

Knowledge and Skill Development in Developing and Transitional Economies

An analysis of World Bank/DfID Knowledge and Skills for the Modern
Economy Project

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Executive Summary

Overview

In April 2001, the UK Department of International Development (DFID) and the World Bank agreed to collaborate on a project titled “*Knowledge and Skills for the Modern Economy*”. The three-year research, analysis and dissemination activity was intended to provide the tools and knowledge for policy makers in developing countries to make informed policy choices for reforming post basic education and training systems to meet the challenges of lifelong learning. To further this goal, DFID committed approximately \$3.9 million to a trust fund that the World Bank agreed to manage and implement. Over its term, the trust fund has financed 17 studies tackling various issues related to lifelong learning, skills investment and development, education, networks, partnerships and technology. The studies represent a diverse range of projects and contexts covering an impressive array of topics, methodologies, and variations in data and analysis from most geographical regions of the world. This detailed macro-analysis of the various sub-projects concludes the overall project with a view to abstracting the critical knowledge and implications for improvement, sustainable policy, leadership, strategic planning and future action.

The main report begins by setting a framework for understanding the nature and challenges of knowledge economies, knowledge societies and lifelong learning goals that delineate the ultimate aspirations for knowledge and skills development. It then conducts two kinds of macro-analyses: the first through five clusters of projects that are grouped together in relations to shared concerns, and the second through significant emergent themes that cut across most or all of the 17 projects. Key summaries and

recommendations for further research and action are listed at the end of each chapter. The final two chapters then draw overall conclusions and recommendations and identify gaps that warrant further action or exploration.

Knowledge Economies and Societies

Knowledge and Skills Development takes place within the context of a present reality and preferred future. The gaps in many developing countries between current reality and preferred future are enormous and the challenges for knowledge and skills development that will bring the future closer are therefore significant and substantial.

More and more developed nations are or aspire to be what are called *knowledge economies*. The knowledge economy is not just a synonym for information economy or information society. In an age of electronic, digital and satellite technologies, knowledge economies address how information and ideas are created, used, circulated and adapted at an accelerating speed in “knowledge-based communities,” i.e. networks of individuals striving to produce and circulate new knowledge. In knowledge economies, wealth, prosperity and economic development depend on people’s capacity to out-invent and outwit their competitors, to tune in to the desires and demands of the consumer market, and to change jobs or develop new skills as economic fluctuations and downturns require. In knowledge economies, these capacities are not just the property of individuals, but also of organizations, which have the capacity to share, create and apply new knowledge continuously over time in cultures of mutual learning and continuous innovation. Knowledge economy organizations develop these capacities by providing their members with extensive opportunities for lifelong upskilling and retraining; by breaking down

barriers to learning and communication and getting people to work in overlapping, heterogeneous and flexible teams; by looking at problems and mistakes as opportunities for learning more than occasions for blame; by involving everyone in the “big picture” of where the organization is going; and by developing the “social capital” of networks and relationships that provide people with extra support and further learning.

The knowledge economy is a learning society. Economic success and a culture of continuous innovation depend on the capacity of workers to keep learning themselves and from each other.

According to OECD, successful knowledge economies rely on four sources of innovation:

- scientific and technical knowledge
- interactions and incentives to innovate among users and doers
- decentralized modular patterns of innovation within a coordinated system
- widespread application of information and communication technologies, including in education

Knowledge economies work best when they are developed in conjunction with *knowledge societies*. Partly, this means recognizing and ensuring that knowledge economy initiatives do not only bolster existing or emerging elites, but also have spin-off benefits and yield social dividends for the broader civil society – through reductions in poverty, improved health, greater education and workforce participation for women and girls, and declines in levels of violence and criminality. The sometimes chaotic effects of fast-moving knowledge economies also need to be counterbalanced by creating

conditions of security and stability in which investment can be conducted; by investing in the public sphere so it can work more effectively with private enterprise; by protecting universal access to, distribution of and long-term storage of information that is a matter of public interest and investment; and by ensuring that the bonds of community, family life and indigenous culture are not eradicated by unrestrained economic progress.

There is a yawning gap between these preferred futures of knowledge economies and knowledge societies and the current realities of most developing countries, where industrialism, unemployment, subsistence living and vast informal economies define day to day life for most of the population.

One way to close the gap is through education and training. Improved access, universal basic education and foundations of literacy offer essential first steps on the path to becoming successful knowledge economies. But knowledge economies demand not just more education, but education and training that is also better and different. In the context of knowledge economy aspirations, the challenge of educational reform is therefore not just to *increase access* or even raise conventional tested achievement, but also to *change the nature and improve the quality* of learning, teaching and training so that they address knowledge economy objectives. How to do this when public resources are limited, poverty and unemployment are widespread, informal economies are extensive, inflexible bureaucracies are obstructive, and corruption is rife, is the fundamental challenge of knowledge and skills development.

In education and training development, we are moving from an age of access to a quest for quality. The very existence of this significant project suggests that the World

Bank and DfID are on the cusp of making this substantial shift in investment and development strategy.

Lifelong Learning

Knowledge economy learning is shared learning, continuous learning and lifelong learning. Rapidly changing knowledge economies depend and thrive on effective orientations to lifelong learning. Lifelong learning involves continuous upgrading and retraining but also much more than that in terms of continuous, personal and collective learning, growth and development.

Lifelong learning takes place in the formal, nonformal and informal economic sectors. In less developed countries, the informal sector is currently the largest and most significant. One of the greatest challenges of knowledge and skills development is to find ways to promote the transferability of learning and what is learned from the informal to the formal economy. Four issues in lifelong learning are central in less developed countries

- *Access and provision* that is flexible, affordable and available
- *Motivational patterns and incentives* that are established in positive attitudes to and experiences of learning in basic education, facilitated by tangible and transferable forms of qualification and recognition, and completed when skills learned are harmonized with economic opportunities to use them
- *Culture* that needs to be challenged when it impedes the lifelong learning opportunities of groups such as women and girls, and that should be worked with and capitalized on where indigenous lifelong learning skills are already strong.

- *Status and quality* of effective pedagogy and those who deliver it.

Project Findings

The 17 Trust Fund project findings fall into five clusters.

- The demand for skills and the effects of investment climates
- Primary and secondary education reform and training
- Further and higher education and training
- Networks and partnerships
- Technology and innovation

The findings compellingly illustrate the challenges faced by developing and transitional nations as they use their limited resources to educate the many. The gap is clearly widening between those who are better educated (whether it be individuals, regions or countries) and those who are not. Progress in providing access to primary schooling contrasts with the challenge of improving results where there is little evidence of improvement in the quality of teaching and learning outcomes. Pathways that might help the under-educated acquire more training or gain access to the formal economy are not always evident or available. When training provision is increased, it tends to be taken up by those who have the benefits of prior training already. Also, while there are many initiatives to introduce technological hardware and software into schools, few provide support in ways that are pedagogically effective.

Despite these challenges, the projects also point to a number of examples of innovative and promising practice. By working across sectors and disciplines, a number of workers and learners are achieving significant progress in ways that provide clues and directions for policy development and for the strategic directions that governments might

choose to follow. In Peru, for example, public universities have worked with private industry and overseas technological innovation to develop and sustain a cutting edge and highly successful asparagus industry that has built itself on the indigenous agricultural knowledge that is already present in the culture. In Chile, public universities and NGO'S have partnered with private and public educational institutions and used collaborative, representative, and local decision-making teams, to bring about effective uses of technology in schools. In many countries, multi-national corporations are beginning to exercise greater corporate social responsibility as they engage with communities to improve services, the environment, and the education of local workers. And in Namibia, current data on local markets and market saturation have been compiled in a low-cost way to help inform choices about and provisions of just-in-time training courses that are fitted to immediate local needs. Examples such as these have arisen in all five clusters of projects which we now summarize in turn:

1. The Demand for Skills and the Effects of Investment Climates

There is a huge demand for a more educated workforce in less developed and transitional economies. Yet in regions like the Middle East and North Africa, while demand is shifting towards more educated workers, most of the labor force remains in agriculture, family enterprises, or the informal economy. The resulting low levels of skill limit how well technological innovation that has been introduced through trade and Foreign Direct Investment, can be transferred into the local economy. While one solution might be a virtuous spiral of skill upgrading and technology transfer, where technological innovation increases the demand for skilled workers, and raised educational attainment,

countries with very low skill levels are often unable to attract initial investment and can find it hard to adapt technologies that have been developed for high skill “leader” countries. The spirals can also be selective and inequitable, providing more training for those who have already received training previously, and improving productivity only at the cost of employee equity.

How well a country is able to respond to the training needs of its people and its economy is dependent on social, political and other factors that make up its investment climate. Once regarded as uncontrollable “externalities” to economic behavior, investment climates such as corruption, financing, tax administration regulations and policy uncertainty clearly influence the performance of firms; they explain much of the variation among countries in their experiences of and orientations towards economic and educational development; and they are therefore legitimate and necessary targets for donor attention and policy intervention.

One significant aspect of the policy environment and investment climate is the emphasis given to public versus private training. Yet each makes a contribution. While the private sector has had considerable success in providing appropriate training in urban areas to larger businesses with specific needs, the public sector addresses broader education content and often offers better support in isolated or rural areas. Although training benefits are greatest where the investment climates are strong this is more the case where companies are large, relatively new, export orientated, and/or foreign owned.

The implication is that both public and private training merit expansion, attention and increasing interconnection in an overall strategy which recognizes that one-size does not fit all and that local responsiveness is essential.

One promising practice is in Namibia where modest and prudent donor support has helped local training centers collect data about local consumer demand and about market saturation points for skills, so this can inform and guide discussions about training courses and provision on a just-in-time, one or two year basis, as fluctuating local conditions demand.

2. Primary and Secondary Education, Training and Reform and Teacher

Training

The spine of any educational system is the quality and reach of its basic and secondary sectors, along with the education of its teachers. All further and subsequent lifelong learning is supported by this. Access to primary schooling or basic education has improved greatly across the regions during the past decade, with most countries now educating about 95% of their populations. Yet these promising figures disguise considerable repetition of grade levels and high drop-out rates leading to young people having poor levels of basic skills when they enter the labor force. These patterns continue at the secondary level, where, despite improved access, drop-out rates remain high and achievement levels are largely stagnant. Access does not always or even usually translate into achievement. For success to occur, policy needs to promote greater quality and higher standards in learning, teaching and teacher education.

It is enticingly easy and inexpensive to address this problem by developing standards frameworks of knowledge economy competencies to which teachers should adhere and aspire. But these frameworks have little value unless teachers have developed the capacity to meet the standards in question.

In many developed and developing countries, qualified secondary school teachers tend to be the hardest segment for the teaching profession to attract, the most expensive

to educate and the most difficult to retain in school, especially among male teachers and those in high-demand areas, such as mathematics, science and technology.

Secondary school teachers who remain in the system lack *confidence* and *competence* due to the erosion of their traditional subject-based authority as they face greater numbers of more challenging and changing students in a mass rather than elite system. Although there is remarkable convergence among interviewed stakeholders as to knowledge-society competencies that teachers should acquire and display in the classroom, teacher education programs still place most stress on *content knowledge* rather than *knowledge of teaching and learning* and of *how to teach one's subject*.

Secondary teacher training is poorly equipped to address these problems. Teacher education reform therefore needs to move beyond listing the competencies that comprise and create quality learning, to articulating teacher education across a continuum of lifelong learning over time, and integrating it with school development, leadership development and strategies of systemic reform – with teachers working and learning together more in schools that are stronger professional learning communities of quality and improvement.

