

# Universal Basic and Secondary Education

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Over the past century, three approaches have been advocated to escape the consequences of widespread poverty, rapid population growth, environmental problems, and social injustices. The *bigger pie* approach says: use technology to produce more and to alleviate shortages. The *fewer forks* approach says: make contraception and reproductive health care available to eliminate unwanted fertility and to slow population growth. The *better manners* approach says: eliminate violence and corruption; improve the operation of markets and government provision of public goods; reduce the unwanted after-effects of consumption; and achieve greater social and political equity between young and old, male and female, rich and poor (Cohen, 1995). Providing all the world's children with the equivalent of a high-quality primary and secondary education, whether through formal schooling or by alternative means, could, in principle, support all three of these approaches.

Universal education is the stated goal of several international initiatives. In 1990, the global community pledged at the World Conference on Education for All in Jomtien, Thailand, to achieve universal primary education (UPE) and greatly reduce illiteracy by 2000. In 2000, when these goals were not met, it again pledged to achieve UPE, this time at the World Education Forum in Dakar, Senegal, with a target date of 2015. The UN Millennium Development Conference in 2000 also adopted UPE by 2015 as one of its goals, along with the elimination of gender disparities in primary and secondary education by 2015.

Educational access increased enormously in the past century. Illiteracy fell dramatically and a higher proportion of people are completing primary, secondary, or tertiary education than ever before. Despite this progress, huge problems remain for providing universal access and high-quality schooling through the secondary level of education. The UPE goal looks unlikely to be achieved by 2015 at the current rate of progress. An estimated 299 million school-age children will be missing primary or secondary school in 2015; of these, an estimated 114 million will be missing primary school. These statistics suggest that providing every child between the approximate ages of 6 and 17 with an education of high quality will require time, resources, and colossal

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effort. Should the international community commit the necessary economic, human, and political resources to the goal of universal education? If so, how should it deploy these resources, and how much will it cost?

The UBASE project reviewed research related to the achievement of universal primary and secondary education globally: the current state of education, the quality and quantity of available data on education, the history of education and obstacles to expansion, the means of expanding access and improving education in developing countries, estimates of the costs, and the potential consequences of expansion. This research implies that achieving universal primary and secondary education is both urgent and feasible. Achieving it will require overcoming significant obstacles, developing innovations in educational practices, and spending more money on education.

## THE CURRENT SCENE

Current educational data indicate that the world has made significant progress in education, though shortfalls and disparities remain.

### *The Good*

Over the past century, formal schooling spread remarkably, as measured by the primary gross enrollment ratio (GER)—the ratio of total primary enrollment, regardless of age, to the population of the age group that officially belongs in primary education. In 1900, estimated primary GERs were below 40 percent in all regions, except that in northwestern Europe, North America, and Anglophone regions of the Pacific, collectively, the ratio was 72 percent (Williams, 1997: 122). Within the past few years, the estimated global primary net enrollment ratio (NER)—the number of pupils in the official primary school-age group expressed as a percentage of the total population in that age group—reached 86 percent (Bloom, 2006, Appendix A). The NER is a stricter standard (i.e., it gives lower numbers) than the GER, so the achievement is all the more remarkable. Secondary-school enrollment shows similar progress. The number of students enrolled in secondary school increased eight-fold in the past 50 years, roughly from 50 million to 414 million (calculations by Bloom, based on UNESCO online data).

Measures distinct from enrollment round out this picture. Over the twentieth century, literacy tripled in developing countries, from 25 percent to 75 percent. The average years of schooling in these countries more than doubled between 1960 and 1990, increasing from 2.1 to 4.4 years (Bloom and Cohen, 2002). That figure has risen further since 1990. This growth in enrollment and literacy was supported by more global spending on primary and secondary education than at any previous time. According to Glewwe and Zhao (2006), developing countries spent approximately \$82 billion on primary schooling in 2000; Binder (2006) estimates that spending for secondary education in developing countries in 2000 was \$93 billion per year. Although the data and methods of estimation underlying these figures differ, they both indicate large expenditures.

As access to education and literacy increased, global monitoring of students, schools, and educational systems also increased. Developing countries are participating in international measurements of educational status in greater numbers (Braun and Kanjee, 2006). More statistical measures of schooling have been defined (for example, net and gross enrollment ratios, attendance rates, completion rates, average years of attainment, and school life expectancy). Though not all are well supported by reliable, internationally comparable, comprehensive data, several organizations are working toward this goal. The UNESCO Institute of Statistics, Montreal, maintains the highest-quality data (for example, UNESCO, 2000, 2004).

### *The Bad*

This progress is considerable, but large deficits remain. Roughly 323 million children are not enrolled in school (23 percent of the age group 6–17); roughly 30 percent of these children are missing from primary school, the rest from secondary school (Bloom, 2006). In developing countries, 15 percent of youth aged 15 to 24 are illiterate, as are about one in every four adults (UNESCO, 2005).

Moreover, enrollment does not necessarily mean attendance, attendance does not necessarily mean receiving an education, and receiving an education does not necessarily mean receiving a good education. High enrollment ratios may give the mistaken impression that a high proportion of school-age children are being well educated. Some 75–95 percent of the world’s children live in countries where the quality of education lags behind—most often far behind—the average of OECD countries, as measured by standardized test scores (Bloom, 2006). That standard may not be universally appropriate. However, it is uncontested that educational quality is too often poor.

