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Overview of Education Issues in Developing Countries

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During this century, education, skills, and other knowledge have become crucial determinants of a person's and a nation's productivity. One can even call the twentieth century the Age of Human Capital in the sense that the primary determinant of a country's standard of living is how well it succeeds in developing and utilizing the skills, knowledge, health, and habits of its population.

Gary Becker (1995)

Most, if not almost all, economists agree with Gary Becker on the importance of human capital in determining a country's standard of living, and that formal education is a large, and perhaps the largest, component of human capital. This consensus reflects the fact that economists and other researchers have accumulated a vast amount of evidence that education increases workers' productivity and thus increases their incomes. They have also shown that education leads to improvements in health and many other types of nonmonetary benefits.

While economists and other researchers may lament that many of their research findings are routinely ignored by policymakers, this does not appear to be the case for education. International organizations fully endorse the importance of education for economic and social development. For example, two of the eight Millennium

Development Goals (MDGs) adopted at the United Nations Millennium Summit in September 2000 focus on education. Even more important, policymakers in developing countries also generally agree that there are important benefits from investment in human capital. One consequence of this consensus is that policymakers have greatly increased their funding of education; governments in developing countries now spend about \$700 billion *each year* on education, and parents' expenditures on their children's education are likely to be on the same order of magnitude.¹

Have these investments in education increased the stock of human capital in developing countries? There has certainly been substantial progress in terms of increases in **school enrollment rates and completion rates**. For example, the World Bank (2012) estimates that 87% of children in developing countries finish primary school, and the gross enrollment rate for secondary school in these countries in 2010 was on average 64%, which is a large improvement over the rate of 41% in 1980.

Yet it is still the case that 13% of children in developing countries do not finish primary school, and over one-third do not enroll in secondary school. Even more worrisome is the large amount of evidence that students in developing countries learn far less than do students in developed countries. In an international comparison conducted in 2009, 58.1% of U.S. fifteen-year-old students attained a literacy score of Level 3 or higher, where Level 3 corresponds to "capable of reading tasks of moderate complexity" (OECD 2010, p. 51). In contrast, the corresponding figures for fifteen-year-old students in many developing countries were much lower: 23.3% for Brazil, 12.2% for Indonesia, 20.1% for Jordan, and 13.1% for Peru. Results for mathematics Level 3 proficiency, which is defined as being able to "execute clearly described procedures, including those that require sequential decisions," reveal an even larger gap: 52.2% for the United States, yet only 11.9% for Brazil, 6.4% for Indonesia, 11.9% for Jordan, and 9.5% for Peru.

While spending even more money may increase enrollment and learning to some extent, most developing countries face serious budget constraints that will make it difficult for them to devote significantly larger amounts of money to education. This raises the question of whether current spending could be allocated more efficiently, and more generally whether education policies could be improved in ways that increase both enrollment and learning at little additional cost. Economists and other researchers have conducted a large amount of research on education in developing countries in the last two decades, but their findings are scattered in many different academic journals and other types of publications.

The importance of education in determining countries' and individuals' standards of living, combined with the low levels of learning in many developing countries despite the hundreds of billions of dollars devoted each year to education in those countries, underscores the urgent need to find policies that will lead to better education outcomes in those countries. Fortunately, there has been a large increase in research on education in developing countries in the last two decades, which presents an unprecedented opportunity to assess how this research can be used to improve education policies in developing countries. In response to this opportunity, this volume has three goals: to take stock of what this recent research has found; to present the implications of this research for education policies in developing countries; and, finally, to set priorities for future research on education in those countries. These goals are accomplished in the remaining chapters of this book. This chapter lays out the broad issues and highlights some of the most important findings in the chapters that follow.

