Fixing the Foundation
Teachers and Basic Education in East Asia and Pacific

Rythia Afkar, Tara Béteille, Mary E. Breeding, Toby Linden, Andrew D. Mason, Aaditya Mattoo, Tobias Pfutze, Lars M. Sondergaard, and Noah Yarrow

OVERVIEW
Fixing the Foundation
Known for their economic success and dynamism, countries in the East Asia and Pacific region must tackle an increasingly complex set of challenges to continue on a path of sustainable development. Learning from others within the region and beyond can help identify what works, what doesn’t, and why, in the search for practical solutions to these challenges. This regional flagship series presents analyses of issues relevant to the region, drawing on the global knowledge and experience of the World Bank and its partners. The series aims to inform public discussion, policy formulation, and development practitioners’ actions to turn challenges into opportunities.

TITLES IN THE SERIES

*The Innovation Imperative for Developing East Asia*

*A Resurgent East Asia: Navigating a Changing World*

*Growing Smarter: Learning and Equitable Development in East Asia and Pacific*

*Riding the Wave: An East Asian Miracle for the 21st Century*

*Live Long and Prosper: Aging in East Asia and Pacific*

*East Asia Pacific at Work: Employment, Enterprise, and Well-Being*

*Toward Gender Equality in East Asia and the Pacific: A Companion to the World Development Report*

*Putting Higher Education to Work: Skills and Research for Growth in East Asia*

All books in this series are available for free at https://openknowledge.worldbank.org/handle/10986/2147.
Contents

Foreword ....................................................................................................................... vii
Acknowledgments ....................................................................................................... ix
About the Authors ..................................................................................................... xi

Overview ..................................................................................................................... 1
  Introduction ............................................................................................................... 1
  The region’s basic learning deficit ............................................................................. 2
  Better teaching, improved learning, and higher productivity ................................... 4
  Poor teaching impedes basic learning in much of the region ..................................... 7
  Strengthening teaching for improved learning ......................................................... 11
  The political economy of reform ............................................................................. 19
  The way forward ....................................................................................................... 22

Annex O.1 Countries in East Asia and Pacific confront different policy challenges based on their circumstances .............................................................................. 23
Notes ............................................................................................................................ 24
References .................................................................................................................... 24

Figures
  O.1 In many middle-income East Asian and Pacific countries, learning poverty rates exceed the levels their incomes would predict ........................................... 2
  O.2 Poorer students in Southeast Asia have worse basic learning outcomes than wealthier students .............................................................................................. 3
  O.3 Assessment scores in Cambodia and Indonesia indicate significant COVID-19–related declines in primary grade outcomes in language and mathematics .................................................. 4
  O.4 Assessment data show that teacher quality is central to student learning ........... 5
  O.5 Education is consistently associated with higher earnings ................................ 6
  O.6 Education increases firm productivity, technology adoption, and innovation .... 6
O.7 Learning and associated skills development, not simply years of schooling, contributes to higher GDP growth. .................................................. 7
O.8 Most Lao PDR mathematics teachers and Indonesian language teachers have not mastered the curriculum they teach ....................................... 8
O.9 Many of the region’s teachers use ineffective teaching practices ..................... 9
O.10 In most Southeast Asian countries, students from the poorest households are not being taught by the most effective teachers ........................................ 10
O.11 Most of those expected to be teaching in East Asia and Pacific by 2030 have already been recruited ............................................................... 11
O.12 Teacher training programs in nine middle-income East Asian and Pacific countries do not generally employ practices linked to improved student learning .... 12
O.13 Policy to strengthen teaching for public basic education has several entry points ........ 12
O.14 Rigorous impact evaluations of in-service teacher training programs in East Asia and Pacific show that well-designed, well-implemented training can lead to better learning outcomes .................................................. 14
O.15 Effective teacher training programs in East Asia and Pacific yield positive rates of return on investment ...................................................... 15
O.16 Computer-assisted learning programs have helped improve student learning in selected East Asian economies ................................................. 16
O.17 Public spending on education (2016–19) is below 4 percent of GDP in most East Asian countries, while many Pacific Island countries spend over 6 percent .... 18
O.18 Policy makers do not (or choose not to) recognize the magnitude of their countries’ learning deficits ......................................................... 20
O.19 Informal mechanisms play an important role in teacher selection and promotions, making performance-based reform difficult in East Asia and Pacific .... 21
Since the 1970s, countries in East Asia and Pacific have served as models for countries and economies seeking rapid economic and social development. The “East Asian Miracle” was built on a combination of policies that fostered outward-oriented, labor-intensive growth while investing in basic human capital and providing sound economic governance. This development strategy delivered rapid and sustained growth, which helped move hundreds of millions of people over successive generations out of poverty and into economic security. In addition, it enabled a succession of countries in the region to progress from low-income to middle-income status.

This model, built largely on low-cost, relatively low-skilled labor, will be insufficient for countries and economies in the region to achieve upper-middle-income and then high-income status. Shifting global value chains, declining productivity growth, and rapid technological change pose new challenges to sustaining the high growth of the past 20 years. Countries will need to focus increasingly on raising labor productivity. Raising the skills levels of workers will be a critical component of that effort.

Currently, 172 million students are in primary school in middle-income East Asia and Pacific. Making sure these children receive a high-quality education is essential to ensuring they are prepared for their futures. Quality education raises people’s incomes and employability, improves their economic mobility, and enables them to escape poverty. It increases households’ resilience to shocks. Quality education—and the skills it confers—are associated with higher worker and firm productivity, faster technology adoption, and greater innovation. Furthermore, a growing body of evidence shows that greater skills are associated with higher economic growth.

Although East Asian and Pacific countries and economies have made great strides in increasing access to basic education, quality varies widely. Merely attending school is insufficient. Whether children learn or not is fundamental. At present, in 14 of the region’s 22 middle-income countries, more than half of 10-year-olds are unable to read and understand an age-appropriate reading material. Because the acquisition of advanced skills needs to be built on strong foundations, many of the region’s children will never be able to develop the higher-order skills needed to propel innovative manufacturing and modern services.
Although multiple factors influence learning, including family income, parents’ education, and child nutrition, once a child enters school, teachers have the largest impact. High-quality teaching will thus be essential to improving foundational learning and students’ skills. However, the evidence presented in this report shows that many middle-income countries in the region continue to face significant teaching challenges. Teacher assessment tests in several countries indicate that as few as 8 percent of teachers have fully mastered the subject matter they teach, classroom observation reveals that two-thirds or more of primary school teachers employ weak teaching methods, and survey data suggest that where teacher absenteeism is high, student learning suffers.

Fortunately, a growing body of evidence is available to guide policy makers in raising teaching quality to ensure that all young children acquire strong foundational skills. Drawing upon the evidence, this report sets out a roadmap for countries, both in terms of what needs to be done to support teachers and how to do it. East Asia and Pacific remains one of the fastest growing and most dynamic regions in the world. Sustaining this dynamism and enabling today’s children to enjoy better jobs and higher living standards as adults requires that they build foundational skills for lifelong learning. Following the roadmap laid out in this report will help countries in the region accelerate learning which, in turn, will help children—and societies more broadly—to fulfil their aspirations.

Manuela V. Ferro
Vice President, East Asia and Pacific
World Bank
Acknowledgments

This report is a joint product of the Office of the Chief Economist, East Asia and Pacific Region, and the Education Global Practice, East Asia and Pacific Region, of the World Bank. The team was led by Andrew D. Mason and Lars M. Sondergaard. The core authors of the report are Rythia Afkar, Tara Béteille, Mary E. Breeding, Toby Linden, Andrew D. Mason, Aaditya Mattoo, Tobias Pfutze, Lars M. Sondergaard, and Noah Yarrow.

The report was commissioned by Victoria Kwakwa, who provided the original vision for the report, and it was prepared under the overall guidance of Manuela V. Ferro, with strategic advice from Daniel Dulitzky and Cristian Aedo. Cecile Wodon, Caroline Gerd G De Roover, and Sharon Shen provided administrative, logistical, and production support.