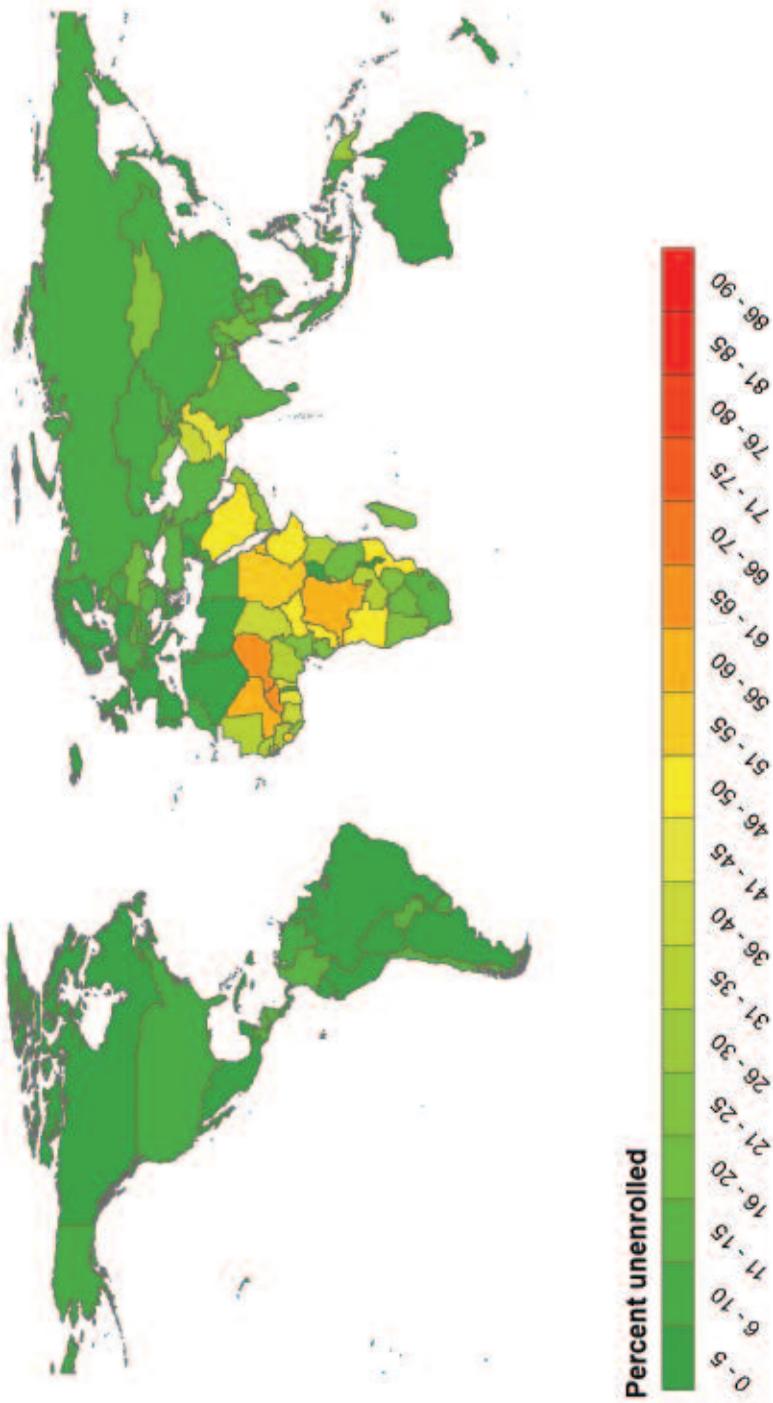
In addition, indicators of educational quality are scarce. Though participation in international and regional assessments of educational quality has increased, countries most in need of improvements are least likely to participate. As a result, important comparative data on quality continue to be lacking for the developing world. The problem of inadequate or missing data is pervasive. Bloom, and Braun and Kanjee examine in their respective chapters of *Educating All Children: A Global Agenda* (2006) why it is so difficult to gather and assess basic facts about who is learning what, where, when, and how.

### *The Ugly*

Gross disparities in education separate regions, income groups, and genders. The populations farthest from achieving UPE are typically the world’s poorest. Net primary enrollment ratios have advanced in most of the developing world but remain low in Sub-Saharan Africa. Figures 1 and 2 illustrate the sometimes-dramatic disparities between countries in school enrollment at the primary and secondary levels.

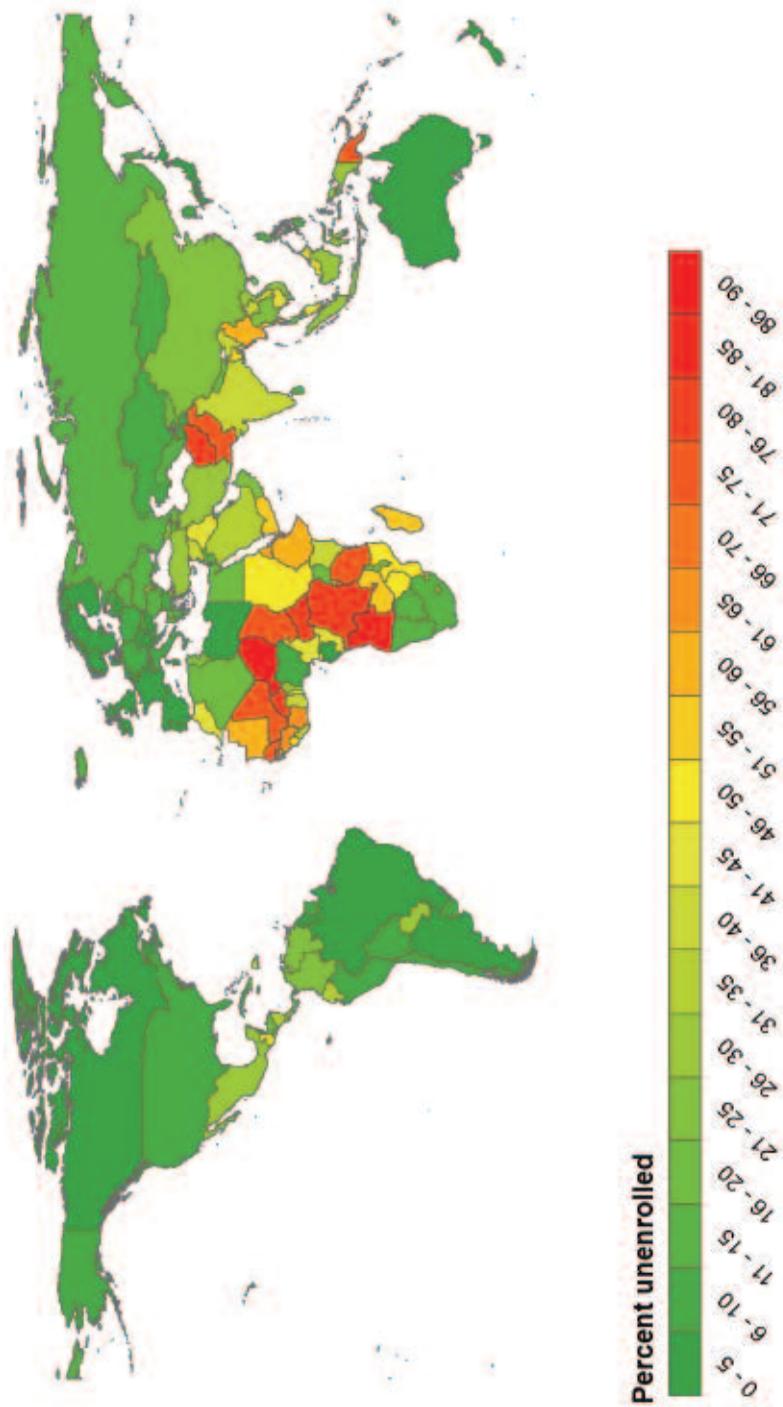
Girls’ education falls short of boys’ education in much of the world. Although enrollment rates sometimes do not differ greatly, many more boys