Broadly speaking, the factors that determine how many years children are enrolled in school, and how much they learn while they are in school, can be divided into child and family characteristics, and school and teacher characteristics. Child and family characteristics are often difficult to change through government policies, though some policies, such as those aimed at improving child health, can have important effects. In contrast, since most children in developing countries are enrolled in publicly operated schools, government policies can have direct (and indirect) impacts on school and teacher characteristics. Thus a reasonable place to begin when reviewing the evidence on the impact of government policies on students' education outcomes is to focus on school and teacher characteristics. Indeed, while students' characteristics and backgrounds can have important effects on how much they learn, careful research has shown that schools and teachers can also make a substantial difference.²

Almost every parent would like his or her child to attend a "high-quality" school, but it is not necessarily clear which schools are of high quality. By definition, a "high-quality school" is a school whose students are more likely to achieve or exceed the learning goals set by the educational system, compared to similar students in other schools. Similarly, a "low-quality school" is one whose students are less likely to attain those goals, again compared to similar students in other schools. But what makes some schools (and teachers) "high quality" and others "low quality"? The role of basic school and teacher characteristics in

determining students' educational outcomes is reviewed in chapter 2, by Glewwe, Hanushek, Humpage and Ravina. This chapter systematically reviews the research done in the last two decades to assess what has been learned about the causal impact of basic school and teacher characteristics—such as class size (student-teacher ratio), teacher education, availability of textbooks and desks, teacher training, and pedagogical methods used—on students' educational attainment (years of schooling) and learning. To the extent that certain teacher or school characteristics have strong positive impacts on students' educational outcomes, funding for education should be reallocated toward policies that promote those characteristics and away from interventions that focus on characteristics that appear to have little or no effect.

The findings of this chapter are sobering. The studies that are deemed to be of the highest quality yield only a few unambiguous results, and those results are not particularly surprising. The clearest findings are that having a fully functioning school—one with better quality roofs, walls or floors, with desks, tables, and chairs, and with a school library—appears conducive to student learning. These findings are little more than common sense, and even the impacts of these attributes may not be causal; perhaps the true causal factor is an interest in, and a commitment to, providing a quality education. On the personnel side, the most consistent results are positive impacts of having teachers with greater knowledge of the subjects they teach, having a longer school day, and providing tutoring. An additional, and again unsurprising, finding is that it matters whether the teacher shows up for work; teacher absence has a clear negative effect on learning. Again, these findings regarding teachers offer little more than what common sense would predict.

One immediate implication of these research findings is that countries that are interested in improving student outcomes should ensure that these common-sense solutions to increase their students' performance are in fact being implemented. Remarkably, many countries around the world fail to provide a basic institutional structure that promotes student achievement. Yet these findings do *not* imply that common sense can serve as a reliable guide for education policies, because many other policies that may also appear to be common sense, such as reducing class size, are not supported by recent research.

Perhaps most important, the analysis in chapter 2 suggests that progress in improving students' educational outcomes in developing countries will require going beyond a narrow focus on basic school and teacher characteristics. Several possible directions could be pursued, and they can be divided into three broad types: policies that alter student charac-

teristics before they begin primary school (and perhaps while they are in school), policies that are designed to alter student and parent behavior, and policies that attempt to change the way that schools are operated in terms of both the management structure and the incentives faced by teachers and school administrators. These three types of policies are systematically reviewed in chapters 3–7.

Consider first policies that attempt to change student characteristics before they even enroll in primary school. The two main avenues to change child characteristics in the first years of life are early childhood development programs, especially preschools, and child health and nutrition programs. The former are examined in chapter 3, and the latter are reviewed in chapter 4.

In developed countries, most children attend preschool before entering primary school, and preschools are becoming increasingly common in developing countries. The potential role that preschools could play in raising students' progress in primary and secondary school in developing countries is examined by Behrman, Engle and Fernald in chapter 3. They find evidence from a small number of high-quality studies that preschools can have strong, positive effects on children's long-run educational and income-earning outcomes.

Yet preschools can vary in many dimensions, and the evidence to date is insufficient to determine what aspects of preschools are most important for boosting student outcomes and outcomes during adulthood. In addition, there are many unanswered questions regarding how preschool services should be provided. For example, should developing country governments establish a nationwide system of preschools, or should they offer subsidies that families can use to enroll their children in privately operated preschools? Chapter 3 concludes with priorities for future research, including specific recommendations for the types of research methods and data-collection efforts that are most promising.

Any comprehensive analysis of education in developing countries must address the relationship between students' educational progress and their health and nutritional status. The need for a comprehensive analysis of this relationship reflects two fundamental facts: (1) Many children in developing countries suffer from malnutrition and other conditions of poor health; and (2) there is strong evidence that malnutrition and poor health, both during the first years of life and while in school, can have negative impacts on students' educational outcomes. This analysis is provided by Alderman and Bleakley in chapter 4.

