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Examining current issues in education that highlight the ongoing work of the faculty of the School of Educational Studies at Claremont Graduate University.

Developing perspective: What can we learn about education from lower-income countries?

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To the extent that Americans look abroad for lessons about education, we primarily concern ourselves with wealthy nations that perform well on international tests like the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS). In this essay, I argue that Americans can learn valuable lessons from the many countries that either do not participate in these tests or score relatively poorly on them. A look to the developing world can shed light on many essential questions related to educational performance and the purpose of schools. Here I discuss six key questions and how studying education in developing countries can help us to answer them.

"Is education a national security issue?" This was journalist Bob Schieffer's final question of the final U.S. presidential debate in 2008. Schieffer asserted that while the United States spends more per capita on education than any other country in the world, "by every international measurement, in math and science competence, from kindergarten through the 12th grade, we trail most of the countries of the world." In fact, most of the world's countries do not participate in international assessments like PISA and TIMSS. Of those that do, the United States generally scores in the middle of the pack. But Schieffer's question illustrates two strongly held beliefs about international educational performance. First, the United States is a low achiever. Second, our educational performance is directly related to our economic health and ultimately, our national security. Implicit in these beliefs there is also a perception that, to the extent that we look abroad for educational lessons, we should concern ourselves with countries that participate in and score highly on international assessments. Yet as

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education researchers and policy makers pack their bags for Finland or Singapore to learn the secrets of their success on PISA and TIMSS, we should also consider destinations like Bangladesh, Indonesia, and Mexico. Although developing countries rarely come up in discussions of how to improve the American education system, the developing world can help us to answer many important questions at the heart of school performance and the purposes of education.[1] These include:

1. How does the United States perform relative to the rest of the world in education?

The United States has never performed particularly well on international assessments like PISA and TIMSS. Our results in PISA raise particular concern: in 2006, U.S. 15-year-olds scored 35th in math and 29th in science out of 57 participating countries. TIMSS results paint a somewhat different picture. In 2007, U.S. fourth graders scored 11th in math and 8th in science out of 37 participating countries. U.S. eighth graders ranked 9th in math and 11th in science out of 50 countries. Although we would probably not earn an A for this performance, we scored significantly above the majority of participating countries. Countries that outscored the United States tend to be much smaller, and many high-income countries, including Australia, Germany, Norway, and Sweden, scored lower than the United States in both math and science. Massachusetts and Minnesota, which participated in the 2007 TIMSS as benchmarking participants, scored above all countries but Singapore, Taiwan, and Hong Kong in fourth grade science.

It is also important to note that countries are not selected randomly to participate in international assessments. Participating countries are on average much wealthier than those that do not participate. If it were possible to compare the United States' performance to the entire world, we would find ourselves in a fairly elite group of top performers. Nonetheless, our K-12 education system does face great challenges, especially in educating poor and minority students. Here we can certainly learn from the developing world.

2. How can we reach our most marginalized populations?

Despite our great national wealth, the United States has deep pockets of poverty, such as the rural South, the Texas-Mexico border, and urban central cities, that are similar in many ways to developing countries. In these contexts, educators and policy makers struggle to enroll poor and marginalized children and to keep them in school. Where are the solutions to this problem, if not in countries that face even greater problems of poverty and marginalization? One promising approach to increase school participation among the poor is the use of conditional cash transfer programs. Such programs, which have been used in Bangladesh, Brazil, Cambodia, Mexico, and many other countries, provide cash payments to families in return for enrolling and keeping their children in school. The goal is to offset the opportunity costs that poor families face when deciding whether to send their children to work or to school, as well as to assist with the direct and indirect costs of schooling that are often relatively high in developing countries. Mexico's conditional cash transfer program *Oportunidades,* which was implemented and evaluated with a rigorous randomized design, has been found to significantly boost enrollment rates of poor children in rural areas, especially among girls (Schultz, 2004).