**Figure 1:** Percentage of Students of Primary School Age Not Enrolled in School



Maps are based on data calculated by Bloom from UNESCO online data. See Bloom (2006), Appendix A

**Figure 2:** Percentage of Students of Secondary School Age Not Enrolled in School



Maps are based on data calculated by Bloom from UNESCO online data. See Bloom (2006), Appendix A

than girls complete schooling, especially at the primary level. Although we know that gender, proximity to a city, and income level interact in influencing educational deficits, a systematic global analysis remains to be done of how much each contributes to differences in children’s educational opportunities and achievements. In India in 1992–93, the enrollment rate of boys aged 6–14 exceeded that of girls by 2.5 percentage points among children of the richest households; the difference in favor of boys was 24 percentage points among children from poor households (Filmer, 1999). The study also shows that wealth gaps in enrollment greatly exceeded sex gaps in enrollment. The boys from rich households had enrollment rates 34 percentage points higher than those of boys from poor households; the gap in favor of rich girls compared to poor girls was 55.4 percentage points.

Developing countries differ widely in spending on primary education, ranging from \$46 per student per year in South Asia and \$68 in Sub-Saharan Africa to \$878 in Europe and Central Asia (see Table 1). Spending per student in secondary education shows a similar range, from \$117 per student per year in South Asia and \$257 in Sub-Saharan Africa to \$577 in Latin America and the Caribbean (Binder, 2006).

**Table 1:** Recent Public Current Expenditures on Primary Schooling in Developing Countries

Region	Public Spending per Student (U.S. \$)	Total Public Spending (millions U.S. \$)	Fraction of Population with Public Spending Data*
South Asia	46	6,910	0.98
Sub-Saharan Africa	68	6,100	0.98
East Asia and Pacific	103	21,200	0.96
Latin America and the Caribbean	440	28,200	0.90
Middle East and North Africa	519	14,200	0.60
Europe and Central Asia	878	5,210	0.22
All developing regions	151	81,800	0.88

Source: Glewwe and Zhao (2006).

\*Public spending figures are more reliable in regions where public spending data are available for a higher fraction of the population.

## CHALLENGES

Closing the gap between the current state of global education and the goal of providing all children with high-quality primary and secondary education schooling requires meeting several distinct challenges.

- Educate the roughly 97 million children of primary-school age who are not currently enrolled in school (Bloom, 2006). As a majority of these students are female and most live in absolute poverty, the underlying conditions that create disparities in educational access will likely need to be addressed.
- Educate the 226 million children of secondary-school age not in school. Improved access to primary education fuels the demand for secondary edu-

cation. As more and more children attend school, more and more teachers—who should have at least a secondary education—will also be needed (UNESCO, 2006).

- Develop the capacity to educate the 90 million additional children 5–17 years old in developing countries in the next 20 years (United Nations, 2004).
- Improve the quality of primary and secondary education, assessed according to constructive goals and clear standards.
- Provide policymakers with clear, empirically supported rationales for why education matters. Achieving these goals requires a realistic appraisal of the obstacles that have thus far prevented educational opportunity for all children. It requires fresh thinking about what the goals of education should be, and how best to pursue those goals. And it demands an assessment of the costs, which are likely to be significant, as well as an assessment of the consequences of educational expansion and the returns on this investment, which are essential to securing societal and political support.

The researchers on the UBASE project consider these and other questions and lay the groundwork for the development of new policies to achieve universal basic and secondary education.

#### WHY UNIVERSAL PRIMARY AND SECONDARY EDUCATION?

Although education is not available to hundreds of millions of children, neither are health care, adequate nutrition, employment opportunities, and other basic services available to these children or their families. Why should universal primary and secondary education be a development goal of high priority?

Several rationales support the pursuit of universal primary and secondary education. Education provides economic benefits. Education builds strong societies and polities. Education reduces fertility and improves health. Education is a widely accepted humanitarian obligation and an internationally mandated human right. These rationales are commonly offered for universal primary education, but many benefits of education do not accrue until students have had 10 or more years of education. Completion of primary education is more attractive if high-quality secondary education beckons.

##### *Economic Benefits*

As Hannum and Buchmann (2006) report, extensive sociological and economic studies have found that education generally enables individuals to improve their economic circumstances. Although the benefits of education for the individual are clear, the aggregate effects on economic growth are more difficult to measure and remain a matter of dispute (Krueger and Lindahl, 2001; Pritchett, 1997; and Bloom and Canning, 2004).

It is clear, however, that more education contributes to a demographic transition from high fertility and high mortality to low fertility and low mortality,

and Bloom and colleagues (2003) find this change is associated with accelerated growth. When fertility rates fall, the resulting demographic transition offers countries a large working-age population with fewer children to support, although only for a transient interval before population aging begins. In this interval, the large fraction of the population that is of working age offers an exceptional opportunity for high economic growth (Bloom et al., 2003).