Vietnam's teacher education reform is moving in a knowledge economy direction. While there are only a few outliers of promising practice on the ground, at this point, increased access plus improved quality are clear priorities of the system, well embedded in the discourse, and amenable to a young teaching force that is open to improvement.

Educational quality and improved teacher education will not be achieved in developing countries without intelligent, effective and orchestrated reform efforts. It is difficult for countries to learn about the effectiveness of their reform efforts without evidence of improvement or its lack in their own system and in relation to comparable

systems elsewhere. Yet many countries with developing and even transitional economies have limited data about their students' achievement or their systems' effectiveness. They also have limited competence and capacity to collect, organize and interpret such data in ways that can usefully guide policy or practice.

The Knowledge and Skills Trust Fund has been able to support courses for policy-makers on interpreting reform alternatives and on administering and analyzing national education assessments, but these assessments provide only limited leverage for improvement unless they are relevant to and useful in the specific countries where the data are collected.

Further educational reform progress in developing countries might be advanced by

- increasing awareness of not only the *content* of different reform alternatives but also of *change processes* for implementing them and developing teacher capacity to do so.
- facilitating national assessment comparisons not with the highest performing countries, but with those that are economically and politically similar and also perform better (requiring improved typologies of countries to make this possible).
- developing data management, not just as summative systems of *assessment of learning* that has been completed, but also in local systems of *assessment for learning* that provide real-time feedback on student learning that can guide local improvement

3. Further and Higher Education

Beyond and sometimes beside conventional secondary education is the training and education that most directly abuts the world of employment and the economy: technical and vocational education and training, and tertiary education. Some of the most obvious connections between lifelong learning and the knowledge economy are to be found in the provision of technical and vocational education and training (TVET).

Trust Fund studies of TVET found that quality and quantity are lacking in most developing countries and in many transitional economies. Much of this is due to the pervasively low status of TVET but there are a range of other formidable problems too. Pedagogies are conservative, content is often traditional, and assessment procedures are summative rather than formative - all out of step with knowledge economy needs. Too much effort has to be devoted to remediating problems of basic literacy that have not been dealt with adequately in the earlier stages of education. Public systems for delivering training tend to be over-centralized, inflexible, supply driven, and not sufficiently accountable. Pathways between general, vocational, tertiary education and the workplace, where further training opens doors between informal and formal economies, are generally insufficient, underdeveloped and unclear.

Yet, there are exceptions to these patterns. In Africa, for example, despite widespread unemployment, and the proliferation of HIV/Aids, there are considerable strengths, achievements and opportunities on which TVET reforms can be built. For instance, African enterprises provide a substantial amount of formal and informal training along similar lines to that found in middle-income and developed countries. New governance arrangements and the establishment of national coordinating bodies and

training authorities have also often given stakeholders authority to develop training markets and allocate resources.

Training challenges are greatest within the vast informal economy, where smaller enterprises train less frequently, or use only traditional apprenticeships that perpetuate conventional technologies and that lack standards or quality assurance. Training for the informal sector necessarily has to be flexible in its delivery. For those who undergo it, it also needs to have an immediate application if it is to justify their investment. Because full cost recovery is rarely achieved in the short-term, public sector and NGO investment seems to be most effective in this case.

Worthwhile future directions for TVET reform include improving the quality of public training by making it more flexible and responsive to changing markets; building on the existing capacity of a broad network of non-government training institutions and enterprises that include NGOs, religious-based providers, and for-profit trainers; targeting niche markets in small enterprises with good growth prospects in locally developed models of intervention; developing multiple pathways between systems and levels to improve flexibility and responsiveness; and improving quality and quality assurance by devising incentives to attract, retain and develop high caliber staff in higher status systems.

Beyond secondary education, the tertiary sector in all countries offers even scarcer access to educational opportunities. Yet it is here that the highest levels of contribution to the knowledge economy can obviously be made – in a sector that continuously creates and produces new knowledge. The Trust Fund projects identified and found considerable variation among seven Central and Eastern European countries in

tertiary education. In these new European economies, which are also post-Soviet societies, the expansion of tertiary education provision in the last fifteen years has not changed its basic character or quality in terms of teaching methods, quality of learning or acquisition of skills. Public universities and other training institutions run the risk of becoming irrelevant to a rapidly changing economy, private institutions are prone to reductions in quality and both sectors run the risk of declining accountability.

There are important exceptions, though. In Romania, which has moved quickly to becoming a market economy and democracy, reforms have concentrated on eliminating obsolete course content, on building a coherent legal framework to ensure more effective coordination, on initiating more flexible study programs, on developing national standards for institutional accreditation, on adapting a transferable credit system, on developing quality indicators, and on allocating disproportionately greater funding to the most dynamic and effective higher education institutions. Similarly, Latvia has significantly expanded higher education provision and take-up, both regionally and through a new private sector, as well as introducing a quality assurance system, instituting a system of student loans, and upgrading as well as developing new study programs. The Trust Fund project reports provide no guidance on how these directions and developments might be transferable to tertiary education systems in Africa or Latin America, for instance.

The Trust Fund projects also examined career guidance systems within and beyond further and tertiary education. These programs, it was shown, can improve the relationship between skill supply and demand in knowledge economies and can also increase access to education and training for the disadvantaged and the poor. Such

systems are most effective when they are coherently administered, provided by a range of institutions, sequenced according to ascending priorities, and guided by an ongoing evidence base of access and impact.

4. Networks and Partnerships

Knowledge societies are network societies. In network societies, increased communication and travel mean that migrants who seek better economic opportunities abroad need not sever their ties to or communications with families and friends in their homeland. Network societies also encourage greater knowledge sharing among partners with a mutual interest in increased prosperity – fostering increased collaboration above and beyond the public/private divide.

Diaspora networks are globally distributed populations that are connected by common faith, ethnicity, or national identity, and that activate and renew these connections by networking locally, globally and back to their homeland. They provide one powerful means for developing economies to access knowledge, skills and investment from elsewhere. While talented students in developing countries still migrate to continue their studies and work in the advanced economies, when they became entrepreneurs or managers of multinational firms, they then often use their own global networks, and especially those of their Diasporas, to reinvest in and help build new establishments in their home countries. At their best, these emerging migration ladders comprise a virtuous cycle of co-development of both migrant human capital and home country institutions. In particular, expatriate networks can help to identify and surmount obstacles to reinvestment, and can access the relevant technical knowledge in other

countries that will assist the home country. More research on who connects with whom in diaspora networks and on what ways are most beneficial for improving understanding about how to support them more effectively through methodologies such as social network analysis could be especially helpful in this regard.

In 1997, Ramón L. García, a Chilean applied geneticist and biotechnology entrepreneur with a Ph.D. from Iowa State University contacted Fundación Chile to help provide the technical infrastructure that would allow Chilean agribusiness to develop domestically viable variants of crops typical of California's Central Valley. After jointly reviewing their portfolios of initiatives, García's company and the Fundación founded a new, co-owned company to undertake long term R&D projects needed to transfer technologies to Chile that were key to the continuing competitiveness of its rapidly growing agribusiness sector. Without García's combination of continuing, deep knowledge of Chile, advanced US (i.e. developed country) education, exposure to US managerial practice and experience as an entrepreneur, establishment of the new company would not have been possible. This company has successfully developed a technological platform for applying modern biotechnology to the improvement of grapes and stone fruits: two key export crops that are very important to the Chilean economy. This diasporas network did not simply bridge existing Chilean capacities with new opportunities, but actually developed new and stronger capacities.

In addition to diasporas, knowledge exchange, transfer and creation benefit when people build, develop and participate in institutional partnerships. In knowledge economies, some of the most interesting and promising partnerships span the public/private sector. Several examples of successful and sophisticated cross-institutional partnerships were spread across the Trust Fund project studies, demonstrating the value of supporting effective lifelong learning by connecting indigenous skills and knowledge to solid public education and advanced university research capacity as well as to technological development and skills along with economic investment from overseas.

The asparagus industry in Peru has been built on a well-developed formal educational base, at the core of which is a public agricultural university, the Universidad Nacional de la Molina, in Lima, where most of the

entrepreneurs in the asparagus industry were trained. These entrepreneurs, in turn, learned new techniques in asparagus growing and processing from U.S. (green) and Spanish (white) asparagus growers. Peruvian entrepreneurs were brought to the U.S. by USAID to learn these new techniques. Spanish investors, on the other hand, came to Peru to take advantage of lower wages. In both cases, technology transfer took place and was adapted to Peruvian conditions. Further, Peruvian entrepreneurs learned (and continue to learn) advanced techniques of irrigated desert agriculture by taking courses in Israel. Peru's asparagus producers are organized into an association that disseminates information and assists with marketing. In addition, the university at La Molina produces research on new export crops as well as pest and disease control, that is made available to asparagus producers, constantly adapted to local conditions, and taught by larger growers to technicians and small farmers. All this lifelong learning has high payoffs for economic development.

This case exemplifies the value of treating the public and private sectors not as opponents but as allies, working together to support lifelong learning and training that promotes the greater economic and social good, and that is deserving of complementary rather than competitive investment.

While public institutions work more closely with private organizations to promote effective lifelong learning and training associated with economic development, private businesses and organizations can in turn contribute to social projects that benefit the public good and improve the investment climate of security and stability in which economic development occurs. One of the key trends in this second sort of public/private partnership is the movement towards greater corporate social responsibility (CSR).

Most CSR efforts have focused on issues such as monitoring working conditions in global supply chains, ensuring environmental sustainability, and improving quality of life in communities that are heavily dependent on single industries such as mining. The collapse of Enron and other high profile corporations that put profits before principles has amplified the receptivity to CSR initiatives.

One of the papers in the Trust Fund projects itemizes a key set of characteristics that characterize good CSR practices. They include having a grasp of specific and strategic capabilities for transferring know-how to host countries, where they build human capacity for sustainable economic development; trying to address the population's need for core business competencies while also meeting strategic social goals; demonstrating a capacity for building effective partnerships and collaborations with the public and social sector; being able to stimulate innovation simultaneously in the business and social worlds; and doing all this in a sustained way, over time, through building greater capacity at the local level.

One of Unilever's soap factories in Indonesia, treats water from the nearby river to manufacture soap, toothpaste and shampoo – since they all require clean water. It is in Unilever's commercial interest to improve water quality in Indonesia and also part of its social and environmental responsibility. Unilever Indonesia's Clean River program focuses sustainably on involving and training everybody living along the river to contribute to its improvement and provides training so that the villagers can look after the river in a self-sustaining way.

A more coordinated approach to CSR might be achieved through creating Corporate Social Responsibility Agencies at regional and national as well as possibly local levels, to connect training investment to local knowledge, national practices and the creation of social value (including strong investment climates) as well as direct economic value.

5. Technology and Innovation

Few things seem more integral to knowledge economies than modern technologies, their prevalence and their use. One of the most significant “new basics”, of knowledge economy learning is the ability to learn and use skills in new technologies.

The need to acquire skills in information and computer technologies places immense demands on educational systems in less developed and transitional economies.

First, there are the logistical challenges of technical infrastructure, power and electricity. Availability of and financial support for distribution of hardware and software come next. Issues of equality of access between rich and poor, women and men, and people in rural and isolated communities versus urban areas are a pervasive problem running through all these issues of access in the quest to close the growing digital divide between advanced and less developed economies.

Beyond these issues of initial access, even more sophisticated challenges concern pedagogically effective and sustainable forms of use. Private sector involvement through the investment of multinational hardware and software companies can boost rates of early adoption of new technology, but then the options and financial capacity of countries to maintain, renew and expand hardware and software in a sustainable, free and open way, are limited. More promotion and promulgation of open source software may offer one solution to this challenge of sustainability.

