

# TEACHING AND LEARNING FOR THE TWENTY-FIRST CENTURY

EDUCATIONAL GOALS,

POLICIES, AND CURRICULA

FROM SIX NATIONS

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CHILE

CHINA

INDIA

MEXICO

SINGAPORE

UNITED STATES

## Executive Summary



Global Education Innovation Initiative

## About the Global Education Innovation Initiative

The Global Education Innovation Initiative at the Harvard Graduate School of Education is a cross-national research collaborative established in 2013 with collaborators in Chile, China, India, Mexico, and Singapore. Our goal is to understand in what ways K-12 education institutions are equipping youth with the competencies necessary for life, work and civic participation in the 21<sup>st</sup> century.

Recognizing the important achievements of the Global Education Movement started with the inclusion of the right to education in the UN Universal Declaration of Human Rights in 1947 in expanding access to basic education to the majority of the world's children, and the ongoing efforts of governments around the world to enhance the quality of education, the initiative addresses the need for enhancing the relevance of education, by supporting the capacities of teachers and other educators to construct opportunities to learn that help students develop a full range of cognitive, social and emotional competencies, that allow them to live fulfilling lives and to participate economically, civically and to contribute to the achievement of the Sustainable Development Goals. Our efforts seek to support schools in developing the full range of human capabilities and consequent expansion of agency and freedom, with particular emphasis in the children of the poor and marginalized populations. We see these efforts as aligned with UNESCO's led global consultation resulting in the landmark report *Learning, The Treasure Within*, with the movement of 21<sup>st</sup> century education, and with the movement of socio-emotional learning in schools.

**Our work is structured in three interdependent pillars:**

### CONVENE

To articulate a global network of institutions committed to the study and practice of 21<sup>st</sup> century education.

We seek the development of communities of leaders of education systems and allied institutions supporting the improvement of educational relevance aligned with the goals of the initiative. This global network will be engaged in activities that support learning of the participants in ways that lead to greater institutional and collective impact of the participants.

### RESEARCH

To engage in a systematic scientific study of 21<sup>st</sup> century education.

Based on the premise that there are already ongoing efforts to increase the relevancy of education around the world, the aim of this pillar is to identify, study, and disseminate this knowledge in ways that it can support organizational learning and increase the effectiveness of the global network addressed in the activities in the first pillar, and of other institutions and actors interested in the advancement of 21<sup>st</sup> century education.

### EDUCATE

To develop interventions to support the transformation of school systems at scale towards greater relevance in offering opportunities for students to learn 21<sup>st</sup> century competencies.

These activities involve the development of programs, in partnership with institutions working to support the improvement of educational opportunity.

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*We would also like to thank our partner institutions who were unstinting in supporting us with their time, expertise, and enthusiasm for this collaborative work: Centro de Investigación Avanzada en Educación (CIAE) in Chile, the National Institute of Education Sciences (NIES) in China, the Piramal Foundation in India, Centro de Investigación y Docencia Económicas (CIDE) in Mexico, and the National Institute of Education (NIE) at the Nanyang Technological University in Singapore.*

# TEACHING AND LEARNING FOR THE TWENTY-FIRST CENTURY

Education Goals, Policies, and Curricula from Six Nations

## Executive Summary

Discussions about how to prepare students for civic and economic participation in the 21<sup>st</sup> century highlight the need for them to acquire key competencies beyond the basics, such as digital, civic, self-knowledge and interpersonal competencies, among others. In this context, how are instructional priorities represented in national curricular frameworks? How do these frameworks reflect the competencies that students need to thrive in the 21<sup>st</sup> century, as identified by research?

In this book, researchers from Chile, China, India, Mexico, Singapore, and the United States discuss these questions and present findings from their respective studies about how national curricular frameworks and policies define, support, and encourage the competencies that students need to thrive in the 21<sup>st</sup> century.