Women who attend school, particularly at the secondary or tertiary level, generally have fewer children than those who do not. An increase by 10 percent in primary GERS is associated with an average reduction in the total fertility rate of 0.1 children. A 10 percent increase in secondary GERS is associated with an average reduction of 0.2 children (Hannum and Buchmann, 2006). In Brazil, women with a secondary education have an average of 2.5 children, compared to 6.5 children for illiterate women. In some African societies, total fertility is reduced only among girls who have had 10 or more years of schooling (Jejeebhoy, 1996).

Education contributes to reduced fertility through numerous pathways. Maternal education can lead to increased use of contraceptives. Education can enable women more easily to work outside the home and earn money. This improvement in status leads to empowerment and increased decision-making authority in limiting fertility. Educated women tend to delay marriage and childbearing, perhaps because of the increased opportunity costs of not participating in the paid labor force. Education and income may also become intertwined in a virtuous spiral: as incomes grow, more money is available to finance the spread of education, which leads to further increases in income.

### *Strong Societies and Politics*

Although the evidence is not definitive, education has been shown to strengthen social and cultural capital. Absolute increases in educational attainment can shift disadvantaged groups, such as ethnic minorities or females, from absolute deprivation to relative deprivation compared to more advantaged groups. Educated citizens may be more likely to vote and to voice opposition. Among states, higher enrollment ratios at all levels of education correspond to increases in indicators of democracy (Hannum and Buchmann, 2006). If the content of the education encourages it, education can promote social justice, human rights, and tolerance. As the percentage of the male population enrolled in secondary school goes up, the probability of civil conflict goes down (Collier and Hoeffler, 2001). These desirable effects depend on the content of education and do not flow from the fact of education per se (Cohen, forthcoming 2007).

### *Health*

Controlling for income, educated individuals have longer, healthier lives than those without education. Children who are in school are healthier than those who are not, though causation could flow in either direction or both.

Many effects of education on health are indirect effects through increased income. Education increases economic status, and higher-income individuals

have better access to health care services, better nutrition, and increased mobility. Education also has direct impacts on health, unrelated to income. It can provide vital health knowledge and encourage healthy lifestyles. For example, the offspring of educated mothers have lower child and infant mortality rates and higher immunization rates, even when socioeconomic conditions are controlled statistically (as discussed by Hannum and Buchmann, 2006).

Improved health may in turn enhance education. For example, as Kremer (2006) and Bettinger (2006) discuss, randomized evaluations of school-based health programs in Kenya and India suggest that simple, inexpensive treatments for basic health problems such as anemia and intestinal worms can dramatically increase the quantity of schooling students attain. Bloom (2006) reviews research on the reciprocal relationship between health and education.

### *A Basic Human Right*

Universal education is justified on ethical and humanitarian grounds as right, good, and fair. Education enables people to develop their capacities to lead fulfilling, dignified lives. High-quality education helps people give meaning to their lives by placing them in the context of human and natural history and by creating in them an awareness of other cultures. Article 26 of the United Nations' Universal Declaration of Human Rights, adopted in 1948, asserts: "Everyone has the right to education." It maintains that primary education should be free and compulsory. The Convention on the Rights of the Child, which entered into force in 1990, obliges governments to make universal primary education compulsory and also to make different forms of secondary education accessible to every child.

## OBSTACLES

The rationales for continued educational expansion are powerful, but the barriers too are numerous and formidable. The cost to governments of providing universal primary and secondary schooling, discussed later in this paper, is significant (See Glewwe and Zhao, 2006; Binder, 2006). The cost of education to individuals and families is sometimes a strong disincentive. Because governments face competing demands for the allocation of state resources, education is often pushed down the list of priorities. And even if financial resources for education were plentiful, then politics, corruption, culture, poor information, and history among other factors would conspire to block or slow the achievement of access to high-quality education for all children.

### *Economic Disincentives*

Millions of children have access to schooling but do not attend. Some families may place greater value on the time children spend in other activities, such as performing work for income or handling chores so other household members are free to work in market activities. In developing countries, a troubled household economic situation may more often be a deterrent to

enrollment than lack of access to a school (Glewwe and Zhao, 2006). For example, in Ghana, almost half of parents, when asked why their children were not in school, answered, “school is too expensive” or “child needed to work at home”; another 22 percent believed that education was of too little value (World Bank, 2004).

Economic barriers disproportionately harm girls. Some parents perceive the costs—direct, indirect, and opportunity costs—of educating daughters to be higher than that of educating sons (Herz and Sperling, 2004).

### *Political Obstacles*

Education competes for scarce national resources with many worthy projects such as building roads, providing medical care, and strengthening a country’s energy system. Limited resources can hamper educational expansion in many ways, as Javier Corrales (2006) describes. Organized interest groups may divert funding from education to their own causes. When social crises, such as crime, unemployment, or civil war, demand the time and resources of the government, citizens are perhaps unlikely to focus on education. Popular demand for education is frequently weakest in poor regions or countries where it is most needed.

Directing adequate funds to education requires a national commitment to education that many countries lack. Government decisions guided by the short-term interests of those in power are unlikely to reflect the importance of education, as educational returns accrue over much longer time horizons. When politicians devote funds to education, the funding sometimes flows to political supporters rather than to programs and regions where it is most needed. Moreover, a limited capacity to oversee the implementation of education programs and the limited political status of education ministries within many governments may blunt reforms as they are enacted.

### *Corruption*

As with any large public sector, the education sector is rife with opportunities for corruption. When funds are diverted for private gain at any level, educational expansion and improvement may be harmed. At the highest levels of government, corruption can affect the allocation of funds to the education budget; at the ministry level, it can influence the distribution of funds to individual schools; and at the school level, it can involve the diversion of money from school supplies, the payment of bribes by parents to ensure their children’s access to or success in school and by teachers to secure promotions or other benefits (Meier, 2004).

