Innovation and Knowledge Utilization to Close Equity Gaps in Education

Fernando Reimers, North Cooc and Jodut Hashmi
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Over the last sixty years, the world has witnessed a remarkable transformation in educational opportunity. The inclusion of education as one of the fundamental rights in the Universal Declaration of Human Rights adopted in 1948, and the ensuing creation of a global architecture to support the achievement of this right, transformed humanity. Whereas sixty years ago the vast majority of the world's children did not have the opportunity to set foot in a school, today most of them do. The most dramatic expansion took place in the developing world, as early industrialized nations had been working to universalize schooling longer.

Despite this progress, the objective of providing all children in the world access to a primary education has not been reached. According to official statistics, which may underestimate the problem significantly, 72 million children of primary school age are not currently enrolled in school and approximately 759 million adults lack literacy skills. One in four children who begin elementary school in developing countries drops out before being able to read and write. Nearly 71 million adolescents were out of school in 2007, almost one in five of the total age group.[i] The children and youth most excluded from education are typically from subdominant groups: the poor, females, and members of ethnic and linguistic minorities.

Three alternative explanations for this global failure in educating all children are a) lack of political commitment at the national and global level, b) deficient approaches to achieve the goal of providing all children a quality education, and c) implementation failures. Given the abundant national and international pronouncements and legislation in support of universal basic education it would be hard to argue that these problems reflect a lack of professed interest or shared global commitment to educating all children. There is certainly evidence that there are serious implementation challenges of programs to achieve this goal. To a great extent, however, this global failure reflects the absence of effective approaches to doing what most countries around the world have expressed an interest in and a commitment to doing: *educating all children*. As a

result, in spite of the remarkable progress in access to school achieved during the twentieth century, existing evidence suggests that many children learn too little of the intended curriculum, that there are serious inequalities in what is learned by children of different social groups, and that too often what is learned in school has limited potential to alter the social chances of educated people or to expand their freedoms.

As our aspirations about including all children in schools have increased, so has demand for knowledge about what works. Such demand outstrips by far the output of specific research and evaluation in each of the specific contexts in which such knowledge is necessary. As a result, there is a growing demand for *knowledge transfer* about what practices "work" from one education context to another. With this growing demand there are also growing concerns about the limitations of *transfer* to support effective policy and greater need for understanding how to transfer appropriately from one context to another. The awareness of the limitations with the transfer of education practices has led many educators and policy makers interested in educating all children to another path to innovation, to try to innovate without attention to what has worked elsewhere. This trial and error approach is a very expensive way to discover how best to deliver on the global aspirations of the last sixty years.

This chapter problematizes the question of what knowledge precisely is helpful to innovate in order to promote equity in education. We argue that effective innovation to educate all children requires not innovation and creativity unburdened by the careful understanding of the facts, innovation based on naïve transfer, or innovation based on a complete indigenous research and development infrastructure, but innovation supported by *contextualized transfer* of educational policies and practices.

Contextualized transfer is the process of adapting practices that have demonstrated effectiveness in one context to another while examining the way in which various policy interventions relate to policy outcomes across national contexts, analyzing the dependency of those relationships on characteristics of the context, and determining how differences among these contexts might limit the transferability of policy effects. At the core of this concept of contextualized transfer is an

understanding of quality education as the product of a system, rather than the product of a single policy intervention, where context is a core element of this system.

To be useful, transfer of ideas and practices about 'what works' need to stimulate educational innovation in the context 'importing' such ideas, to do this well the transfer of ideas about 'what works' in one context needs to be not just about what practices have proven to be effective in certain contexts to achieve particular education objectives, but also why they have been effective in that context as well as what adaptations are necessary in order to be able to obtain similar results given differences in context. The mere transfer of practices that have worked in one context to another, without the additional analysis just described will, more often than not, lead not to sustainable innovation, but to disappointing results and to implementation failures.

I.   Educational Innovations and Knowledge Transfer

Much of the progress that has been made in advancing educational equity globally has been the result of a series of innovations and of transfer and borrowing of such innovations. First, the very innovative idea produced by Jon Amos Comenius in the mid-1600s, that all persons should be educated, was an idea that travelled in time and across geographies. Comenius, who lived through a protracted period of religious-based intolerance, thought that at the root of such violence lay deficient skills and knowledge for people to understand one another and work out their differences peacefully. It would take another two centuries until another innovation, the Lancasterian method of instruction, produced an approach to educate large numbers of children at low cost. This method was transferred to Prussia, where another innovation of the nineteenth century, a public and universal education system, served as a model that inspired reformers in other contexts. John Quincy Adams, for example, as U.S. Minister in Berlin, described with admiration the education system of Silesia in 1804 to his fellow citizens back home.[ii] In 1871 a Japanese delegation traveled to the United States and Europe to borrow education practices that would help to modernize Japan.[iii]

More recent examples of the transfer of the idea that all should be educated include the leading role played by UNESCO in the early 1950s by convening meetings of ministers of education and of finance in different regions of the world to set quantitative targets and milestones to

universalize basic education. UNESCO and other development organizations continue to facilitate the exchange of experience and practice to achieve this goal through regional conferences, publications, training programs and the advice provided by education advisors mobilized through cooperative programs. In addition, member organizations such as the Organization for Economic Cooperation and Development (OECD) provide countries expert teams that analyze the effectiveness of education policies and propose reform strategies. By design these teams are composed of experts from a range of countries with the aim of informing their analyses and recommendations with the lessons of comparative experience.