The report draws on the following background papers commissioned for this study, which are available on request:

- Tara Béteille: “Vibrant or Stuck?”
- Mary E. Breeding: “Teacher Professional Development in East Asia and the Pacific: Evidence vs. Practice”
- Paul Cahu and Lars M. Sondergaard: “Estimating Interim Learning Poverty for Pacific Island Countries”
- Arthur Mendes, Steven Pennings, and Federico Fiuratti: “The Long-Term Growth Effects of Improved Education Quality in Middle-Income East Asian and Pacific Countries”
- Nobuyuki Tanaka and Lars M. Sondergaard: “Analysis of Teacher Stock versus Flow in Primary Education in East Asia and the Pacific Middle-Income Countries: A Simple Model and Results from Simulation between 2020 and 2030”
- Noah Yarrow, Cody Abbey, Sharon Shen, and Kevin Alyono: “Using Education Technology to Improve K–12 Student Learning in East Asia and Pacific: Promises and Limitations”
- Noah Yarrow, Paul Cahu, Mary E. Breeding, and Rythia Afkar: “What I Really Want: Policymaker Views on Education in East Asia Pacific”

The team benefited tremendously from comments provided by colleagues within and outside the World Bank and from colleagues attending several events where preliminary findings were presented and discussed. Particular thanks go to Deon Filmer, Halsey Rogers, and
Mitsue Uemura for serving as peer reviewers for the report. Insightful feedback and advice were also provided during both formal and informal reviews of the report by Luis Benveniste, Ndiamé Diop, Rinku Murgai, Mamta Murthi, Jaime Saavedra, Norbert Rudiger Schady, Mariam Sherman, and Mara Warwick.

Helpful comments and inputs were provided at critical stages of the report’s preparation by Izzati Ab Razak, Cody Abbey, Kevin Alyono, Paul Cahu, Yu Cao, Pinyi Chen, Daisuke Fukuzawa, Pagma Genden, Ergys Islamaj, Sachiko Kataoka, Noviandri Khairina, Dilaka Lathapipat, Duong Trung Le, Diego Luna-Bazaldua, Kevin Macdonald, Adam Merican Mohd Din, Ezequiel Molina, Shinsaku Nomura, Nutchapon Prasertsoong, Akiko Sawamoto, Nobuyuki Tanaka, Ryoko Tomita, Nguyet Thi Anh Tran, Andrew Trembley, Dung Vo, and Shuwen Zheng.


Mary Fisk and Patricia Katayama provided excellent advice and guidance on the publication process. The cover and graphics were designed by Bill Pragluski. Mary Anderson edited the report.

The team also thanks others who have helped prepare this report and apologizes to any who may have been overlooked inadvertently in these acknowledgments.
About the Authors

Rythia Afkar is an economist with the World Bank’s Human Capital Project. She is based in Washington, DC, and engages with national governments and international organizations to help countries build, protect, and utilize their human capital. Her work focuses on various areas, including quality of education, public finance, and gender issues. She previously worked on education operations and research with the East Asia and Pacific Unit and on poverty and social assistance with the poverty team in Indonesia. Her recent policy-oriented research focuses on improved efficiency of education expenditure in Indonesia and Papua New Guinea. She holds a doctorate in economics from the University of Bonn and received a master’s degree in quantitative economics from the University of Paris 1 Panthéon-Sorbonne.

Tara Béteille is the World Bank’s human development program leader for Cambodia, the Lao People’s Democratic Republic, and Myanmar. She served as the global lead for the Teachers Thematic Group of the World Bank’s Education Global Practice from 2017 to 2022. She has led World Bank projects in early childhood education, school education, skills, and higher education in countries in the South Asia and the East Asia and Pacific regions. She was a core team member of the *World Development Report 2018: Learning to Realize Education’s Promise*. Her research interests span teacher labor markets, the politics of education reform, and higher education—topics on which she has published in journals such as *Education Finance and Policy*, *PNAS*, and *Nature Human Behavior*, as well as World Bank reports such as *Ready to Learn: Before School, In School, and Beyond School in South Asia*. Before joining the World Bank, she worked as a postdoctoral fellow at the Center for Education Policy Analysis at Stanford University, and before that, at ICICI Bank, India. She holds a doctorate in the economics of education from Stanford University, as well as a master’s degree in economics from Stanford University and a master’s degree in economics from the Delhi School of Economics.

Mary E. Breeding is a consultant in education at the World Bank, where she has worked on multiple types of education projects since 2010. Her primary areas of specialization are teacher policy, school accountability, and monitoring and evaluation. She has also worked to provide support on a range of policy projects in the areas of student assessment and school finance. Before joining the World Bank, she was a postdoctoral fellow at Georgetown
About the Authors

University (2008–10), and she held the William E. Miller Fellowship at the American Political Science Association in 2007–08. She received her doctorate in political science and public policy from American University in 2008.

Toby Linden has had a long and diverse career working in countries across the globe with the World Bank, including in South Asia, Southeast and Central Europe, and Southern and Eastern Africa. His publications include *Lifelong Learning in the Global Knowledge Economy: Challenges for Developing Countries*, with Harry Patrinos, and *Getting the Right Teachers into the Right Schools: Managing India’s Teacher Workforce*, with Vimala Ramachandran and others. He also served as director of the Roma Education Fund, an international nongovernmental organization working to improve the educational outcomes of Roma (Gypsies), the poorest minority in Europe. Previously, he worked for the British Council and England’s national Department for Education.

Andrew D. Mason is deputy chief economist for the World Bank’s East Asia and Pacific Region. He has carried out policy research on a range of issues, including poverty, social protection, education and skills, labor, and gender equality. He is coauthor of several World Bank flagship reports, including *The Innovation Imperative for Developing East Asia; A Resurgent East Asia: Navigating a Changing World; Toward Gender Equality in East Asia and the Pacific: A Companion to the World Development Report*; and *Informality: Exit and Exclusion*, as well as the World Bank Policy Research Working Paper, “Engendering Development: Through Gender Equality in Rights, Resources, and Voice.” He has also been an affiliated professor at the Georgetown Public Policy Institute (now the McCourt School of Public Policy) of Georgetown University. He holds a doctorate in applied economics from Stanford University and a master’s degree in public policy from Harvard University.

Aaditya Mattoo is chief economist of the World Bank’s East Asia and Pacific Region. He specializes in development, trade, and international cooperation and provides policy advice to governments. He was codirector of the *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. Previously, he was the research manager, trade and integration, at the World Bank. Before joining the World Bank, he was economic counsellor at the World Trade Organization and taught economics at the University of Sussex and Churchill College, Cambridge University.

Tobias Pfutze is a former senior economist in the Office of the Chief Economist for the World Bank’s East Asia and Pacific Region and associate professor of economics at Florida International University. He is an applied microeconomist with an interest in social protection policies, land tenure systems, and institutional economics. He has also held academic positions at Georgetown University, American University, and Oberlin College and worked as a consultant for the World Bank and the United Nations Development Programme. His research has been published in leading peer-reviewed journals, including the *Journal of Development Economics, Journal of Economic Behavior and Organization, Economic Development and Cultural Change*, and *World Development*. He completed his undergraduate studies at Humboldt University in Berlin and Pompeu Fabra University in Barcelona. He holds a doctorate in economics from New York University.

Lars M. Sondergaard is a lead economist in the World Bank’s Education Global Practice, East Asia and Pacific Region. In different regions of the world, he has led both operational and analytical work to support improvement in educational outcomes. His policy research encompasses a range of issues, including education, poverty, growth, and fiscal policy. He is the
coauthor of several World Bank publications, including *Skills, Not Just Diplomas: Managing Education for Results in Eastern Europe and Central Asia* and the Thailand Systematic Country Diagnostic, “Getting Back on Track: Reviving Growth and Securing Prosperity for All.” Before joining the World Bank, he was a senior economist at the European Central Bank. He holds doctoral and master’s degrees in economics from Georgetown University.

**Noah Yarrow** joined the World Bank in 2010 as a part of the Education Global Practice, Latin America and the Caribbean. He is based in Washington, DC, and works on system capacity, education technology, and learning-quality issues with a special focus on refugee and internally displaced persons education. He previously worked on operations and research in the East Asia and Pacific and Middle East and North Africa regions. Prior to joining the World Bank, he worked in the Russian Federation and Asia for agencies such as the Education Development Center and the International Committee of the Red Cross, in addition to teaching for several years at the primary and secondary levels. He holds master’s degrees in development management from the London School of Economics and in adolescent education from Pace University.
Introduction

Early investments in education were key to East Asia’s remarkable development. Basic literacy and numeracy equipped farmers to adopt new seeds and fertilizers and to usher in the Green Revolution. The resulting increase in productivity allowed workers to move out of agriculture and to use their basic skills in export-oriented manufacturing. This structural transformation boosted economywide productivity growth.

However, past successes risk obscuring educational inadequacies in today’s middle-income East Asia and Pacific. Despite significant advances in school enrollment and educational attainment, more than half of 10-year-olds in most middle-income countries cannot read and understand an age-appropriate text—a phenomenon known as learning poverty. Because learning is cumulative, many of these children will never develop the more advanced skills needed for innovative manufacturing and sophisticated services—the productivity-boosting economic activities that could propel countries in the region from middle- to high-income status.

Learning poverty in all the region’s middle-income countries is significantly higher than that in the high-income countries: Japan, the Republic of Korea, and Singapore. However, the challenges are even greater in lower-middle-income Cambodia, the Lao People’s Democratic Republic (PDR), and Papua New Guinea. In all countries, the quality of education is much weaker in rural and poorer regions than in urban and richer areas. These persistent deficits in basic learning have been significantly exacerbated by the COVID-19 (coronavirus) pandemic.