International donors may be deterred by a recipient’s history of poor spending accountability, and may curtail funding or impose accountability measures that are themselves costly. The loss of financial resources is always harmful. It is most detrimental at the local level, where the poorest children may be denied access to education because they are not able to afford bribes or where systems of merit—both for students and teachers—are distorted through the widespread use of bribes to secure advancement (Chapman,

2002). Heyneman (2003) argues that if pervasive corruption leads to the public perception of education as unfair or not meritocratic, then this distrust of the school system may lead to distrust of the leaders it produces. As a result, he says, a country's "sense of social cohesion, the principal ingredient of all successful modern societies," may be undermined.

### *Lack of Information*

Reliable, internationally comparable, useful data on many aspects of primary and secondary education are lacking. For example, the mechanisms that keep children out of school are poorly understood in quantitative (as opposed to qualitative) detail. Most routine data focus on measures of "butts-in-seats" (in the expressive language of Lant Pritchett) such as enrollment, attendance, and completion. As Bloom (2006) points out, data on educational processes, such as pedagogical techniques and curricula, and on learning outcomes, are inadequate.

Political incentives sometimes work against accurate reporting on even basic quantitative measures. In Uganda, enrollment was historically under-reported because schools were required to remit private tuition receipts to the government in proportion to the number of students they reported. When schools became publicly funded on the basis of enrolled pupils, the incentive for schools to report higher numbers resulted in a leap in official enrollments (Bloom, 2006). In addition, governments may be reluctant to publish potentially unflattering data on their school systems for fear of political consequences (Corrales, 2006).

Failing to provide data on education feeds a vicious circle. Lack of accurate data impairs the formulation of effective education policy; citizens lack the information they need to hold their school administrators and elected officials accountable; unaccountable officials have few incentives to collect information that would help them to improve the system. Improving educational data could help to transform this vicious circle into a virtuous one by providing necessary information to citizens, administrators, and officials to monitor and improve the quality of schooling.

### *Historical Legacies*

The history of efforts to expand education provides a rich source of models and lessons. These historical legacies can also present impediments to those who underestimate their importance. Benavot and Resnik (2006) examine the emergence of compulsory education laws, the transformation of diverse educational frameworks into formal school systems, the problems of inequality that have arisen, and the role played by international organizations in creating an increasingly interconnected global education system.

Despite the apparent uniformity in contemporary schooling, past educational models took many forms and motivations for educational expansion varied widely. Because national contexts differ, international organizations seeking to facilitate educational expansion need to be attuned to this varied history if their interventions are to succeed. Solutions that ignore the history

of education in a particular country are likely to be less effective than solutions tuned to context. For example, when leaders advocated the decentralization of public schools in Latin American countries in the 1980s, they ignored the specific social and political purposes for which those schools had been founded, which included ending severe socio-economic segregation. Decentralization led to a growth of private schools and renewed fragmentation along socio-economic lines, which exacerbated the social divide that school centralization was initially intended to correct.

Though the past must not be ignored, it is not always a useful guide to present educational reform. Corrales (2006) notes that past state motivations to provide education—to consolidate national identity, win citizen loyalty, or neutralize rival political groups—were most prominent when nationalist, revolutionary, and totalitarian ideologies drove political development. Today, these rationales are less relevant.

## MEETING THE CHALLENGE

To overcome the obstacles described above and to achieve universal basic and secondary education, many steps are necessary. These include: clarifying what constitutes an education of high quality, improving the implementation of assessments to measure progress toward those goals, evaluating rigorously educational innovations to determine the most effective strategies for making progress, and adopting effective technology in classrooms and schools. These efforts must be directed not only at increasing access to education in the poorest and most remote regions, but also at improving the quality of what is learned.

### *Defining Goals*

Assessments and evaluations presume goals for what education should accomplish. Goals must be clearly laid out so that the success of programs can be continuously monitored (Bloom and Cohen, 2002). What are the goals of education, and who should decide these goals? What relative weight should be given to the views of children, parents, teachers, education officials, policymakers, religious leaders, business leaders, and the community at large? More policy attention to these questions is needed and should be encouraged by international organizations.

Who should decide what students learn may differ in different localities. Sometimes the goals and content of education are determined by localities within nations, sometimes nationally. In either case, international economic requirements and international comparative educational assessments can powerfully influence national decisions about the goals of education within a country. National and international officials should therefore be sensitive to ongoing public and political discussions at the local level.

Proposed educational goals include readiness for the local or global labor market; health knowledge and healthy behavior; the creation (or sustaining) of a more cohesive society; the capacity to adapt to continual change and to

learn under conditions of freedom; assisting youth to fulfill their physical, emotional, social, spiritual, and intellectual potential; providing the competencies children need for their lives and livelihoods; enabling students to interact in socially heterogeneous groups and act autonomously; addressing the needs of the world's poorest children and youth, those the global economy has left behind; teaching tolerance rather than hatred; and opening people's minds rather than controlling them. (See Charfi and Redissi, forthcoming 2007; Cheng, forthcoming 2007; Delors, 1998; Ingram, forthcoming 2007; Levinger, forthcoming 2007; Reimers, forthcoming 2007; Rogers, 1969; Rychen and Salganik, 2001; Salganik and Provasnik, forthcoming 2007; and Strom et al., forthcoming 2007. For a comprehensive view, see Cohen, 2006; Cohen and Malin, forthcoming 2007.)

Bloom and Cohen (2002) characterized the goals of education in terms of skills, knowledge, and attitudes.

*Skills.* They proposed that the skills taught should include reading with understanding, writing with clarity, and speaking with confidence. The choice of language or languages in which these skills are practiced is likely to be a national or local issue. The skills taught should also include numeracy, that is, the ability to read and understand the kinds of quantitative information encountered in daily life, plus the ability to compute as required in the contexts of daily life. These fundamental skills with words and numbers differ from the specialized disciplinary skills of literary and mathematical analysis.

Additional skills worthy of attention include peaceful ways to manage and resolve, where possible, conflicts and differences within and between social groups. The conflicts and the means of resolving them will differ culturally (e.g., compromise vs. consensual discussion vs. majority vote vs. appeal to tradition), but the skills of dealing peacefully with conflict have widespread value. Other important skills include being productive and finding satisfaction in personal life and work.