The greatest challenge to effective educational implementation of ICT repeats the pervasive problem of educational change in knowledge economies generally- the inability of schools to undertake reform in teaching and learning. Without attention to transformation in teaching and learning, the educational promise of technological change will always remain stillborn.

According to the Trust Fund projects, school computers are typically installed separately in a small lab, in the library if there is one, or in the administrator's office. They are rarely found in classrooms, which makes it almost impossible to integrate them

effectively into the teaching and learning process. This challenge of new technologies therefore reiterates the call for quality teaching that can develop new knowledge economy basics of creativity, problem-solving, teamwork and so on.

One way to advance improvements that connect ICT adoption to quality teaching and learning is by promoting school-based participation in planning, developing and implementing technologically-driven change. It is noteworthy that in Trust Fund surveys, half the teachers surveyed feel they have indeed played an important role in such planning. Effective teacher learning and involvement also depends on equally effective processes of learning and involvement among school leaders. In the Trust Fund surveys, among all the people who have participated in the planning and decision-making processes to bring ICT to schools, the heads-of-school feel that they have had the greatest impact. This raises questions about the kinds of support and training that are necessary for them to become effective leaders of knowledge economy learning and technology implementation.

In co-operation with public and private partners, universities, parents, school owners, and administrators, the ENLACES project in Chile sought to provide diverse leadership and local representation in order to ensure that informed judgment about technology use might improve and enhance learning across the country, especially in isolated and rural schools. In ENLACES, staff development for teachers (including the use of classroom facilitators) continues for at least two years with some activities extending beyond that period. Support is also sensitively differentiated based on differences in teachers' previous experience and attitude. A majority of Chilean classroom teachers now have PCs and Internet at home, and more than 80% have successfully completed two-year training in ICT with Enlaces, that familiarizes them with the basic uses of technology—in particular with Internet, word processing, spreadsheet and presentation software. Quality digital content in the form of CD and web-based resources also enables teachers to access information and materials to an unprecedented degree. Most importantly, teachers from specific neighboring areas (or microcenters) work together to design activities in

“communities of practice” where they learn how to use technology to improve teaching and learning.

Summary

The five project areas are not mutually exclusive. Strong partnerships use advanced technology. The link between education and economic growth strengthens as the rate of technological transfer increases. More effective use of technology depends on better quality pedagogies and higher quality programs in teacher education. Investment climates try to change and not merely adapt to the contexts of partnership that include public provision. These issues surface more clearly in the cross-project themes.

Cross-Case Themes

Across the diverse range of Trust Fund projects, nine significant themes and issues emerged from the analysis and review.

1. The Growing Divide

Increased access to and quality of education, training and use of technology lead to improved educational opportunities and enhanced economic development. At the same time, current patterns of training access and provision are creating a disturbing escalator effect that is widening the gaps in achievement and participation between included and excluded populations.

Those who have initial access to further education and training are the most likely to take up other opportunities for yet more training, education and use of technology. Once on the escalator of opportunity and achievement, they rise to higher levels, other escalators, or lateral walkways of even greater opportunities and all their accompanying

benefits. Skill upgrading and technology transfer also operate in virtuous, self-reinforcing upward trajectories.

Those who do not get on the escalator, or who are scarcely aware it is there, are increasingly left behind, trapped in unemployment or the vast sector of the informal economy where training opportunities are unavailable or inappropriate.

Currently, therefore, while increased and long overdue training opportunities and provisions commonly lead to improvement for some and to overall economic development in many cases, these experiences of training appear to be exacerbating rather than alleviating the economic and achievement gaps between the wealthier and poorer populations in developing economies. Attention to widening the scope, reach and capture of initial training provision right into the informal economy, now appears to be a key priority.

2. Lifelong Learning and Training

Many of the studies and reports either examine or use the notion of lifelong learning as a framework for thinking about and implementing various forms of skills training particularly as it relates to the knowledge economy. While conceptualizations of lifelong learning vary across the projects, many of them equate it with more specific kinds of training. Yet a robust lifelong learning framework encompasses learning throughout the life cycle, from early childhood to retirement. It includes formal, non-formal, and informal education and training that addresses civic and personal interests as well as labor market demands.

There is a significant gap between the theory and rhetoric of lifelong learning for the new economy, and the actual practices and policies of governments and most workplaces. While the rhetoric talks about global competitiveness, most workers scrape out a living in the informal economy; while the rhetoric refers to knowledge jobs, most employment is more menial in nature; while the rhetoric emphasizes ongoing skills training for all, it is predominantly the well educated in larger firms who have access to skills training; and while the rhetoric discusses the value of knowledge work, proportionally few jobs and little of the content in the training that is offered in developing economies actually conforms to the “knowledge work” category.

More robust images of lifelong learning are ones where people have the skills, dispositions and values to continually access information and build knowledge not only for the workplace but for the family, community and society; where people have initiative, are problem-solvers, are creative and innovative in making the most of their life chances and are willing and able to contribute to the greater good.

These more robust and inclusive visions of lifelong learning needs to be affirmed and applied in all projects focused on knowledge economy objectives; to be incorporated into internal quality assurance mechanisms within the World Bank/DfID and other donor agencies so that they do not become narrowed into technical training; and to be pursued outside the formal sector as well as within it.

3. Quality

The agenda for educational improvement in developing and transitional economies is moving from one of access to quality. In emerging knowledge economies,

increased access is a necessary but not a sufficient condition for significant improvement.

Countries seeking to evolve into complex knowledge economies now require the attraction and development of high quality teachers, and high quality practices of teaching and learning related to knowledge economy and knowledge society competencies, if they are to become successful.

Yet in secondary education, TVET and teacher education, well qualified teachers who provide good quality education are a scarce resource – with low pay, low status and poor support being the major barriers to improvement.

It is not nearly so easy to quantify quality as it is to measure levels of access. Numbers and types of qualified teachers can serve as one proxy for quality, but the content of teacher preparation courses often builds little capability to develop and deliver knowledge economy pedagogies. Standards frameworks can provide clear pointers towards where and how quality should be improved – but frameworks imported from other countries may be too far ahead of the contexts in which they are being applied, and they have little value unless there are clear strategies to develop teachers' capacity to meet them. Finally, quality assurance systems of data and information are only useful if they allow comparisons with similar countries that perform at a different level, and if they provide local information and feedback about the settings that people can immediately affect.

More promising strategies for improving the quality of teaching and teacher education involve reorganizations from consecutive to concurrent teacher education provision, on a career-long continuum of professional learning that is integrated with school-level and system-wide improvement initiatives.

4. Pedagogy

Fast moving and flexible knowledge economies require knowledge workers who exhibit creativity and flexibility, who are innovation-oriented, who are committed to lifelong learning and respond well to needs for retraining, who can share information and develop solutions openly and collaboratively, and who are skilled in the use of modern technologies. Secure and open knowledge societies which provide the conditions in which knowledge economies flourish, call for citizens who value and contribute to the public good, who can work and live with increasing cultural and religious diversity, who can develop open and trusting relationships with others and resolve conflicts peacefully, who have a cosmopolitan knowledge of, interest in and active engagement with cultures in other parts of the world, who can care for others in strong communities, who are resilient in the face of adversity and who use the natural world and its resources sustainably.

Creative knowledge economies and secure knowledge societies go hand in hand. Their development and maintenance place significant demands on the schools and educational systems which are responsible for cultivating the skills and dispositions that are essential in a knowledge-driven world, that is swathed in insecurity.

Teaching and learning in the knowledge society have to be able to foster creativity and problem-solving capacity, be amenable to collaborative and team-based organization, be ready to encompass a broad curriculum that is not confined to the minimal requirements of technical training or the basics of literacy and numeracy, be able

to incorporate new technology, and be sensitive to offering flexible and personalized forms of delivery.

Yet most pedagogies in developing and transitional economies remain stubbornly traditional and woefully inadequate for knowledge economy needs. Clearly, one of the greatest challenges for donor agencies in the years ahead is how to break this vicious and debilitating cycle of poor teaching quality and low grade pedagogy, and to devise more appropriate ways of measuring and documenting the effects of future interventions in this regard.

5. *Technology*

The Knowledge and Skills Trust Fund reports make many references to efforts to link increasingly sophisticated uses of technology with greater skill development; resulting in upward spirals of improvement in developing economies.

Some successes are described of larger, export-oriented firms introducing sophisticated technologies and providing appropriate training so that local workers can use them effectively, though the danger remains that when advanced technology is imported from highly developed economies, it can be too far ahead of local capacity – even where additional training is provided.

Lower-tech solutions sometimes provide more sustainable options in very poor countries and regions, developing local capacity to a point that might be able to sustain higher tech solutions later. Technological initiatives that connect with and capitalize on indigenous cultural capital also show great promise.

Development of technological expertise and capability begins in school where more affordable and open-access solutions offered by open-source software are worthy of further exploration. Pedagogically, apart from a few exceptions, new technologies are largely being tacked on to existing school structures and incorporated into traditional classroom pedagogies, rather than transforming the quality of teaching and learning in ways that are appropriate for knowledge economy needs.

6. Public and Private Responsibilities

The most consistent patterns of success in knowledge and skills development are associated with private rather than public initiatives. By contrast, public sector practice and provision is portrayed as bureaucratic, inflexible, outdated, uncompetitive and sometimes corrupt. Yet the obvious strategy of shifting more support to the private sector has limitations. Investment in the vast informal economy which yields few or no immediate returns is much better orchestrated by the public sector, for example. And in Africa, many of the most successful initiatives in the informal economy are led by voluntary and religious organizations, and other NGOs.

Emerging global trends suggest a more complex mix of public and private strategies as the path to economic success – for instance in China and Malaysia. Indeed, some of the most successful examples of training and lifelong learning initiatives embody these principles of public/private partnerships. Supporting both sectors, especially where they work in partnership with one another, therefore seems to have greatest merit.

7. Culture and Context

The capacity to provide effective support for knowledge and skills development is profoundly influenced by the political and social climate for investment. Hitherto, in line with conventional economic thinking, there has been a tendency to treat these contextual factors as unalterable “givens” or “externalities”. The result has been a tendency to build an investment by-pass around the public system or to employ models of technology, standards frameworks, data management and decentralization that are imported from more developed societies, with little regard for how the cultures into which they are inserted will nuance or nullify them over time. With the shift from institutional access to cultural quality, the likelihood of failed implementation due to such misunderstanding is magnified.

Yet the reports show glimpses of emerging efforts to work *with* local cultures whenever possible, identifying and building on the social capital and other assets they contain, rather than viewing them largely as impediments and deficits. Given these insights and experiments, more complex models of mixed and varied public and private support and intervention strategies, that address cultural and political as well as economic change, are now beginning to emerge.

8. Theories of Change

The seventeen Trust Fund reports represent the beginnings of a shift in educational change and reform strategy. Established theories of change have emphasized structures and educational access. Centrally imposed standards frameworks and performance targets have been advocated to provide a common sense of direction and a yardstick for accountability, while decentralized management and private incentives and

funding have been promoted as ways to deliver results more flexibly and effectively, without the hindrance or expense of centralized state bureaucracies. Assessment of learning, in the form of tested achievement, is regarded as a way to measure and monitor program accountability, and to prompt increased attention to improvement by making international comparisons of performance public. In all this, traditional culture is a restriction on modernization, more than a resource for its development.

The emergent theory of change, adjusting to the fast-growing reach of a knowledge economy world, in an age of increasing insecurity, moves beyond issues of access to questions of quality. Standards are defined in ways that bring them closer to the realities of existing practice with more attention being paid to developing people's capacity to meet higher standards, than to adhering to the paper standards themselves. Neither centralization nor decentralization, public nor private investment, are objects of ideological advocacy, but areas for pragmatic judgment, where the balance and mix of centralized/decentralized, public/private is decided according to what is most "fit for purpose" in the country and culture concerned.