This report, therefore, focuses on foundational learning—basic literacy and numeracy—which is necessary for the development of more advanced skills. The report focuses on public schools, where most of the region’s students obtain their basic education. Finally, the report focuses on teachers, who are central to children’s learning. Research shows that teacher-focused interventions have the largest impacts on student learning (Snilstveit et al. 2015). Moreover, given that teachers’ salaries make up the largest share of government spending on education, countries that strengthen the cadre of teachers will help optimize the use of scarce public resources.
In analyzing how to strengthen foundational learning in middle-income East Asian and Pacific countries, this report examines the nature of the basic learning deficit in the region, the relationship between improved education and the region’s economic prospects, and the policies that can support teachers in raising basic learning outcomes. Because the region is so diverse, the report highlights the need for tailoring policy responses to specific country circumstances.

The region’s basic learning deficit

Basic learning outcomes are poor in middle-income countries

Ask a typical 10-year-old student in middle-income East Asia or the Pacific to read a simple paragraph and answer basic questions about it, and there is a good chance they will not be able to. Even before the COVID-19 pandemic, more than half of 10-year-olds in most middle-income countries could not read and understand an age-appropriate text. In eight countries (Cambodia, Kiribati, Lao PDR, Myanmar, Papua New Guinea, the Philippines, Tonga, and Tuvalu), this learning poverty rate exceeds two-thirds, and even in upper-middle-income Malaysia it is over 40 percent (figure O.1). In contrast, learning poverty in high-income Japan, Korea, and Singapore is only 3–4 percent.

Basic learning outcomes were also unequal within countries

Students from disadvantaged socioeconomic backgrounds demonstrated lower learning proficiency on average than those from more advantaged backgrounds (figure O.2).

FIGURE O.1 In many middle-income East Asian and Pacific countries, learning poverty rates exceed the levels their incomes would predict

Sources: World Bank and UIS 2022; Cahu and Sondergaard 2023; World Development Indicators database.
Note: “Learning poverty” is the inability to read and understand a simple text by age 10. Middle-income countries in East Asia and Pacific are designated by ISO alpha-3 code. Those shown as brown dots are middle-income countries from the East Asia and Pacific region, whereas those shown as orange dots are from other regions. Red dots designate high-income East Asian countries. GNI = gross national income; In = natural logarithm; PPP = purchasing power parity.
Differences in learning proficiency between students in the top and bottom quintiles could represent more than two years of schooling in the most unequal settings, by World Bank estimates. Similar inequalities are observed between major urban areas and more remote rural settings.

Students lacking foundational skills struggle to acquire advanced skills. Reading proficiency among 15-year-olds in Indonesia, Malaysia, the Philippines, and even Thailand falls well below the levels predicted by those countries’ per capita incomes, while learning inequality persists between poorer and wealthier children.

COVID-19–related learning disruptions made things worse

School disruptions during the COVID-19 pandemic have exacerbated the region’s preexisting learning challenges. To compensate for school closures, countries in East Asia and Pacific implemented distance learning initiatives, including offering classes online, on television, and on the radio. Many high-income countries such as Japan, Korea, and Singapore also faced challenges with these adjustments but adapted their approaches over the period of school closures (OECD 2020a [Japan]; UNESCO 2022 [Korea]; Goh, Wong, and Kwek 2023 [Singapore]). However, in low- and middle-income countries, a new global study finds that for every month schools were closed, students lost nearly one month of learning (Schady et al. 2023). Within the region, data from Cambodia and Indonesia indicate significant learning losses during the pandemic (figure O.3). Similar effects were observed in assessment data from Pacific Island countries during the period.

The pandemic also exacerbated learning inequality in the region. Wealthier households generally had greater access than poorer ones to interactive distance learning opportunities (World Bank 2021). In Indonesia, for example, fourth-grade students lost the equivalent of 11 months of learning, on average, but students from the poorest households lost significantly more (figure O.3, panel b).
A new World Bank study proposes actions to remedy learning losses associated with the pandemic (Schady et al. 2023):

- Keeping schools open and restoring or increasing instructional hours
- Assessing learning and matching instruction to students’ levels
- Focusing on foundational learning and streamlining the curriculum
- Tracking students at risk of dropping out
- Providing incentives for at-risk students to remain in school
- Generating political commitment for learning recovery.

However, middle-income countries in East Asia and Pacific must do more than recover COVID-19–related learning losses. This report focuses, therefore, on remedying countries’ long-standing learning deficits.

**Better teaching, improved learning, and higher productivity**

**Good teachers are essential to student learning**

This report is motivated by the links from teaching to learning and from improved learning to higher labor productivity and growth. A child’s family background remains the most important predictor of learning outcomes, including parents’ income and education levels, as well as a child’s nutrition, health, and cognitive and socioemotional development in the early years of life. However, once children get to school, no single factor is as critical as the quality of their teachers (Béteille and Evans 2021; Bruns and Luque 2015).
Research shows that going from a low-performing teacher to a high-performing one increases student learning dramatically. In Viet Nam, differences in teaching quality mean that, over a four-year period, an average second-grade student can end up in either the top third or the bottom third of the class, depending on whether they benefit from a high- or low-quality teacher during that time (figure O.4, panel a). Across middle-income Southeast Asia, better teaching practices are consistently associated with better student learning outcomes (figure O.4, panel b).

Greater learning boosts productivity and growth

Education confers a broad range of economic benefits on low- and middle-income societies (World Bank 2018b). It increases people’s incomes and employability, improves economic mobility, and enables families to escape poverty (figure O.5). It increases individuals’ and families’ resilience to shocks. In economies with large informal sectors, education is associated with greater access to full-time, formal sector jobs.

The skills students obtain are associated with greater productivity, technology adoption, and innovation. During the Green Revolution in Asia, farmers with basic education made more efficient allocation decisions in the face of technological changes (Foster and Rosenzweig 1996).

**FIGURE O.4** Assessment data show that teacher quality is central to student learning

![Assessment data show that teacher quality is central to student learning](image)

Sources: World Bank estimates based on Carneiro et al. 2022 (panel a), 2019 Southeast Asia Primary Learning Metrics (SEA-PLM) data (panel b).

Note: Panel a compares the effects on two “average” (50th percentile) second-grade students of having either low-performance or high-performance teachers from second grade through fifth grade. If a student had 90th percentile teachers rather than 10th percentile ones, the student would be in the top third of the class, rather than the bottom third, by the time the student finished fifth grade. Panel b shows the estimated effects of “better teaching practices,” on fifth-grade students’ mathematics proficiency. Practices that correlate positively with mathematics scores are reflected in student questionnaire responses such as “I know what my teacher expects me to do”, “My teacher is easy to understand”, “I am interested in what my teacher says”, “My teacher gives me interesting things to do”, and “My teacher encourages me to do extra mathematics exercises in class.” The 2019 SEA-PLM data cover only the six countries shown.
Greater education and skills also raise firms’ productivity and enable innovation. In manufacturing firms across China, increases in employee education resulted in greater total factor productivity (TFP) growth, technology adoption, and research and development (R&D) investment among firms operating in more human capital-intensive industries (Che and Zhang 2017) as shown in figure O.6. Similar results are seen among firms in Organisation for Economic Co-operation and Development (OECD) countries (Crisculo et al. 2021).

FIGURE O.5 Education is consistently associated with higher earnings

Source: Psacharopoulos and Patrinos 2018.
Note: The figure shows the average percentage increase in wages associated with each additional year (beyond 0) of schooling in low- and middle-income countries, by region. Regional country groups are defined by World Bank classifications.

FIGURE O.6 Education increases firm productivity, technology adoption, and innovation

Source: Adapted from Che and Zhang 2017.
Note: The figure shows the average increases (in percent) resulting from a 1 percentage point increase in the share of college graduates employed in Chinese manufacturing firms—the impact of a policy-induced surge in China’s college-educated workforce that took effect starting in 2003. The analysis uses a difference-in-difference approach and, in general, the measured impacts are compared before and after 2003. TFP refers to total factor productivity; “technology adoption” to the value of firm imports of high-technology capital goods; R&D to firm-level research and development spending; and “new products” to the value of new products introduced by the firm. Error bars show “robust standard errors” clustered at the firm level. All the results shown are significant at the 1 percent level.
Education—and the skills it confers—also contributes to higher growth (Barrow and Keeney 2001; Cohen and Soto 2007; Glewwe, Maïga, and Zheng 2014; Hanushek and Woessman 2015; Krueger and Lindahl 2001; Mankiw, Romer, and Weil 1992). In particular, cross-country analysis reveals a robust relationship between the cognitive skills conferred by education and economic growth (figure O.7, panel a). Moreover, given recent increases in years of schooling attained, analysis suggests that improving education quality will be particularly important to boosting countries’ growth performance in middle-income countries (figure O.7, panel b).