New York City Mayor Michael Bloomberg and his Council of Economic Opportunity were so impressed with *Oportunidades* that in 2007 they developed an experimental program called Opportunity NYC—Family Rewards, which provides cash incentives for poor families to improve their health and education. An initial assessment of Opportunity-NYC found that the program has not only helped to reduce poverty and other hardships for participants, but it has also improved school outcomes for some high school-aged children (Riccio et al., 2010).

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"The faculty of the School of Educational Studies believes a socially just nation educates all its diverse citizenry through networks of effective and accountable organizations that interact responsibly with families and communities…"

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[1] *The term "developing country" is inadequate to express the diverse levels of economic, social, and political development among the countries I discuss here. I use the term as a convenience to indicate countries that the World Bank classifies as having lower than high per capita gross national income in 2008 (World Bank, 2010).*

While the United States does not often look to Mexico for policy, our southern neighbor should be a prominent destination on our international tour of educational ideas. In addition to *Oportunidades,* Mexico is one of the few countries in the world with a national teacher incentive program that links teacher pay in part to student test scores (Santibañez et al., 2007). As the U.S. searches for alternative approaches to compensate teachers, including performance-based pay, we could learn many lessons from Mexico's nearly 20 years of experience in this area. Finally, a better understanding of Mexico's tremendous diversity would greatly benefit teachers working with Mexican immigrant children in U.S. schools. For example, children in the Mexican state of Michoacán, which sends a large fraction of immigrants to the United States, score much lower on standardized tests than children in Mexico City (Díaz Gutiérrez et al., 2007). Many children from southern Mexico and Central America speak indigenous languages and may know little Spanish, much less English. Understanding differences in the educational backgrounds of Mexican immigrant children will help educators and policy makers to design more appropriate and effective educational opportunities for them.

3. Do schools matter?

In 1966, James Coleman and colleagues published their landmark study, *Equality of Educational Opportunity,* which found that school resources such as per-student instructional expenditures, facilities, pupil-teacher ratio, and curriculum, have little impact on academic achievement, relative to the profound impact of children's family background. Or, as many interpreted the results of the study, "schools don't matter." Among the many researchers who challenged this conclusion were Stephen Heyneman and William Loxley, who conducted a similar study across 29 diverse countries. Heyneman and Loxley (1983) found that in low-income countries, school and teacher quality—not family background—constitute the predominant influence on student learning. In other words, school resources appear to matter more in places where they are scarce.

In more recent work, Amita Chudgar and I have found differential impacts of schools according to both national income and income equality (Chudgar & Luschei, 2009). In a study of 25 countries participating in the 2003 fourth grade application of TIMSS, we found that schools explain more of the variation in student mathematics and science achievement in lower-income countries and countries with greater income inequality. These findings imply that even in a rich but relatively unequal country like the United States, schools may have a more important role to play than has been acknowledged, especially in poor and unequal areas. The differential impact of schools across contexts is also important to keep in mind as a prolonged economic downturn has forced policy makers to make increasingly difficult decisions to allocate scarce resources among competing programs (Adams, 2010).

> *"... education is a national security issue, but not just due to its impact on our economy. Education is also an economic, social justice, immigration, and human freedom issue. These are some of the many lessons we can learn from an educational tour of the developing world."*

4. How can we ensure quality in the context of scarcity?

In 2008, colleagues from the Open University of Indonesia and I visited a small rural school several hours outside the city of Bogor, West Java, Indonesia. After driving for hours, we abandoned our vehicle to hike two more miles up steep and precarious dirt trails traversing terraced rice farms. When we reached the school, we found a total of three teachers, each with a split-grade classroom of about 50 students. The third-fourth-grade teacher stood in front of the class with little more than a chalkboard and unbounded determination. She called three students up to the front of the class, each with a different stature. I assumed she was teaching about height, but my Indonesian colleague informed me that the teacher was using differences in the children's hairstyles to illustrate the concept of symmetry. One child had a symmetrical part down the middle of her hair, the other had his hair asymmetrically parted to the side, and the third had no discernible part. The 50 children sitting three to a bench listened intently and nodded along.

