put enough pressure on their children (64%), whereas Chinese are the most likely to say that parents put too much pressure on them (68%). In Mexico 42 percent of those surveyed think that parents don't put enough pressure on students, with 20 percent saying they put too much, while in India the numbers are 24 percent and 44 percent respectively.¹⁹ These cultural differences in parental expectations are likely to influence the curriculum priorities in various countries.

RESEARCH METHODS: THE CASE FOR LEARNING FROM COMPARISONS

The notion that we might learn valuable knowledge from comparing education systems is quite old. Before public education systems existed, travelers would transport stories of how people were educated from one country to another. The modern aspiration to educate all children created a new urgency for this kind of exchange of ideas, and it was in the period following the French Revolution that Marc-Antoine Jullien proposed the systematic

study and exchange of comparative education practices. Jullien devoted some time to studying the educational model developed by Pestalozzi in Switzerland. Aware that other educators had developed alternative education methodologies, he led the systematic exchange of documentation and discussion over those practices. He also proposed a systematic survey of how education was organized in various localities, identifying who was being educated, in what kind of institutions, who was doing the teaching, and what was being taught. It was Jullien's hope that the examination of such comparative evidence would help those making decisions about how to expand education.

Many public education systems were assisted in their creation by this kind of comparative knowledge base. In the United States, for example, John Quincy Adams, the sixth president of the United States, while serving as Minister to Prussia, devoted some time to studying the educational institutions of that region, which he discussed in a travel book written for his contemporaries in the new country, *Letters on Silesia*. Later, Horace Mann, the proponent of public education in Massachusetts, also devoted time to study the public education system in Prussia and France, as a way to inform debate in the United States about how to build a universal system of education.

In South America, Simón Bolívar, one of the leaders of the independence movement, visited Joseph Lancaster in London to learn about the educational approach Lancaster had developed to educate large groups of children, at low cost, with a limited number of highly skilled teachers aided by student-monitors. Bolívar persuaded Lancaster to travel to Caracas in the early years following independence, where he helped establish the first teacher training school. The Society for Promoting the Lancasterian System for the Education of the Poor engaged in the active dissemination of knowledge about how to organize the Lancasterian method of instruction across several countries.

The field of comparative education was formally established in the United States with the founding of Teachers College at Columbia University, in the early twentieth century. It was there that the International Institute (now known as the International and Comparative Education

Program)—the first center for comparative studies in education—was created in hopes that the knowledge developed in this center would help inform how to prepare teachers at a time when educational expansion would provide opportunity to children from social backgrounds that had previously been denied it. John Dewey was one of the best-known American educators associated with this center, and through his travels as well as his teaching of students from many different countries, Dewey actively engaged in the cross-national dissemination of ideas about educational purposes and practices. Dewey's work is of particular significance to this book because his idea that what we teach is how we teach, and his writings on the nature of education for democratic life, underscore the central importance of the purposes of education and how those purposes are intertwined with pedagogical practices and curriculum.

In recent years, the most public discussions based on international comparisons draw on the results of international studies of educational achievement, either those conducted by the International Association for Educational Achievement, such as the Progress in International Reading Literacy Study (PIRLS) or the Trends in International Mathematics and Science Study (TIMSS), or more recently the PISA studies conducted by the OECD. These studies have been able to draw on a wide range of variation of educational outcomes and practices, and to learn from the world as a laboratory. They represent an extension, to the cross-national level, of the school effectiveness studies that examine what results are achieved by students—typically in the domains of literacy, mathematics, and science, with a few studies focusing on civics—and then relating those results to teaching practices, characteristics of teachers and schools, and structural characteristics of education systems, such as the degree of school autonomy. The knowledge generated by these studies is immensely valuable, as is the knowledge generated by school effectiveness research more generally, in helping us understand what factors are associated with variation in learning outcomes.

But these studies omit the investigation of policy intent; they are not studies of the effectiveness in implementing a particular curriculum, nor analyses of what is intended in the curriculum. Because education

is an intentional enterprise, much can be gained by an explicit investigation of the intended purposes of education, including what a curriculum is attempting to teach students and how the intended learning can be achieved. Furthermore, understanding the process of education as the result of explicit attempts to modify the goals of education—in other words, the responses of education institutions to adaptive leadership—should complement the vast knowledge that exists about ways to improve the effectiveness of schools, such as the process of sustaining innovation or technical improvement of schools. Tackling these questions is the goal of the Global Education Innovation Initiative, and of this book.

In this study, we undertook to examine policy and curriculum frameworks, as well as to interview key policy makers, in order to identify how diverse education systems have described the skills that public education systems should help students gain in the twenty-first century. We focused this study on countries that had a relatively sizable number of children, as well as on countries in which education was a clear priority on the government policy agenda, on the assumption that these two factors would create the condition for more intentional attention to the work of education institutions. In countries where a large percentage of the population is in school, it is self-evident that what schools do can have a fairly immediate impact in shaping the character of the society, in ways that schools in countries with lower percentages of students cannot. In addition, large numbers of students are associated with large numbers of teachers and institutions, making schools a very visible and important face of the state—often the largest employer in the country, often also the state institution to which most people have access. Chile and Singapore do not necessarily fit this criteria in terms of the number of students in school, but Chile is a setting in which a democratic transition placed education at the center of the government reform agenda and, in Singapore's case, there has been ongoing priority accorded to education since the nation's founding.