**Poor teaching impedes basic learning in much of the region**

Many of the region’s middle-income countries still face serious challenges in achieving high teaching quality, such as the following:

- Education systems are not attracting or selecting those who would be the best teachers.
- Teaching capacity—teachers’ knowledge and teaching practices—is often weak.
- Teacher behavior often does not support student learning.

These three challenges are examined in turn.
Education systems do not attract or select the best candidates

The teaching profession does not attract the best academic performers. Teachers’ salaries are relatively low in many countries, and poor working conditions (especially in poor and remote areas) along with weak career progression mechanisms limit the attractiveness of the teaching profession. Moreover, admission into preservice education programs and recruitment into teaching jobs often lack selectivity. Even where countries have formal criteria for teacher selection, those criteria are often not followed, with political factors playing a role in recruitment.

Many teachers have limited knowledge of their subjects and how to teach them

Far too many teachers in middle-income East Asia and Pacific have not mastered the content they are expected to teach, as these examples show:

- In Lao PDR, only 8 percent of fourth-grade teachers scored 80 percent or higher on an assessment of fourth-grade mathematics content knowledge (figure O.8, panel a).
- In Indonesia, only 8 percent of fourth-grade teachers who were tested received an 80 percent or higher on an assessment of their Indonesian language skills (Yarrow et al. 2020) (figure O.8, panel b).
- In Malaysia, only 53 percent of English language teachers tested in 2020 were judged to be sufficiently proficient in English to teach (Malaysia MOE 2020).

Many teachers in the region also do not employ effective teaching practices. Only 7 percent or less of teachers in Mongolia, the Philippines, Viet Nam, and the poorer provinces

FIGURE O.8 Most Lao PDR mathematics teachers and Indonesian language teachers have not mastered the curriculum they teach

Sources: World Bank 2017 (panel a); Yarrow et al. 2020 (panel b).
Note: Percentages represent the share of teachers achieving scores within each score interval. The red line marks the expected “minimum proficiency score,” defined as a score of 80 percent or better on the exam. For Indonesia, the results are from a nationally representative sample of schools of the Ministry of Religious Affairs and a smaller sample of schools of the Ministry of Education, Culture, Research, and Technology (MoECRT). The survey was conducted in 2019 and used the same survey instrument (Service Delivery Indicators) used in Lao PDR. Shares do not always total 100 due to rounding.
Many of the region’s teachers use ineffective teaching practices

Sources: Coflan et al. 2018 (China); Lai 2019 (Mongolia); Molina et al. 2018 (Philippines); Carneiro et al. 2022 (Viet Nam); additional World Bank calculations of Mongolia and Philippines data to ensure comparability (details available upon request).

Note: The figures show data collected from classroom observations. For Guangdong, China, the figure is based on a classroom observations tool called the Classroom Assessment Scoring System (CLASS), whereas the figures for the other countries are based on a classroom observational tool called Teach. The figures reflecting the Teach tool (panels b, c, and d) show, for each country, the average of teachers’ global scores (that is, teachers’ composite scores from the different indices of the tool). This score, based on classroom observation, captures teachers’ capacity to create a classroom culture conducive to learning, to challenge and engage students, and to foster students’ socioemotional skills to be successful learners. (Shares do not always total 100 due to rounding.) For more details, see the World Bank education brief, “Teach Primary: Helping Countries Track and Improve Teaching Quality,” August 30, 2022, https://www.worldbank.org/en/topic/education/brief/teach-helping-countries-track-and-improve-teaching-quality. Panel b, showing results for Mongolia, differs slightly from what appeared in World Bank (2019b) because an effort was made to harmonize the Teach data across the countries for which we have such data.

in Guangdong, China, demonstrate highly effective practices, while more than two-thirds use ineffective or weak practices (figure O.9). Weak teaching practices translate into poorer learning outcomes.

As with foundational learning outcomes, there is inequality in the quality of teachers’ teaching practices. In Cambodia, Lao PDR, Myanmar, and the Philippines, mathematics teaching practices in socioeconomically disadvantaged schools are significantly worse than in the best-off schools (figure O.10). Disparities in teaching quality across socioeconomic categories are more muted in Malaysia and Viet Nam, where average student learning outcomes are also much better.
Teacher behavior often does not support learning

Teacher absences as well as poor classroom management adversely affect student learning. For example, around 14 percent of students surveyed in Cambodia, Lao PDR, Malaysia, Myanmar, the Philippines, and Viet Nam report, on average, that their teachers are often absent. Across 15 Pacific Island countries, 36 percent of students attend a school whose principal reports that instruction was hindered by teacher absenteeism (EQAP 2022). In contrast, data from Japan, Korea, and Shanghai, China, show teacher absence rates of 1 percent or less, and data from Singapore show only 3 percent absenteeism (OECD 2020b).

Moreover, the class time dedicated to foundational learning is often low. For example, less than one-third of fifth-graders in Lao PDR, Malaysia, Myanmar, and the Philippines have daily mathematics and language lessons.4

Most teachers will remain in place for the near future

Improving the capacity and behavior of existing teachers will be critical to improving learning outcomes because, in every East Asian and Pacific country, most of the teachers expected to be employed in 2030 have already been recruited (figure O.11). In China, Indonesia, Malaysia, the Marshall Islands, the Federated States of Micronesia, Mongolia, the Philippines, and Tonga, three-quarters or more of teachers expected to be employed in 2030 are already in place (Tanaka and Sondergaard 2023).

Even in countries that will need to increase the number of teachers, the large stock of existing teachers will make up at least half of the teaching workforce at the start of the next decade. For example, although Cambodia may need to recruit as many as 22,000 new teachers in the decade to 2030, more than 30,000 current teachers are still expected to be teaching at that time.
FIGURE O.11  Most of those expected to be teaching in East Asia and Pacific by 2030 have already been recruited

Source: Tanaka and Sondergaard 2023.
Note: The figure shows the percentage of primary-school teachers projected to be teaching in 2030 who had already joined the teaching workforce by 2020. Simulations use the United Nations’ World Population Prospects 2022 (medium scenario) for children of primary age (UN DESA 2022) and the following assumptions: (a) countries will reach a net enrollment rate of 100 percent at least by 2030; (b) countries will lower pupil-teacher ratios to 25 to 1 (or maintain current levels if below that ratio) by 2030; and (c) teacher attrition rates are the average country-reported attrition rates for the past five years (if reported in the UNESCO Institute for Statistics database), or if countries are not reporting attrition rates, we use the average attrition rate over the past five years of the countries who do report.

Teachers’ professional development is often ineffective

Evidence on teacher professional development from high-income countries shows that concrete, classroom-based programs make the most difference to teachers and raise student learning (Darling-Hammond et al. 2009; Walter and Briggs 2012). However, new survey data collected for this report indicate that many East Asian and Pacific countries’ in-service training programs lack the four elements of effective teacher training programs—which this report also calls the “four C’s”: (a) a focus on content knowledge, (b) opportunities to practice what is learned with colleagues, (c) continued support through follow-up visits focused on training content, and (d) career incentives through promotion or increased salary (figure O.12).

Strengthening teaching for improved learning

Strengthening the quality and effectiveness of teaching in the region will require action on three fronts (figure O.13):

- Attracting and selecting more effective teachers
- Enhancing teachers’ capacity to teach (that is, strengthening their subject knowledge and pedagogical skills as well as improving the tools they use)
- Encouraging greater teacher effort.

An important element of all three of these areas involves improving the information base upon which policy choices are made and implemented.
**FIGURE O.12** Teacher training programs in nine middle-income East Asian and Pacific countries do not generally employ practices linked to improved student learning

- **Focus is subject content**: 14% East Asian and Pacific programs vs. 81% World’s top-performing programs.
- **Proportion of face-to-face training spent practicing with teachers**: 5% East Asian and Pacific programs vs. 40% World’s top-performing programs.
- **Includes follow-up visits**: 24% East Asian and Pacific programs vs. 85% World’s top-performing programs.
- **Participation has implications for salary or promotion**: 48% East Asian and Pacific programs vs. 88% World’s top-performing programs.

**Sources:** Popova et al. 2022 (for top performers worldwide); World Bank calculations, based on 2022 In-Service Teacher Training Survey Instrument (ITTSI) data for 65 programs in nine middle-income East Asian and Pacific countries. **Note:** Percentages represent the proportion of programs containing a given feature, except for “practicing with teachers,” where the percentage is the proportion of time training courses devote to this activity. The nine East Asian and Pacific countries are Cambodia, Fiji, Lao PDR, Mongolia, the Philippines, Thailand, Timor-Leste, Tonga, and Viet Nam. Orange bars designate “top performers” from a global study of training programs in 14 countries (Popova et al. 2022). Brown bars designate percentages of only the 65 training programs in the nine East Asian and Pacific countries. Detailed data were collected on large-scale teacher professional development programs conducted in countries between January 2018 and June 2022 to observe the landscape of in-service teacher training both before and during the COVID-19 pandemic.