The ideas and practices that have been transferred through this infrastructure include ideas about what to teach, how to teach it, how to organize school systems, how to support the professional development of systems, how to develop education plans and how to monitor the performance of education systems. Some of the ideas that were transferred to support the expansion of education included the creation of 'double shifts' in schools, through which the same school buildings would be used to serve two groups of children, the establishment of 'multigraded schools' in rural areas, which tasked a teacher or two with the instruction of several grades of elementary education, the creation of 'school clusters' through which small rural schools were grouped around a more resourced 'nucleus' school, which served as a center of professional development for the teachers of the affiliated schools. More recent practices which have been borrowed and transferred to support equity in education include specific curricula and instructional programs, approaches to teacher professional development, scholarships to support school attendance of marginalized children, or the creation of national evaluation systems to assess student knowledge and skills.

The practice of borrowing and transferring educational ideas and practices from one context to another is therefore joined at the hip with the history of educational expansion. Some of the ideas transferred have produced great educational progress, they illustrate practices that were successfully transfered. For example the creation of double shifts in the same school buildings to rapidly expand access to school given limitations in the financial capacity to invest in infrastructure during the 1950s and 1960s was central to the significant increase in enrollment rates in the developing world during this period. The Centers of Excellence for Teacher Training

(CETT), for instance, have improved the quality of literacy instruction in Latin America since 2001 by adopting best practices from the International Reading Association and successful programs like Reading is Fundamental.[iv] Another example of contextual transfer is INJAZ Al-Arab, a program that has modeled itself after the Junior Achievement Worldwide, provides high school students and recent high graduates with business, entrepreneurship, and life skills to address unemployment in the Middle East-North Africa (MENA) Region.[v] Other ideas, however, have not travelled well to other contexts. For example, in 1997 South Africa reformed the curriculum of instruction following an approach called 'Outcomes Based Education (OBE)'. Several scholars have described that 'Outcomes Based Education' failed to improve educational practice in South Africa.[vi] Another example is the documented case of failure to transfer new math curricula from Australia to Papua New Guinea because the transfer did not take into account differences in teacher quality between the two contexts.[vii] Similarly, the import of a whole language curriculum to support literacy instruction in Malawi, has failed to produce conditions that enable most children to learn to read, arguably as a result of the much larger class sizes and deficient general preparation of teachers. [viii]

Although concern over the limitations of educational transfer and of policy borrowing is not new, systematic scholarship studying this process is more recent. In 1970, in the golden age of educational expansion in developing countries with much participation of the international development community, Beeby stated "those who are responsible for education in developing countries know that, through lack of books, lack of equipment, and lack of adequately trained teachers, they will, over the next few years, be driven to importing educational ideas that are really irrelevant to their needs."[ix] Most contemporary scholarly study of the process of policy transfer focuses on its consequences and how those relate to the political conditions under which transfer takes place, or to the actors and institutions that participate in the process and their motivations.[x xi xii xiii]

While it is generally possible to describe ex-post when educational transfer succeeds or fails, it is an altogether different issue to do this ex-ante. This is because while the problematic nature of the relationship between transfer and context has been recognized by comparative education scholars, relatively less attention has gone to producing analytic devices to increase the

effectiveness of transfer. This leads policy reformers to recognize the risks of transfer without the tools to manage those risks. This chapter presents an analytic approach to facilitating the transfer of education practices to stimulate educational innovation in order to close equity gaps in education.

II. <u>**What do we need to know to close equity gaps in education**</u>?

To close equity gaps in education, we need to know what those gaps are, what causes them and what could work in closing them. To know this in any given context we need to take stock of what is known, carry out specific research, and transfer knowledge and best practices from other contexts.

There are four broad areas where further knowledge is essential to inform action in expanding educational opportunity. First, we need to know how educational institutions relate to other social institutions. This includes understanding how a society and various groups within the society value education, and what the continuities and discontinuities are between how schools conduct their work and the values, expectations and norms of families and communities. Understanding educational institutions also includes knowing what broad purposes they serve, in addition to the stated purpose of educating children. For example, in some societies public education systems are used to reward political loyalty and support political parties or groups. In some societies educational institutions are one of the mechanisms through which various forms of segregation are practiced along socioeconomic, political, ethnic, racial or religious divides. In some societies different forms of bribes and gifts are extracted from students and parents for access to the best schools, teachers or special attention from teachers. Knowledge about the pervasiveness of these practices and their consequences in sorting different students into different education streams is very important to understand how educational institutions relate to other institutions and culture. It is essential to know what different groups in the society expect of schools and how satisfied they are with the way in which schools function at present.

Second, we also need to know how educational institutions function and what is learned in them. Who teaches, in what way, with what technology, with what pedagogy, with what governance, as

well as what is taught, to which students, at what cost and who pays. We also need to know how effective schools are at developing cognitive, social and emotional competencies, what learning environments are like, and how students are treated by their peers, by teachers and by others in the school. Other relevant considerations include how children engage with schools and the process of school learning, and how school learning fits with other aspects of students' lives.

Third, attention to quality of education requires a focus on the intended purposes of instruction, as well as on the processes that help teachers achieve those purposes. Thus, the concern with educational opportunity in middle- and low-income countries should go much further than the current emphasis on access and completion of a basic education. It should focus as well on how teachers can help students develop capabilities that expand their options in life. In order to achieve this we most need knowledge to support instructional improvement, including the instructional core, the daily interactions among students, teachers, curriculum and instructional resources. Additional dimensions of instructional improvement are time, consistency and alignment. It takes time to learn, and to teach, and in general the more engaged learning time students and teachers have available, the more they will learn. It is also important that there is consistency in instructional quality throughout the learning trajectories of students. It is not much help to have a great teacher in one subject only in one year of one's life. Curriculum, instruction, resources and assessment should be aligned within and across grades so that students' educational experiences are coherent and synergistic.

Fourth, based on a good understanding of the relationship of educational institutions to their social context and of their functioning and effectiveness, we need to know the impact of interventions deliberately designed to improve the effectiveness of schools. The goal of this form of evaluation should be more than establishing program impact; it should be to contribute to the development of program theory, to do this evaluations need to examine the process, the actual mechanism through which certain interventions produce particular results.