In the emergent theory of change, imposed strategies of standardization and privatization are replaced by a greater emphasis on public/private partnerships, network-based and peer-driven forms of positive pressure, and more flexible, just-in-time, localized and personalized forms of program delivery. Assessment *of learning* in the form of data used for summative quality assurance once educational outputs are completed, is replaced by assessment *for learning*, where data are used to inform ongoing decisions and adjustments in quality and processes in order to produce better outcomes.

In the emergent theory of change, existing cultures are regarded as containing usable assets for modernization and not just as presenting impediments to it.

9. Country Frameworks and Typologies

Country typologies can provide useful guides and clues to investment and training strategies. The projects here are too diverse and incomplete to justify new typologies but they do suggest 10 dimensions along which progress can be ranked. These dimensions are listed in the main report.

Gaps and Future Directions

The Trust Fund reports have given rise to significant findings – the link between economic opportunity and development and educational training; the connection of this link to upward spirals of technology implementation and integration; the importance of developing clear emphases on and broad interpretations of lifelong learning; the shifting terrain of policy intervention from educational access to improvement of pedagogical quality and systemic quality assurance; the struggle to make strides in the low status technical and vocational educational sector and the even greater struggle to make any worthwhile training impacts in the vast informal economy.

Among these trends and findings, emergent signs of promise and of positive new practices are evident– the power of public-private partnerships in a world where these sectors had often been regarded as opposed; the emerging recognition being given to the voluntary and religious sectors in terms of their contribution to training and development; the untapped power of diasporas in an increasingly network-driven world; the potential of

lower-cost, more sustainable technology initiatives such as audio-based learning and open source software to provide first steps on to the escalator of development and opportunity; and the credence given to case study reports and methodologies alongside conventional econometric analyses as ways of deriving insight from the secret successes of interesting outlier initiatives, and into the indigenous capital of cultures where interventions are being attempted.

The Trust Fund reports also expose and highlight a number of gaps in research and strategic knowledge that might set a useful agenda for further inquiry and intervention strategy by the World Bank, DfID and other donor agencies. Because these gaps and recommendations are made succinctly in the full report, and because of their strategic importance, they are reproduced here verbatim.

School-to-work Transition

- How are developing and transition countries building national qualification systems? How do those systems contribute to articulating secondary education, vocational training, tertiary education and lifelong learning approaches?
- How do such systems articulate between and among countries? How do they add to labor mobility and what is their impact on migration?
- What is the impact of certification systems on the employability of graduates, mobility of workers, etc.?
- How many students drop out of post-compulsory education before receiving a diploma and, most importantly, what happens to them, in terms of employment, mobility, further learning opportunities, etc.?
- Under what conditions do private and corporate partnerships strengthen or weaken access to knowledge economy and knowledge society opportunities?
- How well-integrated are the certification systems regarding labor market information about relative scarcities (i.e, which certified skills are more scarce), and how well do schools in middle-income or poor countries relay information to students on what the various certification systems and labor market information systems have to say about the job market?
- What are the characteristics of higher education programs with strong labor market linkages in developing countries? (e.g. locally-relevant fields of study,

governance with civil society/industry participation, internships/practical training, applied academic research, etc.?)

- What measures can be taken to significantly increase literacy achievement in basic education so that lifelong learning is not disproportionately directed to remediating deficits in literacy among adults in training programs?

Informal Economy

- How can we document more effectively what skills and competencies are actually being learned in the informal economy, whether these are relevant to knowledge economy objectives and what successful strategies currently exist for transitioning workers with these skills into the formal economy through prior learning assessment etc?
- What homegrown, local models of learning, teaching and training hold promise for wider adaptation within a low-cost, long-lasting and sustainable process for improving teaching quality and developing knowledge economy and society skills and competencies?
- What are the more effective community-based models for developing competencies? How might these have an impact on skills and labor?

Competency-based, skill-based and outcome-oriented curriculum reform

- Is there a viable version of the so-called 21st century Key Competencies taking shape in developing countries? What is the role of those competencies and standards in both citizenship education and school to work transition?
- How can post-compulsory offerings be diversified through alternative pathways, without creating more *cul-de-sacs* of failure?
- How do non-university tertiary education programs develop effective competencies in developing countries?
- How do systems of standards and competencies need to be developed in ways that are appropriately ambitious yet also sufficiently realistic, given existing levels of capacity in developing and transitional countries?
- What tools or strategies can be identified or devised that locate and link standards frameworks and capacity levels so that they interact and propel one another through upward spirals of development and improvement?

Education and Labor Markets

- What measures have been and can be taken to raise the status and attractiveness of TVET within less developed and emerging economies?
- What reforms can be implemented to improve the effectiveness of TVET and thereby increase its attractiveness?

- What types of second-chance education and training programs for school dropouts currently exist in developing countries? How effective are they at helping participants link to the labor market?
- What types of formal and non-formal education and training programs lead to better short term employment outcomes as well as improved capacity for lifelong learning?
- What measures are tertiary education institutions in developing countries taking to avoid outward migration and retain their highly skilled graduates?
- Where have universities partnered successfully with business as well as social and community agencies to initiate successful development and training initiatives for the knowledge economy. What are the key characteristics of these partnerships? How might they be replicated elsewhere?

Human resource policies (teachers and leaders within educational institutions)

- What are the relative payoffs of professional learning communities vs. models of prescribed instruction as ways of developing and delivering quality teaching and learning in less developed and transitional economies?
- Given the connection of leadership to learning outcomes, what current policies and strategies of leadership for learning in less developed and transitional economies are being proposed and which ones are most beneficial for their impact on student learning via developing and supporting teaching quality?
- What kind of pre-service and in-service training best supports various educational reform goals and agendas, such as competency-based curriculum, outcome-oriented instruction, decentralization, etc.?
- How are teacher education studies – and specialized institutions – being positioned in contemporary higher education institutions?
- What performance measures are being used or introduced to assess quality of faculty at tertiary education institutions in developing countries? How effective are they? (tenure, output measures, etc.). What incentives or rewards are being introduced to improve teaching quality?
- How and to what extent are training and development strategies in teacher education being aligned with ambitious but achievable standards and competencies frameworks for teachers and teacher educators alike?
- What alternative models for delivering teacher education other than short-term, consecutive ones can be developed that contribute simultaneously to improving individual teacher quality and the quality of pedagogy and organization in existing schools?
- In countries with increasing institutional autonomy in tertiary education, how are such institutions building human resource management capacity? (Capacity to employ, promote, diversify incentives, and terminate faculty and staff effectively.)

Quality Teaching and Teaching Quality in a Knowledge Society

- What does quality teaching look like in developing or emerging settings within a knowledge economy framework and what factors beyond standards frameworks are necessary to create it?
- Which are the most pertinent and useful alternative delivery modes, methodological approaches and teaching skills in a knowledge society?
- How do emerging quality assurance systems evaluate teaching and learning? What is the impact of quality assurance mechanisms on teaching and learning in tertiary education?

Monitoring and Evaluation

- How can policy and administrative systems in less developed and transitional economies develop cultures of assessment FOR learning and not merely assessment OF learning?
- What is the evidence and what are the indicators that knowledge economy skills and new basics are being taught and learned in practice? How can labor market outcomes be assessed for youths who are taught the new skills and competences?
- What is the impact, in tertiary education, of the expansion of quality assurance regimes, on the assessment of teaching and learning for the knowledge economy?
- What are the scaled up possibilities for collecting and applying local data about market opportunities and saturation, as a way to guide just-in-time, localized training initiatives.

Role of ICTs

- What successful models exist of ICT adoption, where there are clear benefits for the improvement of teaching and learning in relation to knowledge economy skills and competencies and for effective quality instruction in general?
- To what extent have ICTs become a new environment of communication, socialization and networking for young people, even leading to new forms of citizenship? What are the implications of ICT implementation for secondary and tertiary education, in particular concerning curriculum reform and teaching/learning methodology?
- How are tertiary education institutions in the developing world evolving with the advent of wireless technology and cheaper, more powerful technology? Are they lagging or leapfrogging? What is the impact on teaching, learning and research?
- What are the relative benefits for start-up and sustainability of multinational based vs. more open-source driven uses of software?

Science and Technology

- How can international aid be used for accelerating technological learning in less developed and transitional economies at different levels of development?
- How can “aid-enabled” technological learning contribute to improving developing countries’ productivity and competitiveness in the global knowledge economy? What lessons should be drawn from past Overseas Development Aid projects with science and technology components?
- How can developing countries maximize their technological learning from FDI and international R&D cooperation? In this connection, what should be the role of public-private partnerships?
- How can science and technology capacity building in developing countries help to meet the development goals in socially and environmentally sustainable ways?
- What can less developed and transitional countries do to alleviate or even reverse the ‘brain drain’ as a major obstacle to national human capital accumulation?
- What low cost, lower tech solutions (e.g. mobile phone technologies, audio materials) provide the best initial leverage in moving many people in less developed countries on to the escalator of training and opportunity?

Culture and Context

- What assets or forms of local cultural capital are contained in indigenous cultures and traditional families and communities that are pertinent to learning and training in a knowledge economy and society? How can reform and intervention programs effectively audit, then capitalize on these forms of indigenous capital?
- In an era of quality improvement, which disciplines and strategies will best help international aid and donor agencies to understand and work successfully and productively with local and national cultures where development initiatives are being attempted?
- How can existing typologies of development be further modified to account for and integrate the varying paths to development taken by different countries in recent times, and in an age of insecurity to account for key social and political influences in post-conflict, post-totalitarian, post-colonial and post-apartheid regimes?

Change and Sustainability

- As a complement to teaching reform alternatives to key policymakers, what are the reliable, evidence-based aspects of *change process* (implementation, leadership, capacity-building, sustainability, etc.) that could be included within these courses, and what methods of instruction on these courses best

represent these principles of change process, and assure successful subsequent implementation by the participants?

- What home-grown, local, capacity-building models of learning, teaching and training hold the best promise for wider adaptation within a low-cost, long-lasting and sustainable process for improving teaching quality and developing knowledge economy and society skills and competencies?
- What measurable indicators of sustainability can be developed that would serve as useful guides and quality assurance mechanisms for steering and evaluating intervention by international donor agencies in the areas of education, training and development? Drawing on Hargreaves and Fink (A. Hargreaves & Fink, 2006) how might these indicators include attention to the following key components of sustainability.
 - *depth* of attention to actual knowledge economy competencies, authentic lifelong learning and quality teaching and pedagogy
 - *endurance* of initiatives and their success over time beyond the initial period of funding and implementation
 - *breadth* of “scaled up” impact across many institutions, systems and even societies through locally adaptable models that motivate and secure shared involvement and responsibility
 - *justice* of ensuring that training and lifelong learning inclusively benefit all, not just those who have already received some of it or who already work outside the informal economy
 - *diversity* of schemes that have a “fit-for-purpose” response to local contexts and that link and network partners together in support of their development
 - *conservation* not eradication of existing knowledge and tradition whenever possible as powerful sources of indigenous capital
 - *resourcefulness* in terms of affordable use of long-term financial resources, prudent (not depleting) uses of human energy and resources, and environmentally sustainable use of natural resources.