**FIGURE O.13** Policy to strengthen teaching for public basic education has several entry points

- **Improving inflow of teachers**: Strengthening selection
  - Attract strong candidates (salaries, career paths)
  - Employ meritocratic, learning-focused selection
- **Improving performance of existing teachers**: Enhancing capacity
  - Support and incentivize improvement
    - Training
    - Tools
- **Encouraging greater effort**: Incentivize teacher effort
  - Career paths
  - Salary
  - Accountability
  - Exit

**Policy action**

- Increased learning
High-performing education systems make teaching attractive and selective

High-performing education systems in East Asia and Pacific have been effective in making teaching both attractive and selective, through a combination of mechanisms:

- In Shanghai, China, for example, teaching is a highly attractive career, driven by several factors, including competitive pay, attractive working conditions, manageable pupil-to-teacher ratios, and clear career progression structures. The Teacher Law stipulates that teachers’ average salary should be equal to or higher than the national average salary of civil servants.
- In Korea, the education system uses rigorous, merit-based screening processes. Only the top 10 percent of high school graduates are admitted to the country’s teacher education programs, and only 1 in 20 candidates passes the arduous exams to become a teacher (Ferreras, Kessel, and Kim 2015).
- In Singapore, a demanding training regime is accompanied by professional incentives for admitted candidates (World Bank 2018a). Before becoming a teacher, candidates must undergo preparatory training that includes both compulsory contract teaching and formal study to earn the proper qualifications. Admitted candidates are paid throughout their training period, and teachers receive attractive salary packages.

The right training and tools can enhance teaching capacity

Teaching capacity can be strengthened through training to enhance teachers’ knowledge and skills and through tools that have been shown to be effective in improving student learning.

Training content and methods

To be effective, training must be guided by data and evidence for multiple reasons: First, regular assessment of teachers’ knowledge and pedagogical skills generates data to focus training on identified needs. Second, the design of effective training programs should be informed by what works. As noted earlier, high-impact teacher training programs include the four C’s: (a) a focus on content knowledge, (b) opportunities to practice what is learned with colleagues, (c) continued support through follow-up visits focused on training content, and (d) career incentives through promotion or increased salary.

Research shows that such training can be effective in improving student learning. For instance, the Tonga “Come Let’s Read and Write” (CLRW) program provided training focused on content, instructional materials, and coaching on a new method to teach reading. The program improved average reading scores by 0.19 standard deviations after one year and 0.33 standard deviations after two years of intervention (figure O.14, panel a), increasing the proportion of second-grade students who could read from 18 percent to 29 percent (Macdonald et al. 2018). The CLRW program also provided follow-up in the form of regular coaching focused on subject content.

Even the relatively short Sa Aklat Sisikat (SAS) program in the Philippines—whose main activity was a read-a-thon over 31 days—improved students’ reading skills by 0.13 standard deviations (Abeberese, Kumler, and Linden 2014), as shown in figure O.14, panel b. However, some of the gains were lost after three months, highlighting the importance of follow-up teacher support to ensure that the full benefits of teacher training are maintained.

Effective teacher training programs have positive financial returns, with benefits far outweighing costs. Programs in East Asia and Pacific have found benefit-cost ratios ranging from 7.5 to 1 to 12.3 to 1. For the Tonga CLRW program, for example, the present value of per pupil program costs is $116, as compared with the $1,425 present value of the per pupil benefits.
from higher future earnings projected from increased cognitive skills obtained through the program (figure O.15). In the case of the Philippines SAS program, the corresponding figures are costs of $85 per student, set against $640 in benefits. These positive returns are consistent with evidence from beyond East Asia and Pacific (see, for example, Evans and Yuan 2019).

One key feature of effective training programs is follow-up, through visits to teachers once they return to their schools, focused on the content of the training. Coaching and mentoring support teachers, either one-on-one or through teacher groups, to address the challenges they face in applying the lessons from training to their classrooms. No rigorous evaluations of coaching and mentoring have been carried out in East Asian or Pacific countries, but evidence from other middle-income countries highlights coaching’s contribution to improved learning. In Peru, for example, a program of monthly coaching visits to teachers was found to raise reading comprehension by 0.25 standard deviations and mathematics performance by 0.38 standard deviations (Castro, Glewwe, and Montero 2019).

**Effective tools to support teachers**

Teachers can be supported to be more effective with several different tools, such as (a) structured lesson plans, (b) targeted instruction, (c) educational technologies, and (d) the dual teacher model.

**Structured lesson plans** are especially useful where teachers lack pedagogical skills or subject knowledge, because these plans lead the teacher, and thus the student, through a series of activities designed by the best teachers. These plans can be highly scripted lessons that teachers follow carefully, reading from a prepared script. Teachers with higher capacity can...
use them more flexibly like guides. These lesson plans—along with training to use them—lead to significant learning gains, equivalent to an additional half year or more of learning, raising student language scores by 0.23 standard deviations and mathematics scores by 0.14 standard deviations on average (Snilstveit et al. 2015). In the region, the Papua New Guinea’s Reading Booster Program had particularly large effects on student reading skills for grade 3 students, ranging from 0.6 to 0.7 standard deviations (Macdonald and Vu 2018). In Cambodia, structured lesson plans had large positive impacts for grade 1–3 students in language, of 0.5 standard deviations (Snilstveit et al. 2015).

Targeted instruction—an approach also known as teaching at the right level—helps teachers address the major challenge that, in any given classroom, children have achieved different levels of learning. Targeted instruction involves grouping students in school by learning levels, rather than by age or grade, and engaging them in activities appropriate to their achievement levels, often in small groups. Targeted instruction can be highly effective. For example, in the Indian state of Uttar Pradesh, there was a 25 percentage point increase in the likelihood of being able to read a story (Banerjee et al. 2017). Targeted instruction can also be highly cost-effective, delivering as much as three years of learning per $100 spent (Angrist et al. 2020).

Educational technologies (EdTech) also show promise for improving teaching. Computer-assisted learning (CAL) has proven effective both in the region’s middle-income countries (figure O.16) and high-income countries (Hattie 2009). CAL refers to interventions in which students engage in self-directed learning with the assistance of a computer software program. CAL software packages aim to improve student learning in a specific subject area through drills and exercises that give students opportunities to practice material learned in class and by providing immediate feedback. The evidence suggests that CAL is most effective in improving learning outcomes when it is used to complement classroom learning and not as a substitute for instruction by a teacher. EdTech also appears to hold some promise in

**FIGURE O.15** Effective teacher training programs in East Asia and Pacific yield positive rates of return on investment

Sources: Macdonald et al. 2018 (for Tonga’s CLRW program); World Bank estimates (for the Philippines’ SAS program).

Note: Figure shows the estimated present value of costs and benefits per student (in US dollars) of two countries’ teacher training interventions. Benefits are estimated as the effects on future earnings per student from increases in either cognitive skills or educational attainment. CLRW = Come Let’s Read and Write; SAS = Sa Aklat Sisikat (loosely, “Books Make You Cool”).
the implementation of structured lesson plans, as lessons can be loaded onto a website or on tablets for offline use.

The dual teacher model extends the reach of the best teachers by enabling them to provide content and model elements of effective pedagogy through either prerecorded or livestreamed sessions. This approach, in which expert teachers provide content through either prerecorded or livestreamed sessions, has had significant positive impacts on learning in several rural contexts where high-quality teachers are in short supply, including in China, Ghana, India, Mexico, and Pakistan (Beg et al., 2019; Borghesan and Vasey, forthcoming; Johnston and Christopher 2017; Li et al., 2023; Naik et al. 2020).

Impacts have been found in multiple subject areas across a range of grade levels. In the East Asia and Pacific region, a study of seventh to ninth graders in China found improvements in student learning of 0.23 standard deviations in language and 0.18 standard deviations in mathematics (Bianchi, Lu, and Song 2022). It is important to note that these remote instruction interventions took place in classrooms during the regular school day and involved a teacher’s classroom presence with the students in addition to the remote teacher.

**Incentives can motivate greater teacher effort**

Teachers need to be present in the classroom and use their knowledge and the tools to help students learn. In principle, several types of incentives could motivate teachers to perform effectively, including professional advancement, financial incentives, accountability mechanisms, and measures to deal with chronic underperformance. However, there is limited evidence on what works in practice.

Evidence on performance pay, a financial incentive policy used in some countries, is mixed, although one study on promotion incentive among primary- and middle-school teachers in
China found positive results (Karachiwalla and Park 2017). Overall, global evidence suggests that where there is an impact, it tends to be small. Moreover, survey evidence suggests there is little support for it in the region’s high-income countries.