After a conceptual overview of the impact of poor health on education outcomes in developing countries, Alderman and Bleakley focus on

two specific dimensions of poor health: malnutrition and parasitic infections. They highlight the findings that improvements in these two dimensions have the potential not only to increase years of schooling but also to increase learning per year of school, the latter of which is consistent with an emphasis on improving the quality of education. Interventions that reduce early childhood malnutrition and parasitic infections have economic returns that greatly exceed their costs. Alderman and Bleakley also point out that both of these dimensions are characterized by the presence of externalities; diarrheal infections that lead to early childhood malnutrition and parasitic infections that affect children during their school-going years are easily spread from one child to another, which implies that private investments in child health are below socially optimal levels. In addition, public interventions to improve child health lead not only to increased economic efficiency by addressing the above-mentioned externalities but also reduce inequality, since efforts to improve child health tend to benefit the poor more than they benefit higher-income households.

A final point regarding the impact of child health on schooling outcomes is that some successful interventions will require cooperation among two separate government ministries, the Ministry of Health and the Ministry of Education, that have had relatively little interaction in the past in many countries. This could lead to administrative conflicts; for example, some activities of the Ministry of Education that are not particularly effective in improving students' outcomes should have their funding reduced, and those funds may better contribute to education outcomes if they are used to fund health programs administered by the Ministry of Health.³ This is consistent with the more general point made above that parts of the institutional structure in many developing countries impede more effective policies and thus inhibit better results.

Policies that attempt to improve students' education outcomes by changing teacher and school characteristics are, in effect, policies that focus on the supply side of schooling. Yet there may be policies that are more effective by focusing on the demand side. This leads to the second type of policies that go beyond attempts to change school and teacher characteristics: policies that change the incentives faced by students and parents. The potential for such policies is explored by Behrman, Parker, and Todd in chapter 5. This chapter is particularly timely because such incentive programs, especially conditional cash-transfer programs, have become much more common in developing countries in the past one to two decades (see World Bank 2009).

Programs that provide incentives for students and their parents can

take several forms. Chapter 5 reviews the evidence on four types of incentive programs: (1) Conditional cash-transfer programs, which provide parents monthly payments conditional on their children attending school regularly; (2) payments to students based on academic performance, such as scores on exams; (3) school-voucher programs that provide funds that parents can use to enroll their children in either public or private schools; and (4) “food-for-education” programs that provide children with meals at school or supply their families with staple foods to be consumed at home. The authors find that many of these programs lead to increases in school enrollment, although there is less evidence on whether they lead to increased student learning as measured by performance on academic tests.

While incentive programs seem to be a promising avenue for increasing students’ educational outcomes, further research is needed to understand the circumstances that make these programs particularly effective. Given the variation in country and education system characteristics across developing countries, it is not clear that a program that worked well in one country will also be effective in another country with very different characteristics. Another important issue is cost-benefit ratios. Some incentive programs, such as conditional cash-transfer programs, are quite expensive, and there may be other policies that can raise students’ educational progress at a much lower cost. On the other hand, when assessing the costs of those programs it is important to note that, from the perspective of society as a whole, transfers are simply a redistribution of resources from one group of households (taxpayers) to another (program participants) and thus these transfers should not be counted as a cost of the program to society as a whole (although raising taxes to pay for any program does entail a social cost, namely the dead-weight cost of raising government revenue).

The third and final type of policies that go beyond attempts to change basic school and teacher characteristics is those that focus on the ways that schools, and more generally school systems, are organized. Such policies focus on the supply side of the education sector, but also on how that supply can be made more responsive to the demand for education. These types of policies can be divided into those that focus on how public schools are managed, and those that foster competition between (and among) both public and private schools. These two types of policies are examined in chapters 6 and 7 respectively.

Many observers argue that the focus of supply-side efforts pertaining to public schools should not be on their basic characteristics; instead it may be that the way schools are organized and managed may be much

more important for increasing students' educational progress. One startling symptom of poor management is that teacher absences are quite common in developing countries; averaging over six countries, Chaudhury et al. (2006) find that on any given day 19% of teachers are absent. Organizational and management issues, and the recent research on them, are reviewed by Galiani and Perez-Truglia in chapter 6. They focus on three specific issues that have received particular attention in developing countries: school decentralization, tracking, and teacher incentives.