## Scholarly Significance

While discussions about educational priorities and policies are not new, there exists little research that looks at the mechanisms by which these purposes of education are made 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 contexts. This book seeks to address this knowledge gap by adding to the body of international comparative research on educational policy and curriculum studies.

The book aims to foster discussions on how national education policies support students to prepare for life, work and civic participation in the 21<sup>st</sup> century. It examines how educational goals, perceived challenges, and opportunities reflect historical, political, and cultural contexts of education systems varying in size, governance, and demographics, among others. Discussions in the conclusion about shared challenges and different solutions will spark ideas for next steps in international comparative research and in the practice of education in the 21<sup>st</sup> century.

The book aims to foster discussions on **how national education policies support students** to prepare for life, work and civic participation in the 21st century.

**Table: Student enrollment <sup>1</sup> in studied countries and the world<sup>2</sup>**

Country	Total Students Enrolled		Percentage of Students Enrolled (Gross)		GNP Per Capita (PPP)
	Primary	Secondary	Primary	Secondary	
Chile	1,472,348	1,571,374	100%	99%	\$21,942
China	98,870,818	94,324,415	126%	92%	\$11,907
India	139,869,904	119,148,200	114%	71%	\$3,813
Mexico	14,837,204	12,467,278	105%	88%	\$16,370
Singapore	294,602	232,003	n.a.	n.a.	\$78,763
United States	24,417,653	24,095,459	98%	94%	\$53,042
<b>Sum</b>	<b>279,762,529</b>	<b>251,838,729</b>			
<b>World</b>	<b>712,994,323</b>	<b>567,831,226</b>			
<b>Percentage</b>	<b>39%</b>	<b>44%</b>			

*Figures are for 2013 or nearest available year.*

## Overview of the Chapters

This book is the result of a rigorous multi-country collaborative process. In addition to regular correspondence, the contributors to this book met in person every 3 to 6 months, between December 2013 and June 2015, to design the study, gather and analyze the data, and discuss the findings. We based our research on the National Research Council (NRC)’s recent report, *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*.<sup>3</sup> As part of our research process, we interviewed educational stakeholders and analyzed national curriculum frameworks against the three domains of 21<sup>st</sup> century competencies outlined in the NRC report: cognitive, interpersonal, and intrapersonal.

In the book, we use the introduction to frame the study and the conclusion to draw cross-country lessons from the national studies. What follows is a brief overview of the chapters:

**Chapter 1**, “Singapore’s Systemic Approach to Teaching and Learning Twenty-First-Century Competencies” by Oon-Seng Tan and Ee-Ling Low from the National Institute of Education in Singapore, examines the systemic efforts that Singapore has taken to prepare students for the realities of the 21<sup>st</sup> century global workplace and society.

**Chapter 2**, “Thinking Big, Acting Small Lessons from Twenty-First-Century Curriculum Reform in China” by Yan Wang from the National Institute of Education Sciences in China, explicates the policies and strategies adopted to advance 21<sup>st</sup> century education in China, including continuous experimentations and

innovations to change the content and ways to deliver education.

**Chapter 3**, “Strong Content, Weak Tools: Twenty-First-Century Competencies in Chilean Educational Reform,” by Cristián Bellei and Liliana Morawietz from the Centro de Investigación Avanzada en Educación at the University of Chile, looks into the place the 21<sup>st</sup> century competencies approach occupies within Chilean primary and secondary education since these skills were incorporated into the national curricula, in the context of a broader educational reform implemented during the mid-1990s.

**Chapter 4**, “Curriculum Reform and Twenty-First-Century Skills in Mexico: Are Standards and Teacher Training Materials Aligned?” by Sergio Cárdenas from Centro de Investigación y Docencia Económicas in Mexico, analyzes how 21<sup>st</sup> century skills were defined and conceptualized in the new curriculum in Mexico, and discusses the degree of alignment between standards, learning goals, and teacher training materials.