Accountability mechanisms, such as school-based management (SBM), can affect teacher effort. SBM can induce change at the school level by increasing parental involvement and changing teacher behavior (for example, reducing absenteeism), and at the pupil level, by lowering repetition and dropouts. In Viet Nam, where teacher absenteeism is significantly lower than elsewhere in the region, teachers take part in regular internal and external evaluations that hold them accountable for teaching quality. Teachers may be dismissed for misconduct, child abuse, absenteeism, or consistently poor performance.

This report focuses largely on improving the performance of existing teachers. Some teachers may be unable or unwilling to improve their performance to acceptable levels, despite support to improve. Exiting these teachers, especially those with the status of civil servants, takes considerable time and political commitment. However, where it is feasible to identify persistent weak performers, inducing exit would strengthen incentives for other teachers to improve their performance—by demonstrating that the system sets standards for capacity and behavior, assesses performance against those standards, and acts when they are not met.

**Public education spending, used efficiently, can improve both learning and equity**

Countries in middle-income East Asia and Pacific can improve teaching and student learning by implementing the types of interventions discussed earlier. However, effectively implementing these interventions will require resources. In most countries in the region, this will require both additional public spending and more efficient spending of existing budget allocations. Addressing learning inequalities within countries will also require that policy makers make sure that sufficient public resources are directed toward disadvantaged and poorly performing areas.

Public spending for education in most middle-income East Asian countries is well below what would be expected given their level of development (figure O.17). In contrast, Pacific Island countries commonly spend more than the middle-income country average of 4.7 percent of gross domestic product (GDP) because the cost of delivering education services is high owing to substantial geographic dispersion and diseconomies of scale. Private (household) spending is less, on average, in East Asia and Pacific than in other middle-income regions, and much of households’ spending is focused on secondary and tertiary education, not on building basic skills. Moreover, private spending on education tends to be concentrated among the wealthiest 40 percent of households, making it a poor substitute for public spending. Indeed, public spending on education plays an important role in redressing inequality, with greater public spending associated with higher intergenerational mobility (van der Wiede et al. 2021).

Existing levels of public resources will also need to be better spent. For every middle-income country in the region except Viet Nam, there is a peer at a similar level of development that has achieved lower levels of learning poverty—often at lower levels of public spending. A striking comparison between income peers involves Malaysia and Kazakhstan. Kazakhstan has achieved a learning poverty rate of 2 percent as compared with Malaysia’s rate of 42 percent while spending roughly two-thirds as much as Malaysia as a share of GDP.

Within the region, Viet Nam’s performance on basic learning stands out. The country spends about 4.2 percent of GDP on education and has achieved a learning poverty rate of 18 percent. Consistent with the evidence presented in this report, one school-level variable has a particularly large explanatory effect on Viet Nam’s superior performance: the pedagogical skills of primary-school mathematics teachers (Glewwe et al. 2021).
In short, although many countries in the region need to spend more on education, simply allocating additional resources to do more of the same is unlikely to improve learning outcomes. However, increasing the efficiency of education spending will be both technically and politically challenging. The technical challenge is that the underlying causes of inefficient spending vary across countries and are difficult to diagnose without better data and in-depth country-level analysis. The political challenge is that divergent political interests within countries often impede meaningful education reforms. The need to tailor reforms to specific country circumstances—through better data and diagnosis—and to navigate the political economy of reform are now discussed in turn.

Reforms must be tailored to country and within-country circumstances

Reforms will need to reflect different circumstances across and within countries. In general, countries with high levels of learning poverty (such as Cambodia, Lao PDR, Myanmar, and the Philippines) will need to focus on fostering systemic improvements and supporting all teachers, whereas countries with more moderate levels of learning poverty (such as China, Palau, Thailand, and Viet Nam) can take more targeted approaches, focusing on specific challenges such as remedial support for lagging school districts. The Pacific Island countries face additional challenges—small size, significant population dispersion, and linguistic diversity—that make education reform particularly costly and logistically difficult to implement (World Bank 2023c).

Even the limited available data can help policy makers identify priorities for reform. For example, countries like Cambodia, Papua New Guinea, and Vanuatu, which expect substantial growth in their teacher workforces, will need to place a greater emphasis on strengthening


Note: The figure shows average public spending on education, as a share of GDP, in only middle-income countries for which a full set of 2016–19 data are available from UIS (2022). For this reason, the following countries are excluded: the Federated States of Micronesia, Papua New Guinea, Tonga, and Vanuatu. The “Middle income” bar at far right represents the average of middle-income countries globally. GDP = gross domestic product.
teacher selection as compared with countries like Fiji, Malaysia, and the Philippines, which project stable or negative growth in the size of the teaching corps (see annex O.1). Where the data indicate that teacher capacity is particularly low (as in the Solomon Islands, Timor-Leste, and Vanuatu), more intense training and coaching as well as greater use of tools like highly scripted lessons and the dual-teacher model will be needed to provide adequate support to teachers. In addition, countries such as Cambodia, Kiribati, and Myanmar, where learning poverty is high and public spending on education is low, must direct additional public resources to education to support reform initiatives (World Bank 2023a).*

All middle-income countries in the region, regardless of their levels of learning poverty, will need to address differences within their countries in teaching quality and learning outcomes across socioeconomic groups and across different parts of the country. Even in Viet Nam, among the best-performing middle-income countries in the region, learning outcomes are substantially lower among children from the poorest households than among their better-off peers (as shown earlier in figure O.2).

Among other challenges, countries commonly struggle to recruit, deploy, and retain high-quality teachers in poor and remote areas. In Papua New Guinea, for example, the Western Province, which has a large proportion of difficult-to-reach schools, has teacher vacancy rates that are twice as high as in the Southern Highlands, where schools are generally accessible: 34 percent versus 17 percent. Similarly, in Bangkok, nearly 20 percent of teachers have at least a bachelor’s degree, relative to less than 10 percent in Mae Hong Son, a remote, mountainous region in northern Thailand.7

Reducing basic learning inequalities within countries will require additional resources to ensure a more equitable allocation of well-trained, effective teachers to disadvantaged schools. In addition to better designed and implemented professional development programs, special measures will also be needed to support teachers in lagging areas, including more intensive use of highly scripted lessons, enhanced coaching and mentoring, and increased use of dual teacher models.

However, the data needed to diagnose problems and support evidence-based, targeted policy making within countries remains scarce in much of the region. In some countries, like Malaysia and Viet Nam, relatively sophisticated databases contain up-to-date information about each teacher and his or her current and past employment, qualifications, and training received. In other countries, including the Pacific Island countries, even basic information on teachers is missing. In Papua New Guinea, for example, the most recent digitized teacher data are from 2018.

Virtually no middle-income country in the region collects data on teachers’ content knowledge and teaching practices. Few countries collect regular information on teachers’ presence in the classroom at times when they should be teaching.

**The political economy of reform**

Implementing effective reforms at scale—to bring about the transformation of the education systems in the region—will require policy makers to understand the depth of their countries’ learning challenges and to navigate the political winds associated with undertaking major reforms.

**Policy makers often do not recognize the magnitude of the problem**

Surveys of government officials around the world suggest they are not always aware of the magnitude of their countries’ foundational learning deficits. A recent survey of more than 1,000 senior policy makers in 40 low- and middle-income countries around the world found that they systematically underestimate the magnitude of their countries’ learning deficits.
(figure O.18, panel a). In five of the seven countries surveyed in the region—Indonesia, Lao PDR, Mongolia, the Philippines, and Viet Nam—policy makers’ estimates of 10-year-olds’ literacy levels exceeded measured levels by substantial margins (figure O.18, panel b). Surveys also found that senior officials often prioritize socialization and nation-building goals for education above foundational learning.

**Political interests play a key role in teacher hiring and promotions**

Divergent incentives along the education service delivery chain also impede effective reform, even when sound technical solutions have been identified (World Bank 2018b). Although resistance from teacher unions does not appear to impede reform in East Asia and Pacific, politics continues to play an important role in the selection and promotion of teachers in many countries (Béteille, 2022). Across middle-income East Asia and Pacific, politicians and bureaucrats use their ability to create jobs, their access to information on job availability, and their role in the selection of teachers to establish systems of patronage, with the objective of securing teachers’ loyalty (Béteille 2022; Hickey and Hossain 2019; Rosser and Fahmi 2018). In return, teachers receive transfers of their choice or jobs, even though unqualified, and are protected from the consequences associated with absenteeism, weak effort, or lack of accountability. Evidence indicates that patronage hires, having circumvented meritocratic selection procedures, tend to be of lower quality (Béteille and Evans 2021; Pierskalla and Sacks 2020).