Major data sources for the book include the following: document analysis (as of policy documents, curricular frameworks, white papers, and official government reports); literature review of relevant research articles

and books; and interviews with policy makers, national and local educational stakeholders, and experts.

PLAN OF THE BOOK

Chapter 1, “Singapore’s Systemic Approach to Teaching and Learning Twenty-First-Century Competencies,” examines the systemic efforts that Singapore has taken to prepare students for the realities of the twenty-first-century global workplace and society. Specifically, it focuses on the key policies, initiatives, and strategies implemented across major sectors of the education system to develop students’ twenty-first-century competencies. It also highlights the close collaborations between policy makers, schools, and the National Institute of Education that help to achieve these educational initiatives and goals. The chapter ends by discussing future challenges for Singapore.

Chapter 2, “Thinking Big, Acting Small: Lessons from Twenty-First-Century Curriculum Reform in China,” explicates the policies and strategies adopted to advance contemporary education in China, including continuous experimentations and innovations to change the content and ways to deliver education. China’s curriculum to teach twenty-first-century competencies, intended and implemented, is contingent upon historical context and policy reforms implemented on a larger scope. Hence the chapter takes a dual perspective: historical and systemic. First, it reviews historical contexts that had an impact on shaping education for the twenty-first century in China; second, it examines how the concept of education for the current century has taken shape in the policy reforms and landscape of curriculum as a result of the reforms—specifically changes in the strategy, content, and ways to deliver education. The chapter concludes with five lessons of twenty-first-century curriculum reform for potential replication, namely, evidence-based, participatory policy making; provision of professional support for teaching; learning from the world; experimentation; and balancing between centralization and decentralization, emphasizing both unity and diversity.

Chapter 3, “Strong Content, Weak Tools: Twenty-First-Century Competencies in the Chilean Educational Reform,” considers the place the twenty-first-century competencies approach has occupied within Chilean primary and secondary education since these skills were incorporated into the national curricula, in the context of a broader educational reform implemented since the mid 1990s. The chapter analyzes the interplay between the relevance assigned to these new competencies, and the goals and emphases of educational policies and programs oriented to implement them in the actual educational system. The study contributes to critically discussing the priorities of the Chilean educational policies in the last two decades; also, by expanding the concept of quality education, it paves the way for further studies on the relevance of twenty-first-century competencies to both educational policies and school effectiveness research.

Chapter 4, “Curriculum Reform and Twenty-First-Century Skills in Mexico: Are Standards and Teacher Training Materials Aligned?,” analyzes how twenty-first-century skills were defined and conceptualized in the new curriculum in Mexico, and discusses the degree of alignment among standards, learning goals, and teacher training materials. In a similar trend to other countries, Mexico recently introduced in its national curriculum a definition of twenty-first-century skills. However, an open debate remains about how these skills were defined, and how this inclusion may result in changes in instructional practices and student learning.

Chapter 5, “Twenty-First-Century Competencies, the Indian National Curriculum Framework, and the History of Education in India,” looks at the evolution in the educational policies in the changed social and political scenario in recent years, including a short case study of a nongovernmental organization that initiated practices which influenced the current curricular goals. The chapter summarizes the history of education in India and the richness that has evolved, and also examines the links between the twenty-first-century competencies and the existing curricular aspirations, showing how these skills do or do not appear in the existing framework.

Chapter 6, “Mapping the Landscape of Teaching and Learning for the Twenty-First Century in Massachusetts in the Context of US Educational Reform,” examines the key policies and strategies implemented to develop

students' twenty-first-century competencies, including an analysis of the Common Core standards as they were adopted in Massachusetts, vis-à-vis a summary report commissioned by the National Research Council about twenty-first-century competencies. The chapter ends by discussing current and future opportunities and challenges.

Finally, "Theorizing Twenty-First-Century Education," the conclusion, summarizes how curricular frameworks have changed in the countries examined in the study and how those changes incorporate cognitive, social, and intrapersonal domains of competency. The chapter engages with the paradox that even as the goals for education are expanding, support for schools and educators is dwindling. This chapter proposes that at the heart of this paradox lies the failure of the strategies followed to implement twenty-first-century education to be based on a sound theory.

In sum, with this book, we want to engage stakeholders in education in a global conversation about the purposes of education for the current century, which, in our mind, includes preparing students with the competencies, the agency, and the desire to address the larger issues that face all of us.

The need for such an education was most recently echoed in a report of a commission of the US Department of Education:

A world-class education consists not solely of mastery of core subjects, but also of training in critical thinking and problem-solving, as well as in 21st-century concerns like global awareness and financial literacy. Such high levels of education are key to self-reliance and economic security in a world where education matters more than ever for the success of societies as well as individuals.

But American schools must do more than ensure our future economic prosperity; they must foster the nation's civic culture and sense of common purpose, and create the unified nation that *e pluribus unum* celebrates. So much depends on fulfilling this mission: the shared ideals that enable our governmental system to hold together even in the face of fractious political disagreements; the strength of our diversity; the domestic tranquility that our Constitution

promises; and the ability to maintain the influence—as example and power—that America has long projected in the world. We neglect those expectations at our peril.²⁰

Understanding how leaders of national education systems around the world conceive of the goals of education in the twenty-first century is an essential step to understanding whether the relatively recent global goal of educating all children can indeed provide all students the necessary competencies to shape their future.