School decentralization is the delegation of the management of educational resources to lower levels of public administration, the lowest of which is the school. While this policy has been widely advocated since the 1990s, until recently there was little research on its impact in developing countries. Galiani and Perez-Truglia conclude that the most credible studies find that, on average, school decentralization policies increase students' learning and time in school. Unfortunately, these average impacts do not appear to be evenly spread across all students; the few studies that examine the impacts for different groups of students find that the poorest students do not seem to benefit, which implies that such policies lead to a more unequal distribution of educational outcomes unless other policies are adopted that can raise educational progress among the poor.

The evidence on tracking by student ability in developing countries is quite sparse. The best study to date, from Kenya, finds benefits to all students from tracking, but more research is needed in other contexts to see whether this finding can be generalized to other countries and educational systems.

There is somewhat more evidence on teacher incentives. Most, but not all, of the teacher-incentive schemes studied found positive impacts in terms of reducing teacher absenteeism and improving students' performance, though the compensations systems should be designed to discourage teaching to the test. A more specific type of teacher incentive program is the increasing use of contract teachers, who are less-qualified, locally hired teachers who have little job security (a typical contract is for one year) and receive relatively low pay. The best studies to date indicate that such teachers can raise student learning, although again additional research is needed to determine whether these findings generalize to many different settings.

Discussion of school-management issues sooner or later leads to the question of the role that could be played by private schools, and more generally the role of competition in promoting effective delivery of education services. In general, economists favor competition as a means to

increase efficiency in a wide variety of settings, and it is not surprising that many economists advocate a greater role for private schools and for other policies that promote competition among schools, such as vouchers. These issues are considered MacLeod and Urquiola in chapter 7.

These authors begin with a review of the empirical evidence. While many economists would expect that competition in the provision of education would lead to an unambiguous improvement in education outcomes, they argue that this is not the case. First, they examine whether private schools are more efficient than public schools, focusing on studies from Colombia and India, which have the strongest research designs. The evidence for both countries is mixed. They then turn to the question of whether increased competition among both public and private schools improves students' educational outcomes, focusing on evidence from Chile and Pakistan, which have the highest-quality studies of this type. These results are also mixed. A final point is that evidence from several of these countries shows that increased competition, especially in the form of an increase in the share of students enrolled in private schools, leads to greater social stratification and inequality in education outcomes.

Given these results, which may be surprising to many economists, MacLeod and Urquiola present a broad theoretical discussion of the nature of competition in education services, drawing on theoretical models of incentives and contracts (particularly models of incomplete contracts). They conclude that the theoretical arguments for increased competition in education are mixed. The crux of the problem is that students' academic performance depends not only on school quality, however defined, but also on students' ability and effort, and it is difficult for parents, or more generally the market, to distinguish between these effects. For example, in many countries students who attend private schools perform better on academic tests than do students in public schools, but it is unclear whether this difference reflects that private schools are of higher quality or that the students in those schools have higher ability and more parental support. In such situations, where asymmetric information problems are pervasive, economic theory does not assure that increased competition will increase students' educational progress. Thus the mixed empirical findings should not be seen as particularly surprising.

Taken as a whole, the findings in chapters 2–7 provide substantial guidance regarding what policies are most promising for improving students' educational outcomes in developing countries, but clearly more research is needed. Yet once one has fairly reliable results concerning the impacts of several policy options on students' years of schooling and learning, one has only half of the information needed to choose from

among those options; information is also needed on the costs of each of the options. In theory, the different policy options need to be compared using cost-benefit analysis. Yet the wisdom of this approach is questioned by Dhaliwal, Dufo, Glennerster and Tulloch in chapter 8. They argue that cost-effectiveness analysis is a more useful guide for policy decisions.

Cost-benefit analysis attempts to compare the monetary value of the costs of a program to the monetary value of all of the outcomes brought about by that program. In contrast, cost-effectiveness analysis compares the monetary costs of a program to the “amount” of the outcomes, which in the case of education projects are years in school, skills learned, and perhaps other educational outcomes. This has the advantage that there is no need to calculate the monetary value of the outcomes, which can be very complicated and may require assumptions that could be incorrect. On the other hand, cost-effectiveness analysis has the disadvantage that one can compare only programs with similar outcomes, while in principle cost-benefit analysis can be used to compare *any* types of programs for which cost-benefit calculations can be made, for example comparing the relative merits of a given education program to a hydro-power project or an anticorruption program.