I

Purpose and Design

In April 2001, the UK Department of International Development (DfID) and the World Bank (WBG) agreed to collaborate on *Knowledge and Skills for the Modern Economy*. This three-year research, analysis and dissemination activity was intended to provide the tools and knowledge for policy makers in developing countries to make informed policy choices for reforming post-basic education and training systems to meet the challenges of lifelong learning. To further this goal, DfID committed approximately \$3.9 million to a trust fund that the WBG agreed to manage and implement. Over the past years, the trust fund has funded 17 studies tackling various issues. In this final stage of the project, the focus has now turned to dissemination of and consultation on the overall messages and lessons that have emerged from the set of studies that were conducted.

In order to achieve the Trust Fund's goal of providing developing country policy makers with the tools and knowledge needed to reform post-basic education and training systems to meet lifelong learning (LLL) challenges, the primary objectives of the collaboration were to:

- Build an overview of the lifelong learning challenges in the world including identifying issues in different countries;
- Build partnerships with other agencies interested in lifelong learning;
- Build capacity within regions to continue research and development

The purpose of this report is to complete an analytical summary of the 17 projects funded by the DfID/WB K&S collaboration. This has been carried out by reading all the outputs from the 17 studies (more than 4000 pages of text), and additional material such as literature on lifelong learning and knowledge economies, that is useful to understanding the studies; gaining input and feedback from key staff from both DfID and the World Bank who have been involved in oversight and management of the collaboration, preparing a draft report which was shared with the World Bank and DfID; as well as being presented to and discussed with participants at the UKFIET conference at Oxford University in September 2005, then preparing this final report based on the comments received. The rest of the report is organized as follows:

- A discussion and analysis of the characteristics of knowledge economies and of lifelong learning, with implications and guiding orientations for the conduct of this project review (Sections II and III)
- A clustering and summary of the original projects with a conceptual map showing the interrelationships among them (Sections IV)
- A statement and analysis of overall themes, findings, products and lessons learned across the projects; including remarks on typologies of country types and their specific needs (Section V)
- Identification of gaps in the existing collection of projects with accompanying suggestions for further research, future directions and conclusions (Section VI)

The range of Trust Fund projects in terms of both scope and size resulted in many different types of outputs. Our challenge has been to bring these differing sets of information and output together in a manner that uncovers emergent themes and patterns in order to inform policy for both regional and national education programs. One way of establishing such coherence is to examine the material through some clear lenses that give clarity and focus to the analysis. Given the emphasis within the 17 projects on knowledge and skills and on lifelong learning, we therefore begin with a brief review of the nature of knowledge economies, and of lifelong learning, along with a statement of questions and implications for our ensuing project analysis.

II

Knowledge, Skills and Knowledge Economies

In these times, knowledge and skills development and lifelong learning are planned and pursued in the context of a rapidly growing but unevenly and imperfect realized knowledge economy. The challenge to improve knowledge and skill development cannot be separated from this shift towards a global knowledge economy.

The Nature and Importance of Knowledge Economies

The nineteenth century was characterized and fuelled by the rise in Western societies of the *industrial economy* (Reich, 2001). In the second part of the twentieth century, Western capitalism made a rapid transition into a more *service-based economy* (Bell, 1976). Now, in the opening years of the twenty first century, the most economically developed nations are pushing back the frontiers of growth even further by striving to become high performing *knowledge economies* (Drucker, 1993). Yet, in the midst of all these efforts, across most of our planet, in Central and Latin America, Eastern and Central Europe, many parts of Asia and sub-Saharan Africa, national economies remain chained to the ironclad identities of industrialism, the subsistence economies of agrarianism, or the informal economies of improvisation and opportunism. Our world is one that is increasingly divided by achievement and by aspiration: vibrant and lucrative knowledge economies for the established and emergent privileged few, contrasting with economies of basic subsistence, industrial production, and informal economic activity for the remaining multitude.

Recent years have therefore seen concerted (though not identical) efforts by the world's most influential international organizations – such as the United Nations, OECD

DfID and the World Bank – to redistribute economic opportunity spatially, and to improve global economic performance by increasing geographical and economic flexibility. The way in which they have done this is by promoting knowledge economy goals and aspirations, for *all nations*, even the most impoverished.

The nature of knowledge economy goals and their achievability on a universal or near universal basis is hotly disputed. So are the strategies for bringing them about. But the overall idea and ideals of the knowledge economy undoubtedly define the current international terrain of economic and also educational development.

What is a knowledge economy? First, the knowledge economy is not merely a service economy as described by Daniel Bell (1976) in his classic text *The Coming of Post-Industrial Society*. Bell correctly characterized the shifting American workforce of the 1960s and 1970s as one more engaged in services, ideas, and communication than in producing things. He witnessed and foresaw a massive expansion of secondary and higher education as the USA moved to being “a mass knowledge society” (p.15). He accurately recognized that in this new knowledge society as he saw it, “the sources of innovation are increasingly derived from research and development” and that the larger portion of GNP and employment “is increasingly in the knowledge field.” But knowledge societies and economies today mean more than nations where people produce knowledge as their output, or work in services, or forge a future in “the glowing white heat of technology,” to borrow former British Prime Minister Harold Wilson’s phrase. Today’s knowledge society and knowledge economy is not just represented in the spread and lengthening of education, or in the growth of particular sectors like science and technology. Rather, “knowledge” permeates all parts of economic life, characterizing

and catalyzing the very way in which corporations and many other kinds of organizations increasingly operate and innovate.

Although there is a widespread international focus on the knowledge economy and agreement about its significance, there are differences of view within, among and outside international organizations as to what the precise significance is, and what its implications are for public policy and educational reform. Broadly speaking, there are four prevailing positions.

1. *Knowledge Economy as Investment*

Investing in people's education and training amounts to investing in human capital – a view of educational expenditure that gained explicit popularity after World War II (Halsey, Floud, & Anderson, 1961). In the World War II years, through to the 1970s, this investment was construed as one of funding increased access to secondary and higher education. In the knowledge economy, investment moves far beyond access to phases in public education, so that resources are available to support and promote *lifelong learning and retraining* as the rapidly changing economic landscape requires.

2. *Knowledge Economy as Dividend*

A complementary position is that with investment in education and lifelong learning, the movement of societies towards knowledge economies also creates spin-off benefits or social dividends for civil society. Increased opportunity and prosperity, it is claimed, lead to reductions in poverty, increased inclusiveness – especially with regard to the education and workforce participation of women and girls – improved health, and the decline of violence and criminality. In this second view, knowledge economy investments also create valuable knowledge society benefits.

3. *Knowledge Economy and the Social Wage*

A third view starts from Joseph Schumpeter's premise about capitalist economies in general – that they are forces of *creative destruction* which are not themselves designed to attend to the public good. The most outspoken advocate of this position today is international financier and philanthropist George Soros. While economic globalization is valuable, he argues, left to itself it causes “a misallocation of resources between private goods and public goods. Markets are good at creating wealth but are not designed to take care of other needs. The heedless pursuit of profit can hurt the environment and conflict with other social values” (Soros, 2002). Robert Reich (2001) argues that knowledge economies show people how to make a living, but not how to live a life. The quality of the environment, concerted action on global climate change, or the protection of third generation rights (uniquely provided in the South African Constitution) are not readily pursued or protected by competing private interests. Finland, for example, is often highlighted as a high performing knowledge economy that combines high levels of taxation with high levels of public investment (OECD, 2004b). Thus, while positions #1 and #2 presume the movement of resources from the public to the private sphere, position #3 advocates for continuing investment in the public sphere as a way to protect civil interests and also preserve stable social conditions in which economic development can prosper (A. Hargreaves, 2003). It is important, therefore, to pay attention to the development of nations as knowledge societies as well as knowledge economies, where many functions such as universal access to, distribution of and long-term storage of information are matters of public interest and investment; and where the corporate world might also be more

ready to adopt positions of greater social responsibility (Arena, 2004; Jackson & Nelson, 2004).

4. *Knowledge Economy as Rhetoric*

Fourth, a group of critics argue that the knowledge economy and the claims surrounding it may be rhetorical and illusory (Brown, Green, & Lauder, 2001). They argue that

- Increased education will only lead to qualification inflation and underemployment of highly qualified workers
- Increased skill supply will lead to global redistributions of skilled employment, seeking conditions that are especially congenial and where wages are low
- Conversely, skilled talent will migrate to countries where economic and social conditions are better
- Brief periods of innovation are actually followed by long periods of standardization and accompanying loss of worker autonomy – for instance, in the banking industry

These criticisms are most convincing when applied to the most developed economies over the long term – especially if the assumption is correct that the digital revolutions eventually become routinized. However, the arguments apply less well to developing and transitional economies which may benefit at least temporarily from global redistributions of knowledge economy work, move closer to the middle and lower wage levels of the more advanced economies, and benefit from the emergence of diasporas among their emigrants who reinvest in their homeland.

Knowledge Economies and Educational Reform

Fast changing knowledge economies call for new core competencies among all learners in the society. At the heart of these are longstanding “soft skills” such as communication, collaboration and teamwork. To these, can be added others such as the ability to create, apply, share and distribute knowledge; to convert tacit knowledge into explicit and formally codified knowledge that is easily transferable to others; to employ effortless use of advanced information technology; to work in teams that may be socially and psychologically heterogeneous; to have the capacity to reskill and retrain as circumstances demand; to be able to participate in networks and develop the social capital that creates the learning and develops the resilience to cope with change; to cultivate a positive, opportunistic and entrepreneurial orientation to change; and to become committed to continuous and lifelong learning far beyond the years of formal education. For the World Bank, these sorts of skill sets constitute the ‘New Basics’ of innovation and education in the knowledge economy, that are built on the old, eternal and still inalienable basics of literacy and numeracy (e.g. World Bank 2003).

For those whose views of educational and social reform extend beyond the knowledge economy to the knowledge society, and to a productive integration of the two, the desired core competencies that define the heart of educational reform are wider still. Thus, the ‘New Basics’ in Queensland, Australia include the development of life pathways and social futures; multiliteracies and communication media; active citizenship; environment and technologies (Queensland Ministries of Education 2001). To these might be added yet other new basics such as emotional literacy and conflict resolution

especially in post-conflict societies (A. Hargreaves, 2003), or education for sustainable development almost everywhere (World Wildlife Fund 2005) (UNESCO, 2005)– for there is no work without a world in which to do it.

The implications of a shifting emphasis in knowledge economies towards these previously underutilized “soft skills” and the emergence of innovation-oriented new basics alongside them are that educational policy and reform strategies will move increasingly *beyond* improving *access*, or changing governance structures and financing, *towards* making policy interventions that significantly affect and improve the nature and *quality of teaching* and learning.

Most government efforts to intervene directly in the details of learning and instruction have been neither widespread nor especially effective – particularly where more creative knowledge economy capacities and competencies are concerned. The most interventionist programs in literacy and numeracy have tended to concentrate on low level literacy skills that yield the strongest results in the more simple areas of learning with predominantly younger children (Fullan, 2001; A. Hargreaves, 2003); and their purported successes may well have been illusory – for example, reflecting test items that have been redesigned to make them progressively easier over time (Tymms, 2004). Intervention in more high skill knowledge economy areas of teaching and learning needs to be just as intentional and insistent yet it also needs to be more strategically indirect – creating the *conditions, incentives and coaching for high capacity teaching and high quality learning* of a transformational nature to emerge. In this respect, greater pedagogical quality requires improved teacher quality, and changed institutional conditions and capacity to develop it.

These issues apply not just to the period of schooling through childhood and adolescence, but to learning, lifelong through university, other kinds of post-compulsory education and all other formal and informal education far beyond these domains.

Analytical Directions

As we have reviewed the more than 4000 pages of the 17 World Bank and DfID projects within our remit, we have therefore considered the following guiding as well as emerging questions.