Finally, we need knowledge about the process of change itself, and about the role of leadership and professional development in initiating and sustaining change. The purpose of educational leadership is to support efforts at the school level that bring high quality teachers to schools, that

provide them excellent preparation at the beginning of and throughout their careers, that guide their work with relevant, authentic, high quality and intellectually challenging and engaging purposes and curriculum, and that support extended engaged learning time, with consistency and alignment. We need more knowledge about how to select, prepare and sustain such leadership, especially in low-income countries.

III. How do we generate the knowledge necessary to close equity gaps?

The transfer of innovative ideas about education purposes and practices has been, historically and globally, the principal mechanism through which equity gaps in access to education have been closed. The facilitation of this form of transfer of educational practices has been one of the functions of the global architecture that was specifically developed over the second half of the twentieth century to support the achievement of the right to education. Occasionally, some of the practices which travel through the networks that form the global education architecture have been systematically evaluated in particular contexts, but this has not been the norm nor proven a necessary condition for their diffusion or adoption as innovation in additional contexts.

The problem of innovating based on the naïve transfer of educational practices is that educational institutions are complex systems whose performance is the result of the interdependencies of the components of the system. One of those components is *context*, an abbreviation for the set of norms and practices which characterize a specific culture, society and set of institutional practices. The fact that an educational practice, such as a particular approach to math education, has proven to be effective in country A, does not mean that it will also be effective in country B, where the levels of teacher capacity, parental support for instruction or availability of instructional resources to support teaching may be different. Strictly speaking, education practices should not be generalized outside the boundaries in which they have been scientifically examined. These boundaries include the outcomes in which such effects have been tested, the grade levels and particular student populations in which they have been studied, the particular set of social and economic circumstances in which they were studied, and the characteristics of the educational institutions in which they were studied. For example, the results of research on the

impact of class size on student achievement conducted in countries where class size ranges from 18 to 45 students, tell us little about contexts where class sizes range from 50 to 300 students. In turn, class size is a dimension of context that is mediates the impact of other educational practices. Current research on literacy instruction in the United States emphasizes the importance of providing individualized attention to 'struggling readers'. Doing this assumes methods of identification of such readers, and conditions through which teachers or other reading specialists can dedicate time to these students with reading difficulties. But the translation of these practices, which have been adopted in education systems which can afford relatively small classes, to contexts where first grade teachers have classes that include hundreds of students, as is the case in Malawi for example, presents a significant challenge of implementation.

One way to respond to this limitation of research based knowledge is to argue for the replication of studies evaluating the impact of such practices across a wide range of contexts. This replication would, over time, help discern knowledge about policy—outcome relationships that generalize well across a range of contexts from those that are specific to particular contexts. This is what has been done in replicating experimental studies of the impact of Conditional Cash Transfer Program in several countries. However, the investment in evaluation resources necessary to build this body of knowledge exceeds by several orders of magnitude the level of resources which are devoted to educational research and evaluation. This underscores of course the importance of investing those resources, as well as the importance of having a strategy to guide how to invest them. It is clearly impossible to replicate a study about the effects of a particular education practice in every conceivable context. A strategy should help determine which replications are most likely to advance a theory, and help decide when to discontinue replications. But these limitations stemming from the unfeasibility of conducting endless studies, underscores also the urgency to find alternatives to generate a knowledge base.

Because generating an indigenous knowledge base to support innovation is expensive and time consuming, those who need to make decisions in the present about increasing educational access, quality and relevance for marginalized groups typically innovate based on ideas about good practice no matter where they have been generated.

The limitations of naively transferring educational practices, the challenges to developing an indigenous knowledge base, and the limitations of replicating studies of policy effectiveness account in part for the persistent challenges to achieving educational equity. As a result, many education policies are not based on evidence, or at least on evidence that is relevant to the pertinent context. Innovation is obviously necessary, but based on what knowledge?

IV. Contextualized Transfer: A Framework

Contextualized transfer is a pragmatic approach to support and discipline the process of educational innovation, making the best possible use of scientifically based knowledge about what works in education, in the realistic timeframe in which policy makers and program designers need to make decisions about ways to move forward, and within the limitations of resources to support decision making which are typical of most policy settings. Contextualized transfer of knowledge about policies and practices to close equity gaps is a five step process that involves (1) a clear identification of needs translated into a tractable problem, (2) a thorough analysis of the context in which the problem exists, (3) taking stock of existing research on the determinants of the problem at hand and on the best practices to address it in other contexts, (4) an analysis of the gaps between the extant research and the context, and (5) design of innovation or transfer of practices to close the gap. This basic five step framework can extend into an additional step, if resources and time permit it, the evaluation of a pilot of the innovation based on transfer in the importing context.

This five step sequence makes transparent the process of adaptation of practices from one context to another and as such, it is very different from the naïve transfer of policy where, at best, such formal analysis is implicit. In so doing contextualized transfer makes the adaptation subject to the same processes of scrutiny and verifiability that inform the inter-subjective agreements on which scientific knowledge is based. The knowledge base that informs transfer is thus *falsifiable* in the very same way that all positive knowledge is falsifiable, and therefore scientifically true.[xiv]

Identifying Needs

The first step in a process to establish what evidence is relevant to inform how to close equity gaps is to establish what the gaps and needs are in a particular context, as perceived by the various groups that have an interest in the education enterprise. It is possible to use social science methods in assessing those needs systematically.