**Chapter 5**, “Twenty-First-Century Competencies, the Indian National Curriculum Framework, and the History of Education in India” by Aditya Natraj, Monal Jayaram, Jahnvi Contractor, and Payal Agrawal from the Piramal Foundation in India, looks at the stages of evolution in the educational policies in the changed social and political scenario in recent years, including a series of short case studies of a non-governmental organization that initiated practices which influenced the current curricular goals.

**Chapter 6**, “Mapping the Landscape of Teaching and Learning for the Twenty-First-Century in Massachusetts in the Context of US Educational Reform,” by Fernando M. Reimers and Connie K. Chung from the Harvard Graduate School of Education in the United States, examines the key policies and strategies implemented to develop students’ 21<sup>st</sup> 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 21<sup>st</sup> century competencies.

# Findings

The study draws three broad conclusions:

**1. The six countries studied – Chile, China, India, Mexico, Singapore, and the United States – all recognized that educational goals for all students needed to be broadened.**

**a.** They designed new curricular frameworks in response to the perceptions that the demands of the labor market were changing and that civic participation would require greater sophistication and responsibility.

**b.** Governments in each country led or contributed to the development of these curriculum frameworks, often in collaboration with civil society groups and drawing on the work of supranational organizations.

**2. In most of the countries studied, cognitive goals continue to dominate and interpersonal and intrapersonal competencies receive less emphasis in the curriculum.**

**a.** Each country emphasizes different competencies. For example, Singapore stands out with its strong emphasis on values-based education. Chile and Mexico stand out with their focus on democratic citizenship education. India's curriculum framework is arguably the most holistic and broadest in terms of its goals. The United States and China emphasize higher order cognitive skills in their curriculum standards.

**b.** Underpinning these various emphases, however, there are more commonalities than are apparent on the surface. Countries may use different language when addressing similar competencies. For instance, citizenship education in Chile and in Mexico invokes many of the same interpersonal and intrapersonal competencies that are reflected in Singapore's values-based education or in India's emphasis on global citizenship and education for peace.

**3. While the six countries had much in common in terms of the goals of their education reform, their approaches to implementation differed significantly, and implementation of these broader curriculum frameworks remains a challenge.**

**a.** Implementation plans included the development of new textbooks for system-wide use, the organization of new teacher education programs, the establishment of partnerships with businesses and

NGOs, and the identification of schools for pilot implementations, among many others.

**b.** The varying degrees of centralization and decentralization in countries shaped their experiences of policy implementation. In Singapore, the country's relatively small size and the strong partnerships between the Ministry of Education, the National Institute of Education (the national teacher training institute), and the schools, supported alignment in implementation. China, with its strong and centralized education ministry, also had a rather straightforward, sequential rollout of its curricular reforms. By contrast, in Chile's relatively small but decentralized education system, the Ministry of Education's implementation efforts were hampered by relatively limited authority over schools. In India, Mexico, and the United States, too, coherence was harder to achieve.

## cognitive goals continue to dominate

**c.** The countries also differed in terms of the managerial theories that influenced their approaches. While some countries emphasized the measurement of student learning outcomes and the use of incentives to hold teachers and administrators accountable for student performance (carrots and sticks) others emphasized the development of skills and capacity among teachers and adults (professionalism). This dichotomy does not mean that education systems either tested students or provided professional development to teachers; all did a mix of both, but countries varied in the fundamental underlying approach to improvement. This distinction is most visible in the contrast between the United States, which emphasized accountability, and Singapore, which emphasized the development of professionalism.

**d.** In several countries, 21<sup>st</sup> century education strategies conflicted with those strategies oriented towards other educational goals. In Chile, for example, accountability initiatives, particularly assessments, focused on different skills than those highlighted in the new curriculum. There was no clear strategy for how to prioritize each of these policy objectives. In Chile, Mexico, and the United States, there were also disconnects between teacher preparation and the goals of the new curricula, while in Singapore teacher preparation was much more aligned to the new curriculum.