- To what extent do the projects and the practices they address concentrate on the *core issues of quality teaching and learning* that are essential for knowledge economies?
- Given the contexts in which the projects are located, to what extent and in what ways do they address *strategies to attract, develop and retain high quality teachers* capable of developing knowledge economy skills(OECD, 2005)?
- To the extent that countries can and do develop more ambitious learning outcomes and professional standards that align with knowledge economy goals, what opportunities are taken and what efforts can be made to *develop teachers' capacity* to meet these outcomes and goals – especially where finances are scarce or existing teacher capacity is very low (for instance in some of the poorest communities of South Africa due to the legacy of apartheid, or in countries like Cambodia that are still feeling the generational effects of intellectual genocide)?
- Drawing on the growing research consensus that quality learning and teaching capacity is most likely to flourish in strong professional learning communities,

(Hord, 1997) (McLaughlin & Talbert, 2001) what do projects and practices reveal about the opportunities for and achievements in creating such *communities of practice* – especially in conditions where teachers teach extended hours or work in multiple jobs?

- In view of the evidence-based connections between teaching quality and leadership quality (Knapp, Copland, & Talbert, 2003; Leithwood, Jantzi, & Steinbach, 1999; Silins & Mulford, 2002), how far do World Bank/DfID projects and developing country initiatives pay attention to *leadership development* in order to promote the development of teacher quality?
- In view of recent research results from international test comparisons which fail to show positive correlations between levels of ICT adoption and improved student achievement (Timms, 2005), what efforts and successes are occurring in World Bank/DfID projects to *connect technology implementation to improved pedagogy*?
- When does *corporate and private investment* promote and when does it restrict access to knowledge economy opportunities – as in determining the supply and availability of brand name vs. open source software
- In relation to both knowledge economy and knowledge society goals, how can public and private sector strategies contributions and *partnerships* simultaneously promote individual achievement, economic growth and educational equity?
- What conditions of culture, indigenous knowledge and family relationships in a community or society provide existing tacit knowledge or social capital that can be converted into knowledge economy assets (rather than being regarded as an

obstacle or externality for economic growth?) In other words, what existing *assets of indigenous capital and domestic capital* exist in different less developed countries, that are convertible into knowledge economy capital, and how can these assets be identified?

- In an interconnected world of instant information that obliterates boundaries and conquers geography in an age where the world is now flat (Friedman 2006), how can and do World Bank/DfID policies for investing in lifelong learning for the knowledge economy, incorporate into their core reform strategies deliberate efforts to *address* hitherto-named *externalities* such as traditional family loyalties, environmental clean-up costs, corrupt investment climates or degrees of bureaucratic inflexibility that have hitherto been considered outside the scope of economic intervention and responsibility (Daly, 1996; Nadeau, 2003)?

Knowledge Economies in Less Developed Contexts

It is always helpful in improvement efforts, to be able to point to existing models and examples of successful practice. In the case of successful and rapidly emerging knowledge economies, for instance, one can point to Finland, its extensive public and also private investment in training and life-long learning; its high skill, high wage economy; its well resourced commitment to public education; its highly qualified teachers – most with Master's degrees; its longstanding traditions of collaboration and participation coupled with new initiatives in private sector participation; its broad and flexible curriculum frameworks coupled with minimal attention to standardized testing, and so on (Aho, Pitkaren, & Salberg, 2006; OECD, 2005).

But just as it is not particularly helpful to let a novice teacher observe a brilliant colleague without providing ideas and support to help the novice achieve such brilliance for him or her self, so too is it not especially useful to dangle the paragon of Finland or its counterparts in front of less developed or transitional economies, without any realistic appraisal of their own context, or of the strategies needed to move them to a higher level of development.

Several distinctive issues faced by developing and transitional economies, compared to established knowledge economies – as outlined in one of the papers on Sub Saharan Africa include

Limited public resources and the need to prioritize investments in building capacity.

Poverty and unemployment which lead people to accept any job, suppressing the concept of choice, and confining career guidance only to those who are perceived to have choices.

Extensive informal economy. Because of weaker welfare and unemployment benefit systems many people seek economic survival through informal activities – some of them illegal or even criminal – outside the formal wage economy. Yet the informal sector often provides support to the formal sector and calls for training and career development strategies to help people make transitions into the formal economy.

Distinctive family structures that may exert a stronger influence on individuals' choices as, for instance, they leave college to gain jobs which enable them to contribute to the costs of younger siblings' education. Conversely, some strong

kinship structures constitute domestic capital and network capital, and provide important business linkages in the formal as well as informal economy.

Skills migration. In some developing countries, higher skilled workers migrate abroad for better opportunities. This reduces unemployment but also drains talent and capacity. At the same time, migration can also produce diasporas which eventually reinvest in their countries of origin.

Other distinctive challenges for lifelong learning in developing and transitional economies include

Corruption and inflexible bureaucracy in post-totalitarian and post-colonial countries still staffed by appointees of former regimes who hold sinecures in governments or universities, or are appointed in key administrative and leadership positions for political reasons by unions or local municipalities.

Absence of trust in post-conflict societies, which restricts people's capacity to work collaboratively in social heterogeneous groups across ethnic, religious and cultural boundaries.

Lack of political openness in nations that are not fully-fledged democracies; inhibiting the transparency, open access to information, and free flow of knowledge and information that are integral to successful knowledge management in high performing knowledge economies.

Gender inequities and traditional cultural practices which reduce the opportunities for education and employment of girls and women throughout society.

Fragmentation of initiatives at the local level across multiple funding agencies and donors, producing lack of coherence and cohesiveness in development initiatives.

In light of these limitations and conditions, strategies for becoming successful knowledge economies and knowledge societies and for supporting lifelong learning goals in tune with these economic and social objectives, must therefore not only aspire to models of ideal success, but also be sustainable within the current and achievable realities of the cultures and countries in which improvement efforts are being attempted (Hargreaves & Fink, 2006).

Summary

- Strategies for improving lifelong learning in less developed economies must be connected to understandings of the spread and dominance of global knowledge economies in the modern world.
- Knowledge economies thrive on the largely open, and rapid creation, diffusion, application and circulation of formal and tacit knowledge within and across enterprises and organizations.
- The relevant, required skills and competencies that need to be developed to build *successful knowledge economies*, should be balanced and integrated with the skills and competencies needed to build *secure and open knowledge societies*
- Knowledge economy and society skills and competencies are built on the *old*

basics of literacy and numeracy; they include *eternal “soft skills”* such as communication and teamwork, and they factor in *new basics* such as emotional literacy, conflict resolution and education for sustainable development.

- The educational implications of a knowledge economy emphasis involve a policy shift from

increasing access	→	improving quality
teacher training	→	developing teacher capacity
individual teaching skills	→	communities of practice
management	→	leadership
computer adoption	→	pedagogical implementation
public vs. private	→	public and private together
culture as obstacle	→	culture as capital

- Less developed countries present severe challenges in their struggle to emerge as knowledge economies in terms of limited public resources, widespread poverty and unemployment, extensive informal economies, deep rooted family traditions and gender inequities, large amounts of skills migration, pervasive corruption, inflexible bureaucracy, lack of political openness, and fragmentation of donor efforts.

III

Knowledge, Skills and Lifelong Learning

The world is experiencing change on a scale analogous with that of the Industrial Revolution. Digital technology is transforming many aspects of people's lives, whilst biotechnology may one day change life itself. Trade, travel and communication on a world scale are expanding people's cultural horizons and are changing the ways in which economies compete with each other, particularly in an age when previously acquired knowledge is depreciating faster than before. More people stay in education and training longer, but the gap is rapidly widening between those who are sufficiently qualified to keep afloat in the labor market and those who are falling irrevocably by the wayside. Adaptability to changing circumstances and readiness to learn new work-related knowledge and skills have become increasingly important for workers and their employers.

The Nature of and Need for Lifelong Learning

It is within this global context of widening gaps between countries who have an educated workforce and those who are struggling to provide a basic education that lifelong learning holds out the promise of enabling more people to continually improve their education and training and to be adaptable throughout their working careers. Lifelong learning is sometimes equated with having the capacity for and commitment to continuous upskilling and retraining, to adjust to and exploit shifts in the economic environment. Retraining is certainly a key component of lifelong learning, but there is also more to the concept, educationally and economically, than this.

The European Commission (2001) states that lifelong learning entails:

- acquiring and updating all kinds of abilities, interests, knowledge and qualifications from the pre-school years to post-retirement. It promotes the development of knowledge and competences that will enable each citizen to adapt to the knowledge-based society and actively participate in all spheres of social and economic life, taking more control of his or her future.
- valuing all forms of learning, including: *formal learning*, such as a degree course followed at university; *non-formal learning*, such as vocational skills acquired at the workplace; and *informal learning*, such as inter-generational learning, for example where parents learn to use ICT through their children, or learning how to play an instrument together with friends (our emphasis).
- lifelong learning involves all three kinds of learning in varied contexts and times. It prepares people to participate in, contribute to and benefit from vibrant knowledge economies as well as open and secure knowledge societies. In most less developed countries, people work predominantly in the informal economy and their opportunities to continue to learn and adapt may not always lend themselves to formal kinds of learning. Realistically, in less developed economies, significant priority needs to be assigned to lifelong learning in the informal economy, especially with regard to helping people transition into and therefore to develop the formal economy.

Effective lifelong learning is both continuous and personalized, providing individual learning pathways that are suitable to people's needs and interests at all stages

of their lives. The content of learning, the way it is accessed, and where it takes place may also vary depending on the context, the learner, and each individual's learning requirements. Lifelong learning is also about providing "second chances" to update basic skills and offering learning opportunities at more advanced levels. All this means that formal systems of provision need to be open and flexible, so that such opportunities can truly be tailored to the needs of any learner and synchronized with the changing requirements of the economy and society at any time.

Policy, Culture and Strategy

In the WB/DfID report, the Trust Fund's goal has been to provide developing country policy makers with the tools and knowledge needed to reform post-basic education and training systems to meet lifelong learning challenges. At this level of policy and strategy, four issues need to be addressed:

1. access and opportunity
2. motivation and commitment
3. culture and context
4. status, relevance and quality

1. Access and Opportunity

To what extent do government policies either help or hinder lifelong learning? As in most educational reform in less developed countries, most of the initial reform emphasis in lifelong learning has concentrated on the foundational priorities of increasing access and improving equity. Here, issues of provision, location, time, affordability and flexibility are all essential. Progress in these areas is essential and it is relatively easy to monitor, measure, and express as targets from a policy point of view (Griffin, 2000). In knowledge economies, however, issues of content and quality are also increasingly important – even though they are less easy to quantify. And the nature of lifelong learning itself, as an optional individual investment, raises questions about how to address and change individual motivation and societal cultures in which lifelong learning takes place.

2. Motivation and Commitment

Lifelong learning, at least among adults, is institutionally optional. Access does not guarantee take-up. Effective take-up also depends on individual motivation, as well as incentives. Motivationally, at least in the West, lifelong learners are thought to be curious self-starters, capable of identifying and solving problems and able to access and use appropriate information to further their cause and learning.

Motivationally, intrinsic curiosity about and commitment to learning is first established in school and family. The inclusion of knowledge economy skills and dispositions in the content of basic education is therefore a vital prerequisite for their later development and motivation in lifelong learning. Policies on basic and post-basic education therefore have to be synchronized and sequenced. In less developed countries, extrinsic incentives are also essential – in flexible, affordable and easily available access;

in proper, convertible recognition for the learning that has been acquired; in monetary incentives and compensation for participation and successful completion; and in a sphere of economic growth that provides opportunities and rewards for well-trained people.