The following year, I returned to this school and discovered that all of its sixth-grade students had passed the extremely high-stakes entrance exam for junior-secondary school. I also had the opportunity to interview the teacher I had observed a year earlier. I learned that she had grown up in the area and had been a student at that school. She was extremely committed to improving educational opportunities in the community, but due to the difficulty of earning a permanent position, she worked as a temporary "contract teacher," meaning that she could be dismissed at any time. Her contract status also meant that she earned less than fifty dollars a month.

The point of this example is not that we should place teachers in extremely precarious positions with few resources. The point is that dedicated and resourceful teachers can provide meaningful educational opportunities under the most difficult circumstances. The experience of the Indonesian contract teacher also suggests a potential solution to the problem of recruiting teachers to work in difficult-to-staff areas: encourage and support young people from these areas to pursue training and return to their communities as teachers. Local teachers are not only more likely to understand unique conditions and problems, they may also be more committed to solving these problems and staying for the long term.

More generally, teachers—more than any other school resource—represent the most important educational investment that we can make. In a recent study of 20 developed and developing countries, including Botswana, Chile, Mexico, the Philippines, and Thailand, Martin Carnoy and colleagues (2009) found that countries paying higher relative salaries for teachers also enjoy higher average mathematics performance, after accounting for differences in per capita income and income inequality. Specifically, where

teacher salaries are closer to the salaries of scientists and engineers, overall mathematics performance is higher. The authors argue that smaller salary differences between math teachers and professionals in mathematics- and science-intensive fields make it easier to recruit individuals with strong mathematics knowledge into teaching. Given evidence of a strong positive relationship between a country's cognitive skills and its economic growth (discussed below), investments to recruit and prepare high-quality teachers are not just sound education, but sound economic policy.

5. What is the relationship between education and economic development?

Bob Schieffer really asked two questions in one. First, how is education related to economic performance, and second, if education fails our economy, what will be the impact on our national security? Candidate Barack Obama responded by pointing out, "This probably has more to do with our economic future than anything and that means it also has a national security implication, because there's never been a nation on earth that saw its economy decline and continued to maintain its primacy as a military power." The question and response underscore the universally held belief that investments in education result in greater economic growth. In fact, this causal link is very difficult to verify empirically. Certainly, countries with higher average educational attainment are also wealthier; but which came first, the education or the development?

As with the other questions posed here, it is helpful to look to the developing world. If we limit our sample to countries that are already developed, our analysis suffers from a classic case of selection bias. But if we include places like Sub-Saharan Africa, where educational enrollment rates in many countries increased dramatically over the last half of the 20th Century, the link between education and economic development is less clear. In his book *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics,* William Easterly (2001) argues, "Despite all the lofty sentiments about education, the return to the educational explosion of the past four decades has been disappointing…Education is another magic formula that failed us on the quest for growth" (p. 84).

Of course, quantity of schooling is not equal to quality. If we look beyond educational attainment, the number of years that students spend in school, to quality measures, like what they actually learn, the link between education and economic growth becomes stronger. Eric Hanushek and colleagues (2008) find that a country's level of cognitive skills, as measured by performance on international assessments like PISA and TIMSS, is strongly and positively related to economic growth rates. Their work also explores the question of why the United States, which has only average cognitive skills relative to other developed countries, has had higher average economic growth over the past century. Possible explanations include a historical commitment to education, a relatively free and open economy, and a superior higher education system. At the same time, the authors warn, "the situation at the K-12 level should spark concerns about the long-term outlook for the U.S. economy" (p. 70).

The link between education and development depends largely on how we define education. Nobel Prize-winning economist Amartya Sen, who has dedicated his career to studying economic and social development in poor countries, also argues that we should reconsider our definition of development. Sen (2000) points out that independent of evidence that education leads to economic development, a more educated population is, in itself, an important end for society, due to education's potential to increase human freedom. When we ask whether political or social improvements lead to development, "this way of posing the question tends to miss the important understanding that these substantive freedoms (that is, the liberty of political participation or the opportunity to receive basic education or health care) are among the *constituent components* of development" (p. 5). One key element of human freedom is the opportunity to participate in the political system, which brings us to our final question.