The definition of what problems are important in a particular society or community should be informed by a direct analysis of that reality, not by the advocacy or interest of those working on those problems in other contexts. Too often through the networks that form the global education architecture travel not just ideas about solutions to real and perceived problems, but also ideas about what problems are worth treating and should receive priority. Because the global architecture includes industries and interest groups that provide services to treat education problems, there is an inherent conflict of interest in having those institutions, external to the localities in which educational equity needs to improve, establish the priority of the problems that call for their particular forms of expertise or services. Many of the education priorities of the international development community are the result of the well organized efforts of global advocacy coalitions, with limited accountability to the communities and beneficiaries they try to serve. While there is a very valuable role that these global coalitions can and have played in expanding educational opportunity, it is imperative to tap more directly the knowledge of those closer to the problems about which of their education needs should receive priority attention and about promising options to address them.

Three unique characteristics of education institutions are relevant to the identification of needs and priorities. The first is that there are numerous stakeholders who are affected by the outcomes of these institutions. The students themselves are obviously a most important group, but during the earlier part of their educational trajectories, the students are represented by adults, including parents and caregivers, who make decisions for them. Other stakeholders include teachers, members of communities and society at large who are affected by the outcomes of education.

A second unique characteristic of education institutions is that they have multiple outcomes, short and long term, which can be valued differently by different constituencies and different societies. Schools can offer a relative level of safety for children during part of the day, providing shelter, care and often nutrition. They can offer the possibility of engagement in activities valued by society, a social role for children, and the opportunity for positive social, emotional and cognitive engagement. They can prepare students for subsequent education, and provide knowledge and skills that are helpful to assuming adult roles. Some of the outcomes societies care most about, such as helping people live fulfilling lives and be productive and engaged members of society, unfold over a long lifespan. It is very hard to predict ex ante the social context where people will live their lives, which makes it difficult to determine how best to prepare people for an uncertain future. Since different groups in society may place different value in these outcomes, achieving consensus on reform strategies is difficult.

A third characteristic of education institutions is that they operate as a system whose scale and complexity makes identification, coordination and alignment of interventions to meet needs challenging. Good education is the result of the alignment and synergies among the components of such a system: good curriculum, qualified teachers, school principals and school supervisors supporting the work of teachers, a good R and D system to continue to support innovation in schools. There is no educational equivalent of oral rehydration therapy, contraceptives, malaria nets, vaccines, drug cures or other silver bullets. In part this is because cognitive, emotional and social development is a long term process and as such it requires sustained high quality support. The multidimensional nature of human development also requires rich and broad opportunities to foster it.

These three characteristics of education institutions make the use of evidence to promote equity challenging. For some of the relevant questions obtaining evidence is itself very challenging, for instance on the long term effects of education policies, programs or practices, or on their effects over a broad range of outcomes.

One example depicting how challenging it can be to define the needs and priorities of education institutions is the question of whether Madrassas are effective options to expand access to

education. Madrassas are educational institutions that have a variety of goals and have come to the attention of many as they are perceived as spreading Islamic extremism. But to truly judge whether Madrassas are an effective options for increasing educational opportunity, especially in areas such as Pakistan and Afghanistan, it is important to examine the needs and priorities of this institution, and to balance the potential risk for some students against the benefits that this form of education provide a great many students.

Madrassas affect a variety of stakeholders. A Madrassa is a "school" in Arabic, and many were developed along the Afghanistani and Pakistani borders in the late 1970s to provide an education to the rural communities there when no other educational institution was available. Since Madrassas are often funded by the religious alms that Muslims are required to provide, Madrassas provide housing and meals to the students who attend them, making them all the more attractive to low-income families and students. They also expanded education for girls along the two nations' borders. Thus, the Madrassa was able to increase access for a great number of students who did not formerly attend school.

They also have a variety of outcomes. Islam emphasizes two types of knowledge, the "revealed"—which is given directly by God—and the "earthly"—that which humans must discover.[xv] Madrassas are meant to provide both forms of knowledge to prepare students for the life they lead in the present and for the afterlife. Different entities, such as leaders, funders, and nations, may choose which to emphasize. Fundamentalist leaders may emphasize the "revealed" knowledge whereas a more secular government or leadership may emphasize a more balanced knowledge within the Madrassa. And finally, Madrassas operate as a system in interdependency with other social institutions, including government. So regardless of the purposes of the Madrassas, the content that is chosen is a result of the synergies among components of the system rather than intrinsic to this educational modality itself. If, as in Afghanistan, the Taliban come to power, a more "revealed" knowledge may be emphasized, or different elements of the "revealed" knowledge may be taught (but the same could happen in secular schools under the same regime). When government changes or when school leadership changes as a result of the interactions of those within the system, the focus of the Madrassa may be completely different.

Given these complexities, there is no easy and simple answer to the question of whether they are a good option to expand access: it all depends on the context. Social science methods, such as surveys or focus groups among students, parents, teachers and members of the community, can be very effective to help characterize the specific context, identify what the children who are excluded from school identify as their needs, and assess the relative merits of various options to serve those needs.

Analyzing Context

A second step in the process of contextualizing the transfer of education policies is to analyze the demographic, geographic, cultural, historical, economic, political and social dimensions of the context in which schools are embedded, the institutional context of schools themselves, and to the extent possible, future trends. For example, an analysis of the demographic structure of the population, and of the predictable trends in that structure, can help to identify current gaps in access and the institutional and human resources necessary to meet future educational needs as the school-aged population expands or its composition shifts. An analysis of the economic context will help understand how education is contributing, and can contribute, to economic development and to the employment and productivity of the labor force. Institutional analysis will establish the degree of capacity to support various types of activity and reform. Against the backdrop of this contextual analysis it will be possible to discern which research about ways to address particular education needs is most relevant, and it may be possible to make adaptations to what is known from extant research in other contexts.