3. *Culture*

People are part of society. Their motivations and drives are affected by culture, traditions, assumptions and expectations. What does a *culture* of lifelong learning look like (Laver, 1996)? How and where can communities, businesses or even whole societies embrace the values of inquiry, knowledge building, and innovation that create opportunities for all members of the community to learn, improve skills and live the life of continuous learning and improvement (Griffin, 1999).

Where do these cultural values and motivations, or their analogies already exist, even though they may manifest themselves differently than in the context of Western or developed societies? What *lifelong learning capital* do different cultures already have, and how can this be identified and developed? And how can lifelong learning be developed more comprehensively among parts of the population such as women and girls, in conditions where opportunities have previously been limited? As lifelong learning moves beyond opportunity and access to culture and motivation (though these do intersect with opportunity and access), the challenge for governments, NGOs, enterprises and communities in public policy is to create and incentivize the conditions that will support effective and pervasive cultures of lifelong learning within currently less developed societies.

4. *Status, Relevance and Quality*

The status, recognition, quality and pedagogy of lifelong learning are themselves factors which draw people to it and enable them to commit to and persevere with it over time (Doolittle & Camp 1999)(Knapper & Cropley, 1991; Longworth & Davies, 1996). Lifelong learning that has widespread recognition and that is presented in ways that enable learners to be self-directed, to have a feeling of control over their own learning, to be able to set and reach clear and attainable goals, and to see the relevance of what is learned to present and future life experiences, is the most likely to motivate participation and ensure retention and successful completion over time.

Summary

- Rapidly changing knowledge economies depend and thrive on effective systems of and orientations towards lifelong learning.
- Lifelong learning involves continuous upgrading and retraining, but also much more than that in terms of continuous, personal and collective learning, growth and development.
- Lifelong learning takes place in the formal, nonformal and informal economic and social sectors. In less developed countries, the informal sector is currently the largest and most significant.
- A challenge of lifelong learning is that of transferability of the process and/or product of from the informal to the formal sector.
- The improvement of lifelong learning requires systematic attention to

issues of opportunity and access, commitment and motivation, culture and context, and status and quality.

- Effective access and opportunity for participation in lifelong learning requires systems of provision that are flexible, affordable and available.
- The creation of individual motivation to take up lifelong learning opportunities requires improved access; the development of prerequisite knowledge society dispositions in basic education; the provision of tangible and transferable forms of qualification and recognition; and the existence of economic opportunity to use the learning and training that has been acquired.
- Cultures of lifelong learning contain lifelong learning capital that can be audited and accessed by understanding existing cultural practices, and that can also be developed where it is currently not valued or supported e.g. among women and girls.
- Motivation to engage in lifelong learning and the currency of its products depend on securing quality in pedagogy, as well as increasing the status of the product and of those who deliver it.

IV

Project Summaries and Findings

Introduction

The 17 World Bank/DfID Trust Fund projects all address lifelong learning, knowledge and skill development. They do so across all geographic regions, but their concentrations also cluster around a number of coherent themes. Our review of the more than 4000 pages of material has identified five of these. This was achieved by writing all areas of focus, review, intervention and findings for each study onto a number of post-it notes. These notes were then arranged on one large sheet and continually clustered and redistributed until they formed coherent and mutually exclusive categories.

The five areas of focus and concentration identified by this analytic strategy are:

- Demand for Skills and the Effects of Investment Climates
- Primary and Secondary Education, Training and Reform
- Further and Higher Education
- Networks and Partnerships
- Technological Innovation

A grid of project summaries is provided in Appendix A. A conceptual map of the relationship between the project clusters is supplied in Appendix B.

The focus, activity and success of the projects are described and evaluated in relation to the three Trust Fund goals.

- Building an overview of the lifelong learning challenges in the world including identifying issues in different countries;
- Building partnerships with other agencies interested in lifelong learning;
- Building capacity within regions to continue research and development

Within each area of concentration and focus, an especially promising or outlier practice (or set of practices) is highlighted in order to offer some clues and pointers about positive ways forward in the area concerned.

Demand for Skills and the Effects of Investment Climates

Many of the 17 studies point to the huge demand for a more educated workforce in less developed and transitional economies. Mexico (4.0) and Brazil (4.0), for example, each have 45 million workers who are under-educated. They have not completed primary or secondary school, or are illiterate and/or never went to school. In China (5.0), meanwhile, where a highly skilled workforce is seen as the key to economic growth and prosperity, and where rapid industrialization and urbanization have driven vast numbers of rural workers out of farming and into urban areas, four massive re-training projects have been initiated to address the training needs of tens of millions of workers.

How well a country is able to respond to the training needs of its people and its economy is dependent on a whole range of social, political and other factors that together make up the climate for investment. Two projects examined the demand for workers and skills in relation to the prevailing investment climate. The survey data in these projects reached across the developing regions of the world.

One project examined trends in relative wages and supply of workers with different levels of education in the Middle East and North Africa. Here, as in most low-income countries, the study showed that while demand is shifting towards more educated workers, most of the labor force remains in agriculture, where it has to compete against high farming subsidies in the countries of the OECD. Within and beyond the agricultural

sector, most work is in family enterprises, or takes the form of unpaid family labor in the informal economy.

The authors of this project report argue that the resulting low levels of skill limit how well technological innovation that has been introduced through trade and Foreign Direct Investment (FDI), can be transferred into the local economy. As a solution, they propose a virtuous spiral of skill upgrading and technology transfer, where technological innovation increases the demand for skilled workers, leading to raised educational attainment which, in turn, can further stimulate the demand for new technology by firms, resulting in higher productivity and growth rates. Ironically, though, countries with very low skill levels are often unable to attract the necessary initial investment and they can find it hard to adapt technologies that have been developed for high skill “leader” countries. In these instances, the skill/technology/productivity spiral may not therefore materialize.

Even where skill-driven technological change does occur, through the incentive of employee training dividends, perhaps, this seems to lead to greater inequality – with educated and skilled workers receiving higher wage premiums, more access to yet further training and education, and the spiraling benefits that result from all of that. The implication is that while training dividends might improve productivity, this is often at the cost of employee equity.

A second study, *Investment Climate for Workplace Skills* (12.0), examines the impact of the *Investment Climate* – the wider context of policy regulation and behavior – on workplace skills and economic performance. Traditional economic theory and investment strategy has hitherto been criticized for treating these aspects of the policy

climate as uncontrollable “externalities” to economic behavior (Daly, 1996; Nadeau, 2003). However, this study stresses that key attributes of the investment climate such as corruption, financing, tax administration, regulations and policy uncertainty all influence the performance of firms as measured by sales, employment and investment growth. Excessive labor regulation, for example, seems to be negatively associated with both employment and investment growth. Conversely, investment in technological capacity and acquisition is strongly related to employment growth, investment and sales.

These aspects and influences of the policy environment and investment climate (which bear strong legacies of each nation’s culture and history) are among the most important sources of variation between countries in their experiences of and orientations towards economic and educational development. It seems wise, therefore, to incorporate them into any typology of countries to aid decisions about investment and development strategies.

A significant aspect of the policy environment and investment climate is the emphasis give to public versus private training respectively. Overall, this study shows that while investments in private training services are significantly associated with all dimensions of firm growth, public training appears to yield no real benefits of this sort. Behind these overall patterns are important regional and country variations.

- Central America shows a weak private sector demand for training, especially in small, domestically-owned and orientated firms. Workers with low education have especially few opportunities for training. Though private sector firms make a payroll levy to public training institutes, most training is actually on-the-job and informal (in part because levels of technology and associated needs for off-site

learning are low). Firms seem to receive few or no benefits from the levy they pay.

- In India, Sri Lanka, Bangladesh and Pakistan, greater skill development among the workforce is more likely to occur in larger and foreign owned firms that are engaged in export or use new technologies in states with better investment climates and in formal training delivered by private sector providers. Even here, though, at least in India, training does not seem to have a positive impact on wages.
- In Mexico, while more-educated and better-trained workers are more productive and earn higher wages, the productivity benefits of education and training are larger than the wage benefits, suggesting that higher productivity does not translate equally into higher earnings. This is especially true in the case of external formal training where the productivity differential is significantly larger than the wage differential, suggesting that employers benefit more than workers from external formal training.

In general, positive associations between training, productivity and growth are more likely to occur in businesses that are foreign-owned, that are large and/or relatively new, and where there is an orientation towards exporting (though this brings benefits only for sales and investment rather than employment growth).

Promising Practice

Namibia (15.0) provides one example where there has been a serious attempt to clearly identify the skills that are required in the economy and to initiate consequential

planning and action to align training with the workplace market. In the mid-1990s, the Namibian government established seven Community Skills Development Centers (COSDECs) under locally elected boards of trustees. Their main goal is now to impart basic skills to enable young people to generate income through wage employment or self-employment. The COSDECs must be flexible training institutions, varying their basic training courses frequently as income-generating opportunities change in the local economy. After a confused start, during which the centers copied traditional courses of the Vocational Training Centers, the COSDECs, with European Commission assistance, began to employ three basic data-driven improvement techniques to align themselves with market needs.

- 1. Market assessment surveys were conducted at each location in 2002. The COSDEC Foundation provided experts from its small support unit to conduct the surveys. Building on rapid rural appraisal techniques, the market assessments covered the occupational interests of youth, government and local authorities, local development plans, and project sites, and canvassed employers and businesses in both the formal and informal sectors. For example, a visit to a local hardware wholesaler generated evidence about which imported products were in demand, and ideas about how to produce them locally. The assessments also took into account training capacity in the locality. Data from these various sources pointed to potentially fruitful economic initiatives. For example, the survey in Keetmanshoop, a small town in the south of Namibia that has little industrial activity, produced over thirty ideas for new economic activity. The surveys were also used to determine whether training institutions would be viable in new*

locations. One survey, for example, showed there was insufficient demand to sustain a training center for plumbers and pipe-fitters, that had been proposed in the town of Khorixas. The market assessments also made clear that economic initiatives that are viable in one location may not be viable in another. For example, small building construction held promise in the community of Oshakati but not in Omaruru.

- 2. The teams conducted more thorough feasibility studies of the potential opportunities that were identified during the market assessments. These feasibility studies found viable demand in various localities for such products as automobile seat covers, small cleaning services, custom-made women's clothes, casket assembly, and household construction. In contrast, the Foundation abandoned a proposal to start horticulture training in Omaruru when the more detailed feasibility study revealed there were major problems with water supply.*
- 3. The COSDEC Foundation undertook tracer studies at all centers to identify the impact of past training. These revealed a wide range of employment rates, from 20 percent to 60 percent, depending on the occupation in question and the specific year of training. At the extreme, only three out of a hundred graduates in automobile mechanics from one center subsequently found employment. These findings sensitized center managers to issues of market saturation. As a result, one center discontinued auto mechanics, and another ceased offering carpentry because of poor subsequent employment rates. In another community, while employment rates were high in needlework, tracer results hinted at impending market saturation. Mobile courses in needlework at a series of locations therefore*

replaced the center-based program. The COSDEC Foundation has now adopted several policies to build greater flexibility into its skills development services. The period for basic training has now been collapsed from an excessive 12-15 months to a more efficient 3–6 months. Centers provide some one-time courses (in interior and exterior painting, for example), that are not repeated in a locality so as to avoid the risk of market saturation. COSDECs give more attention to outreach training through mobile units. The Foundation “owns” all the training equipment, so that it can be moved from center to center as demands change. COSDECs also now employ instructors on short-term contracts, so that training in surplus trades can be abandoned and new ones readily introduced, as market conditions require.

The Namibian case shows how skills development can be linked effectively to economic development in a context of consistently shifting demand through combining principles of low-cost and sustainable external support with data-driven improvement under flexible systems of local control.