*Knowledge.* The knowledge provided by education must be about both the self and others (Bloom and Cohen, 2002). In human terms, others might include the family, the local community, other communities and cities, the nation state, other countries and cultures, and humankind. In nonhuman terms, others might include other living species and the major nonliving components of the Earth. "Other" also refers to other times, including the sources and limitations of our understanding of past and future. These domains of knowledge can be approached through the perspectives of the natural sciences, the social sciences, and the arts and humanities. For example, understanding the self in scientific perspective provides a vehicle for instruction in health and human biology and behavior.

*Attitudes.* The attitudes to be provided by education must also refer both to the self and to others—though here the goals of a universal education are liable to provoke controversy, according to Bloom and Cohen (2002). How will schools balance the values of individuality and of collective concern, of innovation and conformity, of initiative and obedience, of competitiveness

and cooperation, of skepticism and respect? The industrial model of classroom education, with students sitting silently and obediently at desks arranged on a grid and listening to an authoritative teacher, with classes starting promptly when the bell rings, conveys a different set of values and attitudes than many alternative modes of education.

The goals—and related delivery—of education around the world will shape the kinds of people we and our children will live among. There is as much at stake in defining and ensuring a quality education for every child as there is in defeating terrorism, reducing poverty, and spreading justice, dignity, and democracy. Also at stake are the inventiveness and civility of the people among whom we will live, and the richness of our own opportunities to learn from them.

### *Assessing Progress*

Although assessment is often seen as a tool to measure the progress of individual students, it also allows individuals, communities, and countries to track the quality of schools and educational systems. In theory, if policymakers have access to reliable information on educational quality in specific schools and make this information available to the aware public, then students and parents may be better able to choose among educational options and demand education of higher quality. For example, the Southern African Consortium for Monitoring Education Quality is a regional learning assessment study introduced by UNESCO and now governed by the 14 southern African participating governments. It aims to identify within-country disparities in education as a guide to where interventions might be needed.

To be successful, educational assessment must overcome a central dilemma, as Braun and Kanjee (2006) observe. If there are no consequences attached to a test, then it will do little to motivate healthy change within the educational system; however, if the result is highly consequential, then it may engender unproductive or undesirable outcomes such as narrowing the curriculum or “teaching to the test.” Where assessments are tied to funding decisions, those responsible for the quality of education—teachers, administrators, and state officials—may oppose the release or even the creation of such data.

The development of reliable and useful assessments requires institutional capacity, technical expertise, and money, all likely to be scarce in developing countries. Braun and Kanjee (2006) advocate that developing countries be encouraged to participate in international assessments as “associates,” without requiring that results be released internationally. They argue that this interim arrangement will promote the generation of much-needed data, give developing countries access to expertise, and build local capacity to develop, administer, and analyze tests, while avoiding the political consequences to participating countries of possible poor performance.

Nationally and regionally developed assessments should also be encouraged, as international assessments may not be optimal for all countries. National assessments focused on country-specific curricula or regional

approaches provide information more relevant to the needs of some countries than the information provided by international assessments, which are largely based on OECD models.

### *Innovation and Evaluation*

Assessments enable citizens and governments to track the outcomes of schools and educational systems, but offer only limited insight into the specific educational practices that lead to improved or worsened outcomes. Other means are needed to identify these effects.

Many traditional practices in education have never been evaluated by scientific experimentation to measure quantitatively what they contribute to educational outcomes. Would students learn arithmetic or history less effectively if they were not required to be in their seats by the time the school bell rang? Nor have many educational innovations been rigorously evaluated in comparison to traditional practices. Does a student who learns touch-typing from a computer learn any better, or at a significantly lower cost, than a student who learns from a traditional teacher or by self-instruction from a printed book?

As Bettinger (2006) discusses, one reliable means of getting answers to questions like these—namely, randomized controlled experimentation, the gold standard for evaluating treatments in medicine—is now finding use in education. Such experiments make possible valid comparisons among pedagogical techniques and systems of management because randomization establishes equivalent participant and nonparticipant groups for comparison. Randomized controlled experiments can, therefore, produce the most credible assessment of programs, including their cost-effectiveness. With more reliable information, leaders can focus efforts and resources on the programs that have been found to be most effective.

Kremer (2006) reviews his own and others' earlier randomized evaluations of school-based health programs. He concludes, for example, that deworming can be an extremely cost-effective way of boosting attendance as evidenced in a study in Kenya. A study in Delhi, in which students received deworming medication and vitamin A supplements, found similar results, offering hope that the program may be effective in a range of settings.

Unfortunately, randomized evaluations remain underutilized guides. Randomized experiments can be expensive and time-consuming. They require technical sophistication to plan, implement, and analyze properly. However, such experiments may be no more expensive or more time-consuming than other rigorous data collection activities, as Bettinger (2006) notes. More likely, randomized evaluations are underused because it can be politically difficult to deliver a program to only a small set of students or schools while withholding it from a comparison group of students or schools. However, when budgetary constraints make it difficult or impossible to reach all members of a population in a given year, randomly selecting which groups receive the program in year 1, year 2, et cetera, may be the fairest way to implement the program and simultaneously permit measurements of the program's impact.

### *Incorporating New Technologies*

Information and communication technologies have enormous potential to facilitate universal high-quality education. But to date, efforts to utilize information technology have yielded mixed results. The problem often lies with the implementation.

As its cost decreases, information technology (IT) in classrooms is spreading even to some of the poorest, most remote, and most sparsely populated areas. This technology can increase both the quantity and the quality of education, in part through distance education. Distance learning can provide education to those without access to traditional schools. It can benefit those who would like to learn on a non-traditional schedule, such as during evenings after work. Distance learning can improve the quality of instruction for those already in school. For example, the Indira Gandhi National Open University (<http://www.ignou.ac.in/>) in India broadcasts lectures to classrooms across the country and claims more than one million students. Students can respond by email.