For example, when trying to create a policy or an evaluation to address educational access and opportunities for minorities, such as Muslims in India, it would be necessary to examine all of the relevant dimensions of the context in which schools are embedded. Muslims compose 13% of India's population, the second-largest religious community, or the largest religious minority in the country. Regions such as Jammu & Kashmir, Punjab, and Bengal have concentrated Muslim populations, and the Muslim population is not evenly distributed through different areas. Although there are large numbers of Muslims in India, however, Muslims are considered minorities, and they remain politically, socially, economically, and educationally marginalized.

Politically, Muslims have often been at odds with the Hindu majority in India as a result of the partition of India in 1947 into the Republic of India and the Islamic Republic of Pakistan. Currently, there is not adequate Muslim representation in government, and many believe this leads to oppositional behavior on the part of some Muslim youth in India. Although the economic situation for Muslims varies by region, unemployment among Muslim graduates is one of the highest among all socio-economic groups, and Muslims are one of the poorest groups in India. As many as 25 percent of Muslim youth between the ages of 6-14 have never been to school or have dropped out. Despite an increase in primary school enrollments, Muslim enrollment rates lag behind the national average. Finally, the literacy rate for Muslims is far below the national average [xvi]

Understanding this context in which Muslim youth live in India is essential to develop effective policy or program initiatives to provide them educational opportunities. A likely consequence of this situation is the alienation of Muslim youth from traditional schools, which may make innovative education programs, perhaps managed by private institutions, or public-private partnerships, more promising options to overcome some of the likely obstacles to incorporating these youth through the expansion of established public schools.

Taking Stock of Extant Research including Evaluation and other Applied Research

The study of what is already known about the needs and problems that policy is attempting to address is a valuable step in providing some discipline to the logical analysis of how to increase educational equity. What does research say about this topic? What are the regularities across different studies, what findings are sufficiently robust that they are consistent across contexts, what findings vary with particular contexts and what conclusions can be drawn from examining that variation of results as it relates to variation in contexts?

In learning from what is already known about the educational needs under study it makes sense to look broadly. Looking at contexts different to the particular context at hand is one way to do

this. But one can also look at research with different populations, with different educational outcomes, and so on. It may even be helpful to look at research and practices in domains other than education. The main purpose of this step is heuristic, to generate hypotheses that will then be scrutinized systematically to support the design of policy interventions.

It is especially useful to examine applied research and analysis, including in depth study of national and subnational education systems, historical research, ethnographic studies of schools, classrooms, students and communities, school effectiveness research, program evaluation as well as comparative knowledge of these topics across countries. It will also need to include evaluation research and other forms of inquiry that may not make it into scholarly publications, but that constitute a fugitive literature that documents the life of programs and policies. The knowledge base to support effective education reform needs to be multidimensional, helping to inform a comprehensive and systemic view of educational institutions and of how they change.

The design and innovation necessary to support educational action will also need to draw on other forms of knowledge and developments, not just on studies of what has been done in the past. For example, the development of new telecommunication technologies, particularly cell phones, computers and instantaneous translation technologies, offers much potential to engineer innovations to some education challenges, including administering educational institutions as well as enriching pedagogy or supporting teacher professional development.

For example, facing high rates of grade retention in early grades in a particular country, it makes sense to look at cross-national reviews of grade retention in other settings.[xvii][xviii] Most of these posit that early grade retention is associated with reading difficulties of young learners.[xix] Based on this one can look for evidence to test the hypotheses that there are indeed problems with early literacy acquisition in the relevant context. If there is such evidence one can the productively examine the international literature on literacy instruction, and use this body of knowledge as a foundation to drive systematic examination of the practice of literacy instruction in the country in question. As discussed earlier, however, systematic translation of lessons from comparative research requires also that we compare the ways in which the various contexts differ, for instance in terms of class size, or teacher qualifications, or parental support for literacy.

Analyzing Gaps in Context

After systematically analyzing the context in which the educational equity needs have been identified and reviewing the research that exists about those needs and interventions to address them, it is necessary to identify the gaps between the context in which this research has been conducted and the context under examination.

For example, much of the US-based literature on literacy acquisition emphasizes the importance of balanced instruction, integrating the development of phonological awareness, reading comprehension, decoding skills and motivation to read. But in using this literature to address similar reading difficulties in various contexts one should also examine the differences in the correspondence of sound to script across the languages under comparison, what resources exist to support literacy instruction, and how instruction is constrained by how children are grouped and the size of those groups. In Malawi, for example, primary school teachers teach 85 students on average, a very different number to that in US classrooms.[xx] Basic infrastructure and instructional materials, including blackboards, chairs, pencils, notebooks or books, are often lacking in many low-income countries and the level of teacher capacity can vary significantly across contexts, an important factor in transferring approaches to professional development.

Similarly, there can be constraints rooted in the culture of pedagogy. In China, for example, learning has been more teacher-centered for centuries. If research from other countries proposes educational benefits to student-centered learning, then a gap has been identified in pedagogy. In addition to the identification of this gap, it is important to analyze issues surrounding the gap, such as cost-effectiveness of student-centered learning, expectations of stakeholders such as parents and administrators regarding the roles of teachers and of students, and other complex issues such as changing the purposes of education from being knowledge-based to skills-based.

Generating Innovations and transfer of best practices

In response to a clear analysis of the differences between the contexts in which research has been conducted and the context under consideration it will be possible to establish which practices can be transferred, and which innovative modifications are necessary to adapt them to local context. It is a rare practice that is transferred whole from one context to another, and adaptations to fit varying institutional settings and capacity are common and necessary. The result of this process is the re-creation of particular instances, within a general class of interventions that best fit particular local contexts.

An example is the generation of innovation and transfer to address girls' access to education in Afghanistan. Only 20% of girls in Afghanistan are enrolled in school[xxi]. Attempts to address these equity gaps through the transfer of practices from other regions that have similar challenges would lead us to consider constructing more schools so they are closer to girls' homes, training more female teachers, training teachers in the use of girl-friendly pedagogies, using conditional cash transfers to persuade families to send their girls to school, and conducting community workshops to educate them about the importance of girls' education.