# Challenges and Recommendations

There are bright spots of teaching and learning for the 21<sup>st</sup> century in all of these countries, and the study of programs that are doing well in this area will compose our forthcoming second book in this series.

However, the implementation of 21<sup>st</sup> century education remains a work in progress in most cases, at least at scale and in ways that benefit all students. The goals countries have set are important to reform, but they are not self-executing. While each country faces unique challenges, we outline below five challenges and five recommendations we drew from studying all six countries, grouped into the three pillars of the Global Education Innovation Initiative: Convene, Research, and Educate.

## CONVENE

**Challenge #1: The need to promote public understanding about the content and competencies necessary for the 21<sup>st</sup> century.**

**Recommendation #1: Through convenings of education stakeholders, including funders, policymakers, researchers, practitioners, parents and the general public, promote more robust discussions about the goals and purposes of education and the anticipated needs, challenges, and opportunities of the 21<sup>st</sup> century and beyond.**

Such an increased public understanding can also strengthen the design and implementation of 21<sup>st</sup> century education. Our colleagues in Mexico found that such an understanding was lacking among education stakeholders, for example. In countries such as India and Singapore, where such discussions were facilitated, the outlined competencies are more comprehensive.

## RESEARCH

**Challenge #2: The need for an explicit systems theory about how to produce effective system-wide changes oriented to the broader goals of 21<sup>st</sup> century learning.**

**Recommendation #2: Conduct research that can support the development of a systems-based approach to teaching and learning that can impart competencies relevant to life in the 21<sup>st</sup> century.**

The weaknesses in implementation in many of the countries we studied can be seen as resulting from a lack of a systems-based approach to teaching and learning. While countries may set ambitious goals, implementation often lags behind, and practice, policy, and preparation of teachers and organizations are rarely coordinated to support the implementation of these goals.

Thus, there is a need for research that can support the development of a relevant systems theory. For example, research about existing systems that work and about how improvement science<sup>4</sup> and Networked Improvement Communities<sup>5</sup> can accelerate learning in schools, may address this challenge. Such a theory that would address how the interplay of a wide range of factors in the education system, from assessment to communication between schools and communities, could help the undertaking of implementing broader, more ambitious education goals that are necessary for the 21<sup>st</sup> century.

**Challenge #3: The need for an integrated developmental theory to guide 21<sup>st</sup> century education.**

**Recommendation #3: Develop an integrated theory of 21<sup>st</sup> century competency development that can strengthen the design of learning and teaching experiences.**

The lack of such a theory poses a particular challenge with regard to developing intrapersonal and interpersonal competencies, which are newer curricular foci. While there is significant research on the development of individual traits, this is not sufficient for 21<sup>st</sup> century education's challenge of developing a range of traits simultaneously and in a manner that encourages students to make meaning of their educational experiences and see schools as relevant to their lives.

There also a need to further develop theories of how adults learn the competencies that support a 21<sup>st</sup> century pedagogy and collaborate to produce a coherent and integrated set of educational experiences for students across subjects and grades.

**Challenge #4: The need to find new ways to organize educational systems and schools that achieve a fine balance between the need for centralization and the need for autonomy.**

**Recommendation #4: Leaders will need to pay attention to the governance structures of education, so that schools are the kind of organizations where intrinsically motivated people—students and teachers—engage in the kind of innovation, collaboration,**

**and hard work that will be necessary to teach to a more ambitious set of competencies.**

For example, setting clear standards and expectations—the expectation that the phrase “all students” means all when it comes to providing them the competencies for empowerment—are necessary. These standards need the supports that centralized efforts can provide, for example, in the form of funding, or opportunities to build capacity, or assessment of progress. But those efforts need also to be coupled with the autonomy for teachers and students that provides room for professionalism, voice, and innovation where it most matters—in the classroom and in the school—and coupled as well with openness for rich and multiple forms of collaboration between schools, communities, and other organizations of civil society.