In four of five countries for which there are data (Lao PDR, Mongolia, the Philippines, and Viet Nam), more than half of the senior officials surveyed indicated that the politically

---

**FIGURE O.18  Policy makers do not (or choose not to) recognize the magnitude of their countries’ learning deficits**

---

Sources: World Bank calculations, based on Crawford et al. 2021 and 2022 Center for Global Development—World Bank survey (panel a), and Yarrow et al. 2023 (panel b).

Note: Learning poverty refers to the percentage of 10-year-olds in school who cannot read and understand a short, age-appropriate text. Panel a: The survey of more than 1,000 senior government education officials in 40 low- and middle-income countries, including two Pacific Island countries, asked respondents to estimate the share of 10-year-old children in their countries who can read. The remaining percentage is the learning poverty rate. The study compared these estimates with the actual shares of children who can read, based on formal assessments of students’ reading skills. Panel b: The survey reported policy makers’ perceptions and compared them with literacy levels in seven East Asian and Pacific countries: Indonesia, Lao PDR, Mongolia, the Philippines, the Solomon Islands, Vanuatu, and Viet Nam. Vanuatu and Solomon Islands LP rates are interim estimates/not World Bank official data (from Cahu and Sondergaard).
connected candidate had at least an equal if not better chance of being selected than the candidate with good test scores (figure O.19, panel a). Only in Indonesia did most officials (65 percent) say the candidate with good test scores was most likely to be hired. An earlier study on Indonesia found that the Ministry of Education and Culture (MoE&C) was more likely than most other government ministries to circumvent formal processes in giving promotions, with political reasons listed as most important (figure O.19, panel b). The more recent survey results suggest there is hope: Indonesia’s new teacher policy reforms focusing on meritocracy and performance appear to be bearing fruit.

Navigating political interests to enact reform is possible

Despite these political challenges, several middle-income countries—in developing East Asia and beyond—have managed to enact quality-enhancing reforms. For example, Brazil (Sobral municipality), Ecuador, India (Karnataka and Delhi), and Indonesia were able to implement difficult reforms because of the efforts of reform-minded politicians and administrators as well as many willing, committed teachers. Reforms included making teacher selection and deployment more meritocratic (Ecuador, Indonesia, Karnataka, and Sobral), undertaking regular performance evaluation and enabling dismissal of teachers when improvements in performance were not forthcoming (Ecuador and Sobral), and improving teaching practices in the classroom (Delhi).

FIGURE O.19 Informal mechanisms play an important role in teacher selection and promotions, making performance-based reform difficult in East Asia and Pacific

Sources: World Bank calculations, 2022 Center for Global Development—World Bank survey. More detailed information about the survey can be found in Yarrow et al. 2023 (panel a) and Keefer 2012 (panel b).

Note: Panel a. In the survey, senior government officials were asked, regarding teacher candidates in the capital city of their countries, “Who is most likely to get the job? Candidate A has good test scores but is not well connected politically. Candidate B does not have good test scores but is well connected politically.” Panel b. The figure shows data from the 2012 Indonesia Survey of Public Servants (Keefer 2012), which surveyed 3,903 public servants from three employee ranks across 15 government institutions about the effects of the Bureaucratic Reform allowances on the performance, efficiency, and morale of public servants in Indonesia. Each percentage (bar) shown represents responses from that same agency or ministry. DG Treasury = Directorate General Treasury, Ministry of Finance; DG Tax = Directorate General Tax, Ministry of Finance; FDRA = Food and Drug Regulatory Agency; MoA = Ministry of Agriculture; MoA&BR = Ministry of Administrative and Bureaucratic Reform; MoE&C = Ministry of Education and Culture; MoE&MR = Ministry of Energy and Mineral Resources; MoI = Ministry of Industry; MoM&TI = Ministry of Manpower and Transmigration; MoPW = Ministry of Public Works; MoT = Ministry of Transportation; NDPA = National Development Planning Agency; NLA = National Land Agency; NSA = National Statistics Agency; NScA = National Science Agency.
These politicians and bureaucrats addressed key political economy challenges by focusing on the following:

- **Effective outreach and communication** ensured that information on specific challenges, whether low learning levels or unfilled teacher vacancies in schools, is widely available; presented in a manner that motivates action; and focused on key stakeholders such as teachers, parents, and the general public. These actions brought teachers on board (Indonesia, Karnataka, and Sobral), engaged parents (Ecuador and Delhi), and built public support for quality-enhancing reforms.

- **Building strong coalitions and teams** can spur reforms and help sustain them. Coalitions were built among district politicians, administrators, and teachers (Indonesia) and between teachers and parents (Delhi and Ecuador). Reform efforts in Delhi, Ecuador, Karnataka, and Sobral also benefited from strong technical teams, working with committed, reform-minded officials for nearly a decade. This resulted in high-quality inputs to the reforms as well as continuity of reform implementation.

- **Buying out vested interests** may be necessary to weaken opposition to reforms. In Indonesia, teachers opposed to the redeployment policy could opt out of recertification if they were prepared to forgo the salary supplement. In Ecuador, when teachers and school directors opposed the new meritocracy-related policies, the government offered an attractive early retirement package, stemming opposition early. In Sobral, salary increases, incentives, and professional recognition muted opposition.

- **Adaptive implementation** helped ensure that reforms were politically sustainable because phased rollout provided an opportunity to remedy initial design or implementation flaws, to demonstrate benefits, to build ownership, and to avoid early large-scale confrontation with different interest groups.

**The way forward**

Successful reforms require sustained and aligned efforts across a range of stakeholders: heads of government, ministries of education, ministries of finance, teachers, and parents. Heads of government provide vision and political leadership, which will be needed across successive government administrations. Ministries of education must develop credible agendas for reform. Ministries of finance will have to allocate sufficient resources to enable implementation of the reform agenda and get stakeholders on board. Teachers will need new tools and enhanced support and be ready to step up to the challenge. Parents and caregivers will need to be engaged in, and advocates for, improved learning.

In the aftermath of the COVID-19 pandemic, garnering the resources to support successful reform will be a challenge in many countries. To convince officials from the region’s finance ministries that additional resources will be used productively, education ministries must develop credible, evidence-based programs of reform. They will also need to improve data and information to underpin the design, implementation, and evaluation of reform initiatives. Better and more accessible information will also be critical to empowering parents to support teachers—and to hold them to account—in the quest for improved foundational learning for their children.

Such mutually reinforcing, and long-term, relationships between key stakeholders—between ministries of education and finance, between parents and teachers, and between heads of government and the general public—will be critical in countries’ efforts to bridge the basic learning gap in middle-income East Asia and Pacific. Those efforts would set the stage for higher productivity and growth and more prosperous societies in the years to come. Progress takes time under the best of circumstances, so action must begin now.
### Annex O.1 Countries in East Asia and Pacific confront different policy challenges based on their circumstances