Some of these policies may be more applicable to the context of Afghanistan than others and a rigorous analysis of these contextual differences and similarities is essential in deciding which practices might be transferred or how they should be adapted. For instance, the documented high levels of corruption in public administration in this country make the use of scholarships potentially wasteful; evidence that parents did send their daughters to school while they were in refugee camps suggests that improving the supply of education for girls, and reducing the distance between home and school, should receive priority over demand based interventions. Fundamentally, best international practices can provide a checklist that needs to be checked against evidence of what are the specific causes of the equity gap and the particular characteristics of the context which would make some of these options better bets than others.

V. Applying the Framework: Two Case Studies

We illustrate the application of this approach of contextualized educational transfer with two equity challenges: providing education to populations affected by conflict and emergencies, and providing opportunities to learn to read to marginalized populations.

Boys' Access to Education in a Post-Conflict Armenia

Education can work to serve the needs of families in Armenia, many of which have fallen apart as a result of the significant number of male deaths after the Nagorno-Karabakh war between Azerbaijan and Armenia from 1988 to 1994. Education can provide their children, particularly boys, with tools to succeed in the economy and an avenue to remain free from criminal behavior. Finally, in the long-term, education has the potential to lift Armenia out of low-income country status and to propel the market economy to which Armenia has attempted to transition since the post-Soviet era.

Identifying Needs

In Armenia, education has the potential to benefit both boys and girls, who might be inclined to work instead, by providing them with the tools to be successful in the workforce when they complete their schooling. However, boys in Armenia perform at lower levels on international assessments of student learning compared to girls. Boys' enrollment in upper secondary and tertiary education has declined and continues to do so, and they also face significant challenges in accessing basic education. Societal pressure to work while in school causes many boys to leave school to support their families. They are consequently much more likely to be absent from and drop out of school compared to girls. Few programs and policies address these increasing challenges faced by boys in Armenia.

There are many supply-side factors that can contribute to transforming the education system to meet its goals and to effectively prepare both boys and girls for success in the labor market. Obtaining qualified teachers, high quality schools, low schooling costs, federal and local government support for education, school materials, and low opportunity costs to attendance are

all pieces that must be considered when addressing boys' educational access in post-conflict Armenia.

Analyzing Context

Armenia, a former Soviet republic and a low-income nation, has experienced many political, industrial, and social reforms over the last fifteen years as it transformed into a market economy and its education system, along with other public services, has deteriorated. Resources were devoted to the Nagorno-Karabakh war, and education budgets were subsequently reduced. Low public expenditure on education has made it difficult for communities to maintain a good condition and quality for schools. Education has become mainly a private system. Schools are now more expensive, exacerbating the financial barriers to access and complete school. Schools located in rural and border areas, where many minorities live, have been most impacted by such budgetary shortfalls.[xxii]

Child poverty also impacts the potential for students to attend higher levels of education. Students who need to work to support families cannot go on to access higher education. Voluntary military service and the government's conscription of males between the ages of 18 to 45 affected the makeup of many families, leaving them with no central male figure. This impacted the societal expectations of boys, creating additional pressure for them to leave school and find jobs to support their families. Consequently, child labor has become a great barrier to schooling, especially for those from poorer communities.[xxiii]

Communities that prioritize labor in Armenia may affect boys disproportionately because of cultural expectations that assign men to the manual labor associated with agricultural work.[xxiv] Therefore, absenteeism, repetition, and dropout rates for all children in refugee- and minority-populated areas are much higher than the national average.[xxv] Teachers in many minority areas are also involved in farming, and therefore also tend to be absent.

Taking Stock of Extant Research including Evaluation and Other Applied Research

There is a variety of research about the deterioration of boys' schooling in different parts of the world. Research on the effect of child labor on boys' education is particularly extensive and helpful. Discrimination in schools exists towards students who combine work and school, students who are poor or disabled, and students who were formerly child laborers.[xxvi] Many children become disabled because of the work they do, which prevents them from participating in formal education settings because of a lack of special education support, as in Armenia. Research has also shown that teachers treat disabled students differently, making them feel uncomfortable in the classroom. Former child laborers are often older than their peers, and age differences in the classroom can negatively impact the teacher's ability to teach all students. Child laborers also face peer discrimination, and the combination of institutional discrimination and peer discrimination discourages former child laborers from attending school.[xxvii]

Research in Armenia has also tied male juvenile crimes to the fact that boys' access to potential male role models is severely limited as a result of a lack of male educators.[xxviii] The presence of male role models for boys is very important, but they may not exist within families due to the Nagorno Karabakh war. Much research also exists about boys' anti-schooling attitudes. Elsewhere, though not a result of a post-conflict situation as is the case in Armenia, research from Australia, Lesotho, and Guyana shows that boys value male teachers as role models.[xxix]

Analyzing Gaps between Research and Context

Although there is limited research on what to do about the problem of boys' underparticipation and underachievement, there is much that provides some guidance about anti-schooling behaviors of boys and there is evidence on how the post-conflict situation in Armenia has exacerbated these issues. All of the problems that have caused the deterioration in boys' schooling are related in the context of Armenia. The lack of resources for education in the post-Soviet era have both contributed to the poor quality and declining access in education. This was even more problematized by the Nagorno-Karabakh war, during which many males died, leaving their families to support themselves. Alongside high absenteeism and drop-out among boys, the

lack of male role models in schools, gender stereotyping of subjects, the inability to see a relationship between school and the labor market, and the problems associated with re-enrolling in school after having been a child laborer are all associated with the declining access to education for boys. Unless these particular issues, which have been extensively examined in other nations, are addressed using a combination of solutions or innovating to address specific challenges in the various regions of Armenia, we are unlikely to experience a reversal in the declining trend of access for Armenian boys.