Information technology can be a tool for both students and teachers. It can facilitate a transition from rote memorization to more learner-centered education in which students actively gather information, grasp new ideas, and creatively display what they have learned. In principle, IT can enhance learning in a wide range of subjects. One area of particular interest includes gender, sex, and health, because technology can allow students to explore these areas with relative anonymity (Maclay, 2004). Teachers can also benefit from IT through the use of computer-based teaching aids and curricula and online professional development. It can also facilitate communication among colleagues in different communities, allowing them to share materials and ideas.

There are obstacles to the continued expansion of IT in primary and secondary education. Many involved in education oppose the diversion of resources to IT, citing competing priorities such as textbooks and basic supplies. Moreover, political leaders may focus on visible short-term gains such as buying computers at the expense of long-term investments such as maintaining the computers and providing adequate training for their use. Successful implementation entails costs, particularly for proper training. Practitioners recommend that 30–40 percent of a budget for IT should be allocated to training (Maclay, 2004).

### *Improving Both Quantity and Quality*

Quality of education is a major problem now and will still be a problem in 2015. At first sight, it would appear obvious that there is a trade-off between the quantity of education and its quality. The rush to achieve more “butts in seats” could reasonably be expected to undermine the quality of education, as more students are placed in already crowded classrooms and resources are spread more thinly. However, Glewwe and Zhao (2006) suggest that improving the quality of education may be a necessary precondition for achieving universal primary and secondary coverage. Improving quality increases the incentives to parents to send their children to school. The quali-

ty of education may compete with the quantity of education when a country is trying to extend the reach of primary education from 20 percent of school-aged children to 60 percent of school-aged children, but higher quality may facilitate a country's efforts to educate the 40 percent of school-aged children who are least accessible.

## COSTS AND FINANCE

What would it cost to achieve universal primary and secondary education? Assuming education will be largely delivered through schools, educating all children will require additional money for schools, teachers, teacher training, materials and equipment, administration, assessments, randomized evaluations, and overcoming economic disincentives to families. Cost estimates are crude at best. Studies of educational costs generally ignore the burden borne by those who seek or provide education outside of schools. It is also difficult to measure the cost of ignorance.

### *Cost Estimates for Universal Primary and Secondary Education*

Estimates by the World Bank, UNICEF, and UNESCO of the annual costs of achieving UPE by 2015 range from \$6.5 billion to \$35 billion per year, over and above the approximately \$82 billion that developing countries spend each year on primary education. These investigations focus on the cost of increasing the number of places for students in schools. However, as Glewwe and Zhao (2006) discuss, the number of places available is often not the limiting factor. Parents may choose to keep their children out of school for various reasons. The true cost of UPE will include the cost of implementing policies that influence parental decisions and boost the demand for primary education. Future cost estimates should reckon the cost of providing other improvements necessary to encourage students to attend school—such as meals, tuition subsidies to families, higher quality and more reliable teaching, and reductions in rates of repetition and non-completion. The spending necessary to implement such improvements would likely increase the cost of UPE a significant amount.

The cost of achieving universal secondary education will be greater than that for UPE because more children in this age bracket are not in school and secondary education is more expensive per pupil. Binder (2006) presents pioneering estimates. According to her analysis, if a gradual approach is taken between now and 2015, the annual additional cost would likely be between \$27 billion and \$34 billion. If an instantaneous expansion of secondary education is sought, the cost could rise to \$62 billion annually, at least under current policies. This high-estimate cost could fall to \$47 billion if policymakers adopted the practices of countries most successful in making schooling available to students, getting students to attend school, and helping them learn while they are in school. The best (albeit unlikely) scenario, including a sharp drop in repetition rates, would reduce the additional annual cost of an instantaneous expansion of secondary education to \$28 billion. Binder notes that

the biggest expansion of secondary education will be needed in the poorest countries, where the average per-student yearly cost is \$126, compared with \$244 in low-income countries and \$884 in upper-middle-income ones.

The estimated total cost for universal primary and secondary education combined ranges from a low of \$34 billion to a high of \$69 billion per year (setting aside the “instantaneous” expansion of secondary education mentioned above)—a huge amount of money, but certainly not beyond the ability of the world to fund. If investments in education promote economic growth in the poorer countries as anticipated, the share of income devoted to primary and secondary education could be expected to decline.

### *Financing Universal Education*

How much do countries have to spend? The low- and middle-income countries, with a population of 5.3 billion, had a combined gross national income (GNI) of nearly \$7 trillion in 2003 (with an average annual per capita income of just over \$1,300) (World Bank, 2005). The incremental cost of \$34–\$69 billion per year for them would be about 0.5–1.0 percent of their GNI.

If the richer countries shared the cost, the burden on the poorer countries would, of course, be less. The GNI of the high-income countries was \$29.4 trillion of the world’s \$36.4 trillion; an extra \$70 billion per year would be roughly 0.25 percent of their income. The OECD reported that official development assistance (ODA) in 2003 was \$69 billion, the highest ever in nominal and real terms. At only 0.25 percent of high-income countries’ combined GNI, it was well short of the average of 0.33 percent achieved in 1980–92 and of the United Nations’ ODA target of 0.7 percent. The incremental cost of \$34–\$69 billion per year could consume up to the entire pie of recent ODA.

As public funds are limited, it is natural to ask: Is education the best use of the marginal dollar of government expenditure in a developing country? Should that dollar be spent on education rather than health, physical infrastructure, applied research, cash grants, or land purchases for the poor? Unfortunately, we know no convincing answers to these questions, even if “the best use” is interpreted narrowly to mean economically efficient. Credible models to evaluate the trade-offs for human well-being between education and other sectors of public investment are lacking. The same lack of knowledge applies to the trade-offs and complementarities among primary, secondary, and tertiary (higher) education.

### REMAINING WORK AND NEW QUESTIONS

Many questions important to the achievement of universal basic and secondary education remain to be addressed by scholarly, policy-oriented research.