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP per capita 2021 (US$)</th>
<th>Learning poverty rate (%)</th>
<th>Government expenditure on education (% GDP)</th>
<th>Government expenditure on education (% total spending)</th>
<th>Share of qualified teachers in primary education (%)</th>
<th>Teachers are often absent (%)</th>
<th>Participation in international assessments</th>
<th>Quality of EMIS (score 1–6)</th>
<th>Teacher persistence to 2030 (%)</th>
<th>Projected change in teacher positions by 2030 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palau</td>
<td>13,251</td>
<td>10</td>
<td>6.8</td>
<td>15.7</td>
<td>95.7</td>
<td>49</td>
<td>2</td>
<td>4.5</td>
<td>73</td>
<td>-0.32</td>
</tr>
<tr>
<td>China</td>
<td>11,188</td>
<td>18</td>
<td>3.5</td>
<td>11.2</td>
<td>98.9</td>
<td>49</td>
<td>2</td>
<td>4.5</td>
<td>79</td>
<td>0.01</td>
</tr>
<tr>
<td>Malaysia</td>
<td>10,827</td>
<td>42</td>
<td>4.2</td>
<td>17.7</td>
<td>98.9</td>
<td>49</td>
<td>2</td>
<td>4.5</td>
<td>73</td>
<td>-0.19</td>
</tr>
<tr>
<td>Thailand</td>
<td>6,270</td>
<td>23</td>
<td>3</td>
<td>13.7</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>4.5</td>
<td>74</td>
<td>0.02</td>
</tr>
<tr>
<td>Fiji</td>
<td>4,708</td>
<td>41</td>
<td>5.1</td>
<td>16.8</td>
<td>92.5</td>
<td>1</td>
<td>2</td>
<td>75</td>
<td>4</td>
<td>-0.05</td>
</tr>
<tr>
<td>Tonga</td>
<td>4,630</td>
<td>72</td>
<td>8</td>
<td>11.9</td>
<td>92.5</td>
<td>1</td>
<td>2</td>
<td>75</td>
<td>78</td>
<td>0.07</td>
</tr>
<tr>
<td>Mongolia</td>
<td>4,121</td>
<td>39</td>
<td>4.9</td>
<td>16.5</td>
<td>93.7</td>
<td>0</td>
<td>0</td>
<td>78</td>
<td>78</td>
<td>0.07</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>4,019</td>
<td>73</td>
<td>100</td>
<td>1</td>
<td>1</td>
<td>2.5</td>
<td>65</td>
<td>0.16</td>
<td>65</td>
<td>-0.07</td>
</tr>
<tr>
<td>Samoa</td>
<td>3,972</td>
<td>61</td>
<td>4.7</td>
<td>15.6</td>
<td>87.5</td>
<td>0</td>
<td>0</td>
<td>75</td>
<td>75</td>
<td>-0.05</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3,856</td>
<td>53</td>
<td>2.8</td>
<td>17.3</td>
<td>99.8</td>
<td>14</td>
<td>2</td>
<td>79</td>
<td>79</td>
<td>0.11</td>
</tr>
<tr>
<td>Philippines</td>
<td>3,413</td>
<td>91</td>
<td>3.2</td>
<td>17.5</td>
<td>99.8</td>
<td>14</td>
<td>2</td>
<td>79</td>
<td>79</td>
<td>0.11</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>2,397</td>
<td>62</td>
<td>15.8</td>
<td>24.8</td>
<td>1</td>
<td>3</td>
<td>75</td>
<td>0.11</td>
<td>75</td>
<td>0.05</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>3,373</td>
<td>18</td>
<td>4.1</td>
<td>14</td>
<td>100</td>
<td>14</td>
<td>2</td>
<td>68</td>
<td>68</td>
<td>-0.03</td>
</tr>
<tr>
<td>Micronesia</td>
<td>2,720</td>
<td>53</td>
<td>9.7</td>
<td>18.1</td>
<td>90.8</td>
<td>1</td>
<td>3</td>
<td>76</td>
<td>76</td>
<td>0.01</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>2,655</td>
<td>72</td>
<td>3.6</td>
<td>21.1</td>
<td>90.8</td>
<td>1</td>
<td>3</td>
<td>51</td>
<td>51</td>
<td>0.42</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>2,613</td>
<td>58</td>
<td>1.8</td>
<td>5.6</td>
<td>71.8</td>
<td>1</td>
<td>1</td>
<td>52</td>
<td>52</td>
<td>0.38</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>2,582</td>
<td>98</td>
<td>2.3</td>
<td>14</td>
<td>90.2</td>
<td>18.3</td>
<td>2</td>
<td>74</td>
<td>74</td>
<td>0.08</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>2,081</td>
<td>58</td>
<td>11.1</td>
<td>30.1</td>
<td>79.6</td>
<td>1</td>
<td>2.5</td>
<td>51</td>
<td>51</td>
<td>0.33</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>1,626</td>
<td>81</td>
<td>8.1</td>
<td>10.9</td>
<td>76.5</td>
<td>1</td>
<td>3</td>
<td>61</td>
<td>61</td>
<td>0.22</td>
</tr>
<tr>
<td>Kiribati</td>
<td>1,474</td>
<td>71</td>
<td>12.4</td>
<td>12.4</td>
<td>99.7</td>
<td>1</td>
<td>2.5</td>
<td>67</td>
<td>67</td>
<td>0.11</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1,400</td>
<td>90</td>
<td>2.2</td>
<td>11.8</td>
<td>100</td>
<td>23.7</td>
<td>2</td>
<td>58</td>
<td>58</td>
<td>0.26</td>
</tr>
<tr>
<td>Myanmar</td>
<td>1,292</td>
<td>89</td>
<td>2.1</td>
<td>10.6</td>
<td>91.3</td>
<td>20.2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

(1) Constant 2015 US$, 2021 or latest; (2) % of GDP; 2019 or latest pre-pandemic; (3) % of total expenditure; 2019 or latest pre-pandemic; (4) 2019 or latest available; (5) Participation in int'l assessments of primary students in past three years? (2 = yes and data are available; 1 = yes, data are not publicly available; 0 = no); (6) 1 = poor quality; 6 = high quality.

Note: Red cells indicate countries in the bottom tercile; yellow cells, the middle tercile; and green cells, the top tercile. Gray cells indicate missing data. In the two rightmost columns, the darker the orange, (a) the lower the country’s persistence of current teacher stock or (b) the larger the projected increase in future teaching positions. GDP = gross domestic product.

a. GDP per capita is in constant 2015 US$, using 2021 or latest data.
b. Learning poverty is the percentage of children who cannot read and understand a simple, age-appropriate text by age 10.
c. Government expenditure on education, as a percentage of GDP, uses 2019 or the latest pre-pandemic data.
d. Expenditure on education, as a percentage of total government expenditure, uses 2019 or the latest pre-pandemic data.
e. The percentage of qualified teachers in primary education—a proxy for existing teacher capacity—uses 2019 or latest available data.
f. Participation in international assessments of primary students measures participation in any of the past three years (2019–21). 2 = yes, data are publicly available; 1 = yes, data are not publicly available; 0 = no.
g. Quality of education management information systems (EMIS) ranges from 1 (poor quality) to 6 (high quality).
Notes

1. Approximately 90 percent of the region’s primary students were enrolled in public schools in 2019 (UIS 2022). In high-income Japan, Korea, and Singapore, more than 95 percent attend public schools. In the region’s middle-income countries, the focus of this report, the figure ranges from 99 percent in Viet Nam to 75 percent in the Solomon Islands.

2. In India, the estimated impact of having a high-performing versus low-performing teacher is even larger: the difference between an average student ending up in the top or the bottom 12 percent of the class (World Bank estimates).

3. The Green Revolution, also known as the Third Agricultural Revolution, refers to the introduction of new high-yielding seed varieties in the mid-1960s, which contributed to significantly higher agricultural productivity, especially when combined with modern chemical fertilizers, pesticides, and controlled irrigation. Productivity using Green Revolution technologies differed in important ways depending on farmers’ ability to make appropriate use of these new agricultural inputs and technologies.

4. The findings on low class time devoted to learning are from World Bank estimates, based on Southeast Asia Primary Learning Metrics (SEA-PLM) data (UNICEF and SEAMEO 2020).

5. The benefits may be even larger if increased cognitive skills of students also translate into students completing more years of schooling. In the case of Tonga, when making this additional assumption, the estimated benefits would increase by $560. The present value of future earnings is derived from Mincerian earnings functions, which model individuals’ future earnings. In the case of Tonga, the relationship between cognitive skills and earnings is estimated using the Tonga Household Income and Expenditure Survey (Abeberese, Kumler, and Linden 2014; Evans and Yuan 2019; Macdonald and Vu 2018; Montenegro and Patrinos 2014).

6. As discussed in more detail in World Bank 2023a, the military coup in Myanmar in February 2021 has severely disrupted the education sector in Myanmar. As the report documents, the disruptions in the education sector caused by the pandemic were compounded by the military coup as many officials in the Ministry of Education (MoE) and a large number of public school teachers throughout the country joined the civil disobedience movement (CDM) to protest against the military takeover.


References


Béteille, T. 2022. “Vibrant or Stuck?” Background paper for this report, World Bank, Washington, DC.


Early investments in education have fueled the remarkable economic development in East Asia and Pacific, leading to increased incomes, employability, mobility, and economic resilience. Despite past successes, today more than half of the 10-year-olds in most middle-income countries in the region is unable to read and understand age-appropriate texts or demonstrate grade-level mathematical skills. Learning outcomes are also unequal within countries—between cities and villages and between rich and poor. Weak foundations mean that many children will be unable to develop the skills needed in innovative manufacturing and modern services—the same productivity-boosting services essential to the growth that will propel these countries from middle- to high-income status.

*Fixing the Foundation: Teachers and Basic Education in East Asia and Pacific* presents a growing body of evidence that shows how the region’s policy makers can support teachers and enhance teaching skills to improve foundational learning in literacy and numeracy. The report proposes a three-pronged program of action: attract and recruit effective teachers, enhance existing teachers’ capacity to teach, and motivate greater teacher effort.

The evidence discussed indicates that effective programs to raise teaching quality and student learning include four key elements:

- Strengthening teachers’ subject matter knowledge
- Facilitating opportunities for teachers to practice what they learn with colleagues
- Offering ongoing support through follow-up coaching and mentoring opportunities
- Providing career incentives for training that are tied to promotion or salary considerations.

Public spending on education in most middle-income East Asian and Pacific countries is well below that of other countries with similar incomes. The proposed reforms will need to be financed by a combination of more efficient public spending and increased budgetary resources; additional resources are particularly needed in poorly performing areas.

Successful reform will require more than identifying the best evidence-based programs. It will take the sustained commitment of all stakeholders—government officials, teachers, parents, and the general public—to set the stage for better learning now and for more prosperous societies in the future.