Generation of Innovation and Transfer of Best Practices

Considering the research on child labor and what has been written about boys' anti-schooling attitudes and the gaps existent in Armenia, some best practices from areas of the world where these topics have been researched heavily are listed below. Some have been applied to different groups in varying parts of the world, some of which are quite different from Armenia. Regardless, they provide an overview of what best practices exist. These practices could serve a heuristic purpose, to inform the development of innovative practices in Armenia to educate boys.

- Attract more male teachers, male teaching assistants, and male mentors to expose male students to positive male role models in society as has been done to enhance male enrollment in other parts of the world[xxx];

- Improve current teacher training programs to minimize gender stereotyping in education and to better engage boys in learning[xxxi];

- Emphasize cooperation, confidence-building, and conflict resolution in teaching pedagogy to improve boys' academic performance[xxxii];

- Create a compensatory intervention program, such as a conditional cash transfer program such as Mexico's Progresa Program, that is geared towards males in the upper secondary grades, when they are most likely to drop out ;

- Allocate funds for textbooks, uniforms, and school construction;

- Monitor boys who are absent or drop out to join the workforce and develop interventions to help boys return to school[xxxiii]; and

- Make specialization part of school: education, specialization, and work can be combined so that students can relate education to their line of work.[xxxiv]

Literacy and Educational Access in Laos

The *Education for All: Global Monitoring Report 2006* (EFA) indicates that investing in education and literacy provides numerous benefits to individuals and nations. Education raises self-esteem and empowers marginalized individuals like women and minorities to voice their opinions and participate in civil society. Greater political participation often translates in turn into quality public policies that can address the needs of disadvantaged groups.[xxxv] In addition, educated individuals can foster the promotion and preservation of cultural values, which is particularly important in an ethnically and linguistically diverse nation like Lao PDR.

Identifying the Needs

The Lao People's Democratic Republic (PDR) is a nation of six million people. Literacy and enrollment rates indicate a gap in learning and education access for many ethnic minorities in Lao, a problem that affects half the country. The national literacy rate for males is 80 percent compared to 60 percent for females but rates are lower by ethnic group and region.[xxxvi] For example, female literacy rates are below 20 percent for minority groups like the Hmong, Katang, Makong, and Kor. On the other hand, the Hmong male literacy rate is 60 percent in Saysomboune province but only 30 percent in Oudomxay.[xxxvii] Related to literacy and learning is educational access. The net enrollment rate of the country is near 80 percent but in provinces that consist of 90 percent or more ethnic minorities the rate drops closer to 50 percent.[xxxviii]

Literacy can clearly play a key role in developing and sustaining economic growth in an agricultural country like the Lao PDR. Studies show that "literacy and numeracy enable farm households to adopt innovations more easily, to better cope with risk, and respond to market signals and other information."[xxxix] The UNDP notes that four to six years of schooling is the

minimum threshold necessary for increases in agricultural productivity. Without upgrading the skills and education of the current labor force, the country's transition from a natural resource-based economy to a human resource based economy may be delayed for another generation.[xl]

Analyzing the Context

The current state of the Lao PDR reflects political and economic changes of the past thirty years. These changes include the communist Pathet Lao's ascendance to power in 1975 and the transition from a centralized government to the beginnings of a market economy. Although many of these transformations under the Pathet Lao cultivated high annual growth rates in gross domestic product, the confluence of recession in Asia during the mid-1990s, limited natural resources, and dependence on agriculture continues to limit foreign investment and economic growth.[xli] Furthermore, not all segments of the population benefited from these economic developments.

The government officially recognizes 47 ethnic groups but the population is classified into three main categories by topography: *Lao Loum* (Lowland Lao), *Lao Thueng* (Midland Lao), and *Lao Soung* (Highland Lao).[xlii] The ethnic Lao majority resides primarily in the lowlands and Vientiane municipality and forms much of the ruling political elite in the capital while most ethnic minorities populate the highlands. Although the Constitution of the Lao PDR explicitly states that "the state will provide a policy of unity and equality between different ethnic groups," ethnic minorities report less access to public services like health and schooling.[xliii]

Indeed, poverty affects disproportionately those in provinces with high proportions of ethnic minorities. Whereas only 12 percent of Vientiane residents in 1999 fell below the poverty line, more than 50 percent in Oudomxay, Phongsaly, and Luangnamtha lived in poverty. Even in provinces with a low ethnic minority population like Champasack, the poverty rate is more than one-third. It should be noted that while poverty generally declined from 1993 to 1998, the rate of decline was lower in ethnic minority provinces. Some provinces like Oudomxay actually witnessed a significant increase (51 percent to 73 percent) in poverty between those years.

Overall, the UNDP reports that 38.6 percent of the population live below the poverty line, but of this number, 93 percent are ethnic minorities.[xliv]

A key barrier to schooling and literacy for many ethnic minorities is the absence of schools in their communities. In provinces that are predominately ethnic minorities (over 90 percent), nearly half of the villages lack schools.[xlv] For those who do enroll in school, teacher quality is a major issue. Many teachers are unaware of the curriculum statement and have little knowledge of its contents. More importantly, only half of the 47 ethnic groups speak the national and instructional language of Lao as their native tongue. According to the Asian Development Bank "Children from homes where Lao is not spoken enter schools with a significant handicap, a condition partly accounting for the high dropout rate."[xlvi] Despite the initial language barrier that many ethnic minority children face in learning, few teachers come from these communities or speak the language.[xlvii] Many of the ethnic minority languages also lack a written component. The lack of access to early childhood education compounds these difficulties.