## EDUCATE

**Challenge #5: The need to address the perceived tension between investing in and supporting effective practices aligned with the traditional literacies and supporting practices aligned with 21<sup>st</sup> century competencies, particularly in schools that perform very poorly in the traditional literacies.**

**Recommendation #5: Identify schools, programs, and practices that teach these 21<sup>st</sup> century competencies well, in a variety of contexts, to show that teaching traditional literacies and 21<sup>st</sup> century competencies are not mutually exclusive, and work to learn from, distill, and disseminate these practices and principles.**

Some stakeholders in education argue that since schools cannot even get children to learn the basics, it is better to go back to those narrower sets of basic skills, and to hold teachers accountable to them, than it is to set higher aspirations for schools.

However, in all the countries examined in this book, there are models that demonstrate 21<sup>st</sup> century teaching and learning, albeit at a small scale. Better under-

aspirations of 21<sup>st</sup>  
century education  
require **new thinking**  
and **new ways of doing**

standing these models can contribute to strengthening system-wide implementation. Thus, there is a need to highlight best practices and ways to increase teacher and organizational capacities, and find ways to not just scale but transfer them, while taking into consideration the different demands placed by different socio-economic, political, and other contexts in which schools operate.

## Conclusion

The aspirations of 21<sup>st</sup> century education require new thinking and new ways of doing, and those require everyone involved, particularly the adults working in schools and those who support them, to learn new ways. Figuring out how best to support the learning of those new ways is perhaps the single most important next step in the global movement to educate all children to build the future.

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*Executive summary prepared by Connie K. Chung and Anastasia Aguiar and designed by Jonathan Seiden.*

<sup>1</sup> <http://data.worldbank.org/>

<sup>2</sup> “Gross” enrollment includes students of all ages. In other words, it includes students whose age exceeds the official age group (e.g. repeaters). 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://datahelpdesk.worldbank.org/knowledgebase/articles/114955-how-can-gross-school-enrollment-ratios-be-over-100>)

<sup>3</sup> National Research Council. *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington, DC: The National Academies Press, 2012. doi:10.17226/13398

<sup>4</sup> <http://www.carnegiefoundation.org/our-ideas/>

<sup>5</sup> Bryk, Tony (2015). 2014 AERA Distinguished Lecture: Accelerating How We Learn to Improve. *Educational Researcher*, 44 (9), pp. 467–477.

This executive summary is based on the book, *Teaching and Learning for the Twenty-First Century: Educational Goals, Policies, and Curricular in Six Nations*, edited by Fernando M. Reimers and Connie K. Chung, and is based on the research conducted by the Global Education Innovation Initiative at the Harvard Graduate School of Education.

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# Praise for

## TEACHING AND LEARNING FOR THE TWENTY-FIRST CENTURY

Educational Goals, Policies, and Curricula from Six Nations

*“What should be the goals of education in the twenty-first century? By surveying the ways that six nations have sought to identify and develop the competencies necessary for success, this volume offers a thoughtful, grounded, and provocative response to that essential question. It serves as an indispensable resource for all those working to provide a relevant and high-quality education to children around the globe.”*

**James E. Ryan, dean and Charles William Eliot Professor,  
Harvard Graduate School of Education**

*“What Reimers and Chung have done is unparalleled: a comparative study of how education systems have approached the challenge of twenty-first-century competencies. The result will be invaluable to the global education community in thinking about how to prepare learners for a complex and ever-changing world.”*

**Gwang-Jo Kim, director, UNESCO Asia and Pacific Regional Bureau for Education**

*“If education policy makers around the world do one thing in the next twelve months, it should be to read this book! Reimers and Chung have provided a welcome dose of reality into the conversation about how to prepare our students for the challenges of the twenty-first century.”*

**Ken Kay, CEO, EdLeader21**

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