- Goals and values: What should be the goals of basic and secondary education of high quality? Which, if any, of these goals should be universal? What does “universal” mean? What happens when educational goals conflict? Who decides these questions, and by what process do they decide? How should the quality of decisions about educational goals be evaluated?

How can national and international discussions of the goals of education best be encouraged?

- **Incentives:** In developing countries where schools are physically available and parents choose not to enroll their children, what policies will substantially increase the willingness of parents to enroll their children in school, and what will implementation of those policies cost? Answering this question is crucial to estimating realistically the costs of attaining universal primary and secondary education.
- **Finance:** What financing strategies make the most sense under different circumstances, and what financing mixes are best matched with particular country characteristics? What are the implications of “basket funding” for education (i.e., channeling all education support to local authorities, rather than earmarking funds for specific programs, such as teachers’ salaries, construction and maintenance of buildings, or provision of school lunches)?
- **Role of business:** Under what circumstances do local and multinational businesses demand and support better education for large numbers of children? What are the actual and potential activities of firms (local, national, multinational) in supporting and providing education to their employees, families, and communities? What are the actual and potential partnerships of firms and governments in providing and financing education? What are the benefits and drawbacks of business involvement?
- **Future trends:** How will the costs and financing of primary and secondary education be affected by future trends such as continuing rapid population growth in some developing countries, population aging, infectious diseases including HIV/AIDS, the globalization of economic activity, migration, economic growth, and changing economic inequality between nations?
- **Learning out of school:** What is the status (extent, effect, and cost) of non-school-based learning (e.g., professional apprenticeships and religious study)? What data could be gathered to assess that status more effectively?
- **Teachers:** How can shortages of qualified teachers be overcome? How can motivation and continuing education for teachers be assured? Hanushek (2005) argues that only selection and retention of the teachers most effective at raising students’ test scores will result in an improvement in the corps of teachers. How generally does this conclusion apply? Are its implications relevant in countries where many students remain out of school? If this conclusion is confirmed, what are the best means of selecting effective teachers? What incentives are most effective in retaining good teachers?
- **Development:** Given a marginal dollar to invest in development, how should it best be allocated among education, public health, jobs, physical infrastructure (roads, bridges, and harbors), grants to the poor, purchase of land for the poor, scientific and educational research, and other means of promoting social and economic development?
- **Case studies:** How should case studies be selected so as to provide a systematic view of countries that have achieved, or failed to achieve, universal

primary and secondary education? What generalizations can validly be drawn from case studies?

- **Research:** What can be done to encourage greater local capacity for research on the extension of education to all children? What can be done to facilitate the development of a knowledge base on the necessary steps? When a knowledge base is available, how can it be adapted to local needs and put to use most effectively?
- **Remittances:** What roles do remittances from expatriates play in supporting education in developing countries?
- **Schools and technologies:** How are models for imparting knowledge changing? Will the Western model of schooling (e.g., buildings, classrooms, teachers, schedules) be the model for future education in developing countries? Will alternative models exploit new information technologies and opportunities and a post-industrial vision of learning? For example, how can technologies for distance education be used most effectively? What cost-effective new technologies for distance education can be developed and implemented?
- **Inequalities:** How do differences of income, gender, and residence (urban vs. rural) interact to produce inequalities in educational access and achievement? What are effective points of intervention to reduce these inequalities?
- **Employment:** Secondary education is more likely to attract students if there are jobs for graduates. What characteristics of the labor market make secondary education a sound investment? What is the relationship between the demand for labor and the demand for education?
- **Quality-quantity interactions:** What are optimal trajectories to high-quality mass education for countries starting at any combination of educational and economic development?
- **Private education:** What are the forms, costs, curricula, and achievements of private education globally? What institutions and incentives are necessary to facilitate the collection of useful comparative data on private education globally?
- **Decentralization:** What are the benefits and disadvantages of the decentralization of formal education? Which responsibilities and activities are best decentralized and which are not? Under what circumstances and toward what end should decentralization be undertaken?
- **Learning:** When many children never finish primary school, how can a basic level of learning—reading and numeracy—be best achieved in a short time? What components are important to ensure learning? How can learning be measured?

Plans to achieve universal education should incorporate investments in research required to find the answers to these questions, as well as the answers derived from the best available evidence. They should also include unconventional approaches. In a best-case scenario, educational plans will resemble an experimental design, so that innovations can be evaluated, adapt-

ed, and changed based on outcomes. Educational plans should include audit mechanisms to ensure accountability at every level of operation from the local to the international. They should include innovation in two-way information systems, both to solicit feedback from participants in educational systems at every level and to provide all participants with information about the performance of the educational systems they support.

## CONCLUSIONS

The goal of providing high-quality primary and secondary education to all the world's children is as inspiring and formidable a challenge as any extraterrestrial adventures—and far more likely to enrich and improve life on earth, even in ways that may be difficult to anticipate today. Because many benefits of education do not accrue until students have had 10 or more years of education, and because primary education is more attractive if high-quality secondary education may follow, international conventions and national governments should adopt formally the goal of universal secondary education of high quality.

Universal, high-quality primary and secondary education is achievable by the middle of the 21st century, though probably not at the current rate of progress. What is needed now? No single magic bullet will bring high-quality primary and secondary education to all the world's children. Rather, at least five complementary, interacting changes are needed (Cohen and Bloom, 2005):

- open discussions, nationally, regionally, and internationally, on what people want primary and secondary education to achieve—that is, the goals of education;
- a commitment to improving the effectiveness and economic efficiency of education in achieving those goals, whether through formal schooling or other means; this improvement would be driven by reliable data on what children learn, careful experiments with alternative pedagogical techniques and technologies, and comparative studies of the countries that perform best, region by region, within any given level of funding and material resources;
- a commitment to extending a complete, high-quality secondary education to all children;
- international recognition of the diverse character of educational systems in different countries, and adaptation of aid policies and educational assessment requirements to local contexts; and
- more money and higher priority for education—especially an increase in funding from rich countries for education in poor countries.

Achieving universal primary and secondary education of high quality is likely to require enhanced political will to apply tested approaches combined with new interventions, carefully evaluated and widely reported.

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