Taking Stock of Extant Research including Evaluation and Other Applied Research

In situations where students must acquire literacy in a second language, the research emphasize the importance of developing proficiency in the first language. According to Snow, Burns, and Griffin, "…being able to read and write in two languages confers numerous intellectual, cultural, economic, and social benefits."[xlviii]. More importantly, their research indicates that instruction in the student's first language can aid the acquisition of literacy in the second language. That is, cognitive skills like letter and sound recognition and phonological awareness that enhance literacy development are transferable across languages. Even students who come to school speaking languages without a written component can still increase phonological and phonemic awareness by improving oral proficiency. Finally, research also shows that these skills serve as a foundation for literacy in both alphabetic and non-alphabetic languages like Lao.[xlix]

The educational context in Laos indicates that any intervention to improve literacy should address access to schools which facilitate learning for non-Lao speakers. However, research shows that investing in adult literacy can also produce high social returns and improve the

literacy of children as parental literacy contributes to child literacy. Evidence from the EFA Global Monitoring Report suggests that the private returns to adult literacy programs are comparable, if not higher, than for primary education. Although these returns are difficult to measure, the EFA concludes that "what people learn from these literacy programmes does help them raise their incomes and move out of poverty."[l] Moreover, the research of Dorit Aram with preschoolers in Jaffa demonstrates the impact of adult literacy on children.[li] In a study of two common early literacy programs for children, storybook reading and alphabet skills training, Aram finds that children who are read to develop the phonological awareness and name writing skills often seen in successful readers. In addition, storybook reading stimulates verbal interaction while enhancing vocabulary development and the relationship between print and sound. Aram's research suggests that failure to develop these critical skills early on and even before formal schooling can lead to reading difficulties.

Other research points to specific reading strategies for young learners that can boost literacy in the classroom. Willingham identified three important factors of reading comprehension that effective strategies address: the ability to monitor one's comprehension, relating sentences to one another, and relating sentences to what the reader already knows.[lii] Strategies targeting these areas can be learned quickly and appear to provide a boost in literacy for readers in primary school.

Gaps Between Context and Research

The key gap between the Lao educational context and extant research, aside from the assumption of financial capacity, is human capital. Most literacy experts would emphasize the importance of utilizing the students' linguistic resources when the language of instruction is different from the first language. In provinces that consist primarily of ethnic minorities, sensible classroom policy would entail integration of both the Lao national language and the students'. Examples of effective bilingual models exist in the United States and around the world. The problem, however, is that these models require high levels of teacher capacity. In many of these Lao provinces, the teacher comes from outside the community and lacks fluency in the local language.[liii] Building more schools and increasing educational access can improve literacy

chances for students but a major issue is improving school capacity to address the linguistic diversity of the community. Thus, merely transferring a bilingual model from abroad fails to address teacher quality.

Complicating the issue is that many of the ethnic minority languages lack a written component. The research shows that being able to read and write in two languages confers numerous developmental and cognitive benefits for students. Less clear is to what extent these benefits carry over when knowledge of the first language is limited to the spoken form. Similarly, although readers of any language must learn decoding and comprehension skills, there is likely variation between alphabetic and nonalphabetic languages.

Generating Innovations and transfer of best practices

Based on the research and current state of education in Laos, improving literacy will require changes at different levels of the institution. Some of these changes, like building more schools and expanding access, are clear inputs that demand more financial capital. Addressing literacy at the classroom and student level, however, means improving teacher quality. The current problem is that many ethnic minorities struggle with the language of instruction and few teachers understand the languages in these communities. The current dearth of female and ethnic minority teachers suggests that local governments should raise wages or subsidize living costs for potential teachers.

The use of inducements has been implemented with mixed success in the United States to attract more candidates to the teaching profession. Researchers found in Massachusetts that a financial bonus attracted more teachers but few remained in the profession after three years, citing poor working conditions and limited professional growth.[liv] The Massachusetts experience made clear the importance of ongoing attention to working conditions and professional growth. Given local conditions, rather than a monetary bonus, the Lao government may establish a rice coupon system as an additional incentive to become teachers since evidence suggests many often worry about their rice supply. Provision of child-care and adequate accommodations may help address the insufficient supply of female teachers. Once teachers from the community are recruited into

the profession, it is important to provide regular in-service training on pedagogy and how to use the students' first language while teaching the national language. One key finding in the Massachusetts study was that a proportion of the bonus should have been used to support induction and professional development for new teachers. Similar workshops and training should be provided to current teachers to improve instructional practice and understanding of the languages and learning difficulties of minority students.

Conclusions

The central question of this chapter, "How do we know what works to promote educational equity?" is deceptively simple. It invites us to reflect on the relationship between knowledge and action. How is knowledge useful to action? What knowledge is useful to act? How do we generate that knowledge? How do we use it?

Despite its limitations, research-based knowledge has a role to play in sustaining educational practices to advance equality of educational opportunity. Evidence-based knowledge can help to inform the consideration of alternative ways to achieve education objectives, once those objectives, and possible tradeoffs between objectives, have been established through the political process. Evidence-based knowledge can also inform the political deliberations about education, the process of agenda setting, as well as policy and program design.

This role for research recognizes that the establishment of education objectives is not a function of research and that the creation and implementation of programs to advance educational opportunity requires as much in terms of creation, design and invention, as it does from research and evaluation. The search for what works must use research and theory to create and design practical and scalable approaches to helping students learn. We must transfer knowledge about what works from some contexts to others, as we have always done since the global experiment to educate all children began a few centuries ago, and began in earnest for most of the world six decades ago. To increase the odds that knowledge transfer is effective we must do it methodically, examining the relationship of education practices to context, and comparing not only practices but contexts. In comparing carefully in order to transfer sensibly lies much

potential to accelerate the process of expansion of educational opportunity and of closing the equity gaps that still remain.

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