Dhaliwal et al. argue that many, if not most, education decisions can be made on the basis of cost-effectiveness analysis. While this has the benefit that it requires fewer assumptions than cost-benefit analysis, it is still the case that cost-effectiveness analysis is not always straightforward, so the authors provide detailed advice in how best to implement it. Difficulties regarding the calculation of the impacts include obtaining credible estimates of those impacts (the main focus of chapters 2–7), comparisons when programs have multiple impacts, statistical imprecision in the estimated impacts, spillover effects, and aggregation issues. Complications that arise in calculating costs include calculating the marginal costs of a program, determining the value of goods and services that are obtained at little or no cost, calculating (direct and indirect) costs incurred by beneficiaries, and deciding how to treat income and other transfers (which involve redistribution of resources but perhaps little cost to the economy as a whole), management costs, and issues involved in scaling up a pilot program.

Considered together, the chapters in this book summarize the current state of knowledge regarding the policy options available to developing countries that are most promising for increasing the stock of human capital of their youth. While much has been learned in the past ten to twenty years, much more remains to be learned. Fortunately, economists and

other researchers currently are doing a large amount of high-quality research on education in developing countries. They use a wide variety of methods, but this is a strength, rather than a weakness, of this research (Rosenzweig 2010). Future work should, when possible, involve interaction of innovative empirical work with new theoretical work (as recommended by Banerjee and Duflo [2010]). Given that policymakers in developing countries and international development agencies do heed the advice that economists and other researchers offer on education policy, the results of new research will not be of merely academic interest but have the potential to increase the quantity and quality of education of hundreds of millions of children in the developing world.

A final point is that much of the research by economists and other researchers looks at the impact of specific programs and policies. A bigger task would be to develop a decisionmaking structure that countries can use in a systematic way to maintain and expand those programs that are successful while eliminating those that are not. Unfortunately, this important issue is often overlooked. The running story throughout this book is that some programs that appear to be quite efficacious are not necessarily the ones most often implemented. In addition to building a database about the success and failure of individual policies, future research should also focus on the decisionmaking process of both developed and developing countries.

Notes

1. See chapter 2 by Glewwe et al. on figures for government expenditures on education, as well as references regarding economists' support for education.
2. For example, two recent studies using US data (Carrell and West 2010; Rivkin, Hanushek, and Kain 2005) show strong impacts of individual teachers on student learning.
3. Bundy et al. (2009) provide a discussion, and examples, of how to improve collaboration between the Ministry of Education and the Ministry of Health in developing countries.

References

- Banerjee, Abhijit, and Esther Duflo. 2010. "Giving Credit Where It Is Due." *Journal of Economic Perspectives* 24 (3): 61–79.
- Becker, Gary. 1995. "Human Capital and Poverty Alleviation." Human Resources Development and Operations Policy Working Paper 52. Washington, DC: World Bank.
- Bundy, Donald, et al. 2009. *Rethinking School Feeding: Social Safety Nets, Child Development and the Education Sector*. Washington, DC: World Bank.

- Carrell, Scott, and James West. 2010. "Does Professor Quality Matter? Evidence from Random Assignment of Students to Professors." *Journal of Political Economy* 118 (3): 409–32.
- Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Economic Perspectives* 20 (1): 91–116.
- OECD. 2010. *PISA 2009 Results: What Students Know and Can Do*. Paris: Organization for Economic Cooperation and Development.
- Rivkin, Steven, Eric Hanushek, and John Kain. 2005. "Teachers, Schools, and Academic Achievement." *Econometrica* 73 (2): 417–58.
- Rosenzweig, Mark. 2010. "Microeconomic Approaches to Development: Schooling, Learning and Growth." *Journal of Economic Perspectives* 24 (3): 81–96.
- World Bank. 2009. "Conditional Cash Transfers: Reducing Present and Future Poverty." World Bank Policy Research Report. Washington, DC: World Bank.
- . 2012. *World Development Indicators 2012*. Washington, DC: World Bank.