Summary

- There is a significant and widespread need for training in less developed countries.
- Training tends to be associated with greater productivity and sales, but only sometimes with higher wages.
- Not all training is equally valuable.
- Employer benefits from training sometimes exceed worker benefits.
- Private training currently seems to be more effective than public training.
- The effectiveness and impact of training is significantly influenced by investment climates which vary across countries.
- Training benefits are greatest where investment climates are strong, and where companies are large, relatively new, export-oriented and/or foreign-owned.
- Training can be harmonized effectively with changing market opportunities where it is data-driven, flexibly implemented, locally controlled and provided with modest levels of external technical assistance.

Implications and Explorations

- There is a need for stronger understanding of, attention towards and adjustment for investment climates, cultures and contexts.
- Standardized, one-size-fits-all training solutions are ill-advised.
- While public training is currently less effective than private training, both warrant expansion, attention and increasing interconnection.
- Companies operating in unfavorable investment climates need strategies to become more resilient.
- The favorable or unfavorable nature of investment climates should not be treated as an unalterable external given, but be viewed as a legitimate target for improvement and intervention.
- More information is needed and more research needs to be undertaken regarding the content of training initiatives and how well matched they are to knowledge economy objectives.
- External support might be sustainably directed to supporting local capacity with improved information that can enhance just-in-time, locally adaptable training development.

Primary and Secondary Education, Training and Reform

The spine of any educational system is the quality and reach of its basic and secondary sectors. All further and subsequent learning is supported by this. Though the projects in the Trust Fund portfolio were concerned with post-basic education, many

touched on the quality of basic education. This section examines what has been found by and can be learned from the projects that is directly or indirectly concerned with determining the quality of basic and post-basic education, assessing the effectiveness and appropriateness of teacher training for these sectors, and developing large-scale reform strategies and interventions for raising quality and standards in the system as a whole.

Primary and Secondary Education

Access to primary schooling or basic education has improved greatly across the regions during the past decade, with most countries now educating about 95% of their populations. There is, for example, an average enrolment of 94.5% in basic education across the Middle East and North Africa region (3.0). Yet these promising figures of increased access disguise considerable repetition of grade levels and high drop-out rates. While large numbers of school-age children in less developed countries now access basic education, they do not stay in school - entering the labor force and traditional apprenticeships with poor levels of basic skills. It is harder to improve achievement than to increase access – especially given the widespread problems of poor quality in teacher preparation along with persisting problems of traditional classroom pedagogies that are at odds with knowledge society goals of lifelong learning.

At the secondary level, improved access has again enabled more students to commence school at this level, but drop-out rates remain high and achievement levels are largely stagnant. In basic and secondary education, access does not always or even usually translate into success. For instance, in the Latin American/Caribbean countries (4.0), despite improvements in participation and school achievement, a substantial

portion of school age adults lack the minimum levels of competencies and skills needed for jobs in the labor market. Poor teaching quality is a result of secondary teachers being more preoccupied with subject knowledge than with expertise in teaching and learning, of poor teacher pay and of teachers having to work at multiple jobs in order to survive.

Teacher Pre-Service and In-service

The connection between the quality of pedagogy and learning, and the quality of teacher preparation is explained in one of the most readable and accessible of the Trust Fund Project reports, *Learning to Teach in the Knowledge Society* (11.0). This report examines how teacher education and professional development in six countries (Mexico, Chile, Senegal, Ghana, Vietnam, and Cambodia) prepare secondary school teachers with the skills and competencies that (according to a range of different stakeholders) are appropriate for the knowledge society and for the knowledge society competencies that their students will require.

In many developed and developing countries, the report shows, qualified secondary school teachers tend to be the hardest segment for the teaching profession to attract, the most expensive to educate and the most difficult to retain in schools. The amount of unqualified teachers at the secondary level exceeds the numbers for primary education in almost every developing country. And the attrition rates of secondary education teachers are the highest in the teaching profession, especially for male teachers and for those in high-demand areas, such as mathematics, science and technology (OECD, 2004).

Data from key informants in each country (comprising Ministry of Education staff in charge of teacher training policies, heads of teacher training colleges, representatives from teacher unions, and academics and/or consultants based in the countries carrying out the research about teacher issues) suggested a number of key findings and recommendations that were shared with leaders of other international organizations engaged in teacher education initiatives

At the heart of the report's findings is the claim that there is a *crisis of secondary school teachers' professional identity and confidence*. The professional identity and sense of confidence of secondary teachers is constructed not around teaching but around the discipline (subject) of specialization. This phenomenon is reinforced by *consecutive* patterns of pre-service teacher education that educate people first in a curriculum area or specialized discipline, before they are exposed to pedagogical training. With the growth of secondary education as a mass rather than elite sector, the associated influx of wider student populations, and the decline of deference to adult authority resulting from cultural globalization, secondary teachers feel they are losing control of their children and that their (content-based) professional identity is under attack. Lacking knowledge society competencies due to the poor quality of their own schooling and teacher preparation themselves, secondary teachers seek survival toolkits rather than searching for ways to innovate that will engage the changing needs of their students. Waves of reform in school structures and curriculum add to the precariousness and unfamiliar role demands of secondary school teachers' professional identity and confidence.

In a knowledge society that emphasizes problem solving, teamwork, peaceful conflict resolution, dealing with complexity, living with ambiguity, thriving on change,

being life-long learners, etc., there is a remarkable convergence among interviewed stakeholders as to the teaching competencies that teachers should themselves acquire and display in the classroom. These extend far beyond subject specialist training, yet teacher education programs still place most stress on *content knowledge* rather than *knowledge of teaching and learning* and of *how to teach one's subject*, which research evidence increasingly indicates is more related to student achievement (Darling- Hammond, 2002; Marcelo, 2002; Shulman, 2004).

The teacher education report proposes and implies a number of reform strategies. These involve:

- Re-conceptualizing *teacher education as a lifelong continuum* from initial training, through professional induction, to career-long professional development.
- *Preparing teachers* in a complex and changing world *to teach in multiple contexts* and to diverse groups of children, and to build effective school-community partnerships in those different contexts.
- Emphasizing not just *content knowledge* of one's subject but also *pedagogical content knowledge* of how to teach one's subject knowledge in practice, as the focal points of teacher education.
- *Connecting teacher education reform to school improvement* and to strategies of systemic reform - otherwise better trained teachers will be dispatched into, then defeated by unchanged schools and systems.
- *Linking teacher development to leadership development* – since effective leaders improve the quality of teaching.

- *Increasing teachers' participation in school improvement planning* as a way to improve their own leadership skills.
- Integrating teachers' professional development into an overall framework or *System of External Support to Schools*, which integrates all the institutional and professional elements of technical assistance, evaluation, supervision, training, development and networking of school management teams, individual teachers and schools as a whole.
- Combating teacher isolation (and insulation from all they might learn from their colleagues) by reconstructing schools as *professional learning communities* where teachers learn from and support each other as they strive to raise standards and improve quality. Some of the most significant training for teachers is on-the-job, workplace learning. Career and reward incentives, as well as systems of quality assurance that promote professional learning and participation in professional learning communities, take this agenda forward.

Lists of professional standards and teaching competencies are enticingly easy and inexpensive for policy agencies to develop. While they can provide a guide and a goal for improving quality and raising standards, they are insufficient by themselves if schools, teachers and trainers do not have or cannot gain the capacity to meet the standards. Teacher education reform therefore needs to move beyond listing the competencies that comprise and create quality learning, to articulating teacher education across a continuum of lifelong learning over time, and integrating it with school development, leadership development and strategies of systemic reform.

Improving Reform and Evaluation Awareness

It is difficult for countries or communities to learn about effectiveness of their educational efforts without evidence of improvement or its lack in their own system and in relation to comparable systems elsewhere. Yet many countries with developing and even transitional economies have limited data about their students' achievement or about their system's effectiveness. They also have restricted resources along with low levels of competence and capacity for collecting, organizing and interpreting data in ways that can usefully guide policy or provide feedback to those who are pursuing improvement at the chalkface. Lack of openness in access to information, or of credibility of the data themselves, are also serious problems in systems suffering from stifling bureaucracy, pervasive corruption or absence of trust.

The Knowledge and Skills Trust Fund therefore provided grants to a WBIHD education team, for a series of ten intensive National Education Assessment (8.0) courses for policy-makers in Anglophone Africa and South Asia on the administration of national education assessments, including test development and questionnaire design, analysis of pilot tests and questionnaires, preparation of final tests, sampling, data clearing, statistical analysis and report writing.

A number of learning tools were created for this course, which are now available on the course's webpage. In addition, participating country teams have begun educational assessment of their own education systems.

The website provides one case study of this work in action. Uganda started conducting a National Assessment of Progress in Education (NAPE) in 1996. The Advisory Committee, composed of representatives of the key stakeholders, had its

inaugural meeting in 1995. Subsequently, five cycles of assessments have been carried out. The first (1996) and the third (1999) were for Mathematics and English Language, while the other two (1997 and 2000) covered the subject areas of Science and Social Studies. The fifth, which was conducted during the training period in 1999, covered the areas of Literacy in English and Numeracy. The results of student performance in these assessments unsurprisingly revealed low levels of achievement, especially in English language and Mathematics (Literacy and Numeracy).

The programs point to the need for sophisticated training in national assessment strategies to create greater awareness of and transparency about national educational quality and effectiveness. At the same time, national officials and those providing them with technical assistance need further guidance and training on:

- How to use the data not to make comparisons with the world's best performing systems whose economic and societal characteristics are quite different, but with economically and politically similar countries whose educational performance is superior and from whom useful ideas about improvement might be gleaned.
- How to group countries in clear and defensible typologies that make these sorts of comparisons possible.
- How, also, to compile, use and interpret achievement data at the level of the school and/or the locality so that teachers can share achievement data and manage knowledge effectively as a basis for improving standards and quality. This means developing local systems of assessment *for* learning, in addition to current efforts to create national summative systems of assessment *of* learning.

In a second project, which tried to improve reform strategies by providing training for senior policy personnel, the World Bank Institute (WBI) offered a Core Course on Strategic Choices for Education Reform. This was designed to help member countries to launch, sustain and improve educational reforms that sought in turn to improve quality, equity and efficiency in national education systems.

Divided into a series of four complementary and integrated modules, the course aimed to provide a systemic understanding of the alternative choices available for carrying out educational reforms. The objectives were to:

- provide a common language and understanding of educational reform issues for country participants and Bank staff;
- familiarize participants with a broad range of alternative educational reforms and promising world-wide practices in the areas of teaching and learning, financing, organization and management, and evaluation and monitoring of education.
- assess the broad range of alternative education reforms and practices on the basis of their contribution to the efficiency, quality and equity of the education system;
- familiarize participants with enabling conditions and promising strategies to launch and sustain educational reforms;
- help participants understand how their education systems could be reformed from their current state to more efficient, effective and equitable systems centered on student learning in the classroom;

In addition to transmitting reform content and developing strategic awareness, the course also aimed to help establish transnational networks of professionals where educational knowledge and educational reform experiences could be shared across member countries

of the World Bank. One surprising absence in the course content, however, was knowledge of educational *change processes* and strategies and of the leadership development efforts necessary to implement them.

Promising Practice

Vietnam has set ambitious goals for itself in terms of teaching students and training teachers. The education and teacher training systems in Vietnam are complex and burdened with inadequate resources and insufficient compensation for teachers. On the other hand, the relative youth of Vietnam's teaching force means that the teachers are more likely to be open to the kinds of changes required to meet knowledge society aspirations.

Vietnam has set targets for consolidating Universal Primary Education, along with more ambitious goals for achieving universal lower secondary education by 2010. These goals pronounce a shift in national