6. Is education a national security issue?

Clearly, U.S. educational performance has raised concerns about our economic prospects and military strength. But for a different perspective on Bob Schieffer's question, we can again benefit from a look to the developing world. Here we find evidence of positive links between educational expansion and both democratic behavior and political participation (Hannum & Buchmann, 2005). Countries with greater educational attainment are also much less likely to engage in civil conflict (Collier, 2007). In his book *Wars, Guns, and Votes: Democracy in Dangerous Places,* Paul Collier (2009) argues that education can be used as a tool to unite disparate social elements and reduce the likelihood of political conflict or civil war. And in general, countries that are more democratic and peaceful are less likely to be a threat to our national security.

The bestselling book *Three Cups of Tea,* by Greg Mortenson and David Oliver Relin, has made popular the idea that by investing in schools in poor and politically charged places like Afghanistan and Pakistan, we can not only reduce poverty, but also promote peace. As Mortenson—who has built dozens of schools in these two countries—has argued, the war on terrorism will be won with "books, not with bombs." Nicholas Kristof makes this point in a recent editorial in the *New York Times* (2010, p. A35):

"…hundreds of billions of dollars will be spent fighting terrorism and bolstering fragile countries like Afghanistan, Yemen and Pakistan. We should note that schools have a better record of fighting terrorism than missiles do and that wobbly governments can be buttressed not just with helicopter gunships but also with school lunch programs (at 25 cents per kid per day)".

The answer to Bob Schieffer's question is clear: education *is* a national security issue, but not just due to its impact on our economy. Education is also an economic, social justice, immigration, and human freedom issue. These are some of the many lessons we can learn from an educational tour of the developing world.

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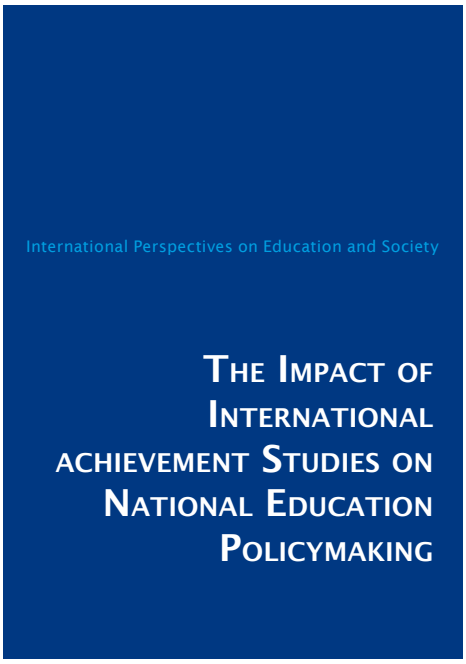
Forthcoming Chapter on International Education

Chudgar, A. & Luschei, T. F. (2010). Does income inequality influence the impact of schools on student mathematics achievement? A comparison of nine high-, medium-, and low-inequality countries. In A. W. Wiseman (Ed.), ***The impact of international achievement studies on national education policymaking.*** Emerald

In their influential 1983 paper, Stephen Heyneman and William Loxley found that in lower-income societies, schools (rather than families) constitute the predominant influence in explaining student achievement. Similar studies followed, often with results challenging Heyneman and Loxley's original findings. We argue that one reason for inconsistencies among these studies is the failure to account for the distribution of income. Until recently, few studies had examined whether school effects vary across countries with different levels of income inequality. Yet emerging evidence suggests that inequality plays an important role in determining the extent to which schools ''matter'' for student learning. In this study, we employ hierarchical linear modeling and two related yet distinct measures of inequality to examine how inequality relates to within- and between-country variations in student performance. To capture sufficient variation in country context, we use data from nine diverse countries participating in the fourth grade application of the 2003 Trends in International Mathematics and Science Study. Our findings indicate that schools have an important impact on student learning, especially in unequal countries.



Selected Publications by Tom Luschei

Carnoy, M., Beteille, T., Brodziak, I., Loyalka, P., & Luschei, T. (2009). *Do countries paying teachers higher relative salaries have higher student mathematics achievement?* Amsterdam: International Association for the Evaluation of Educational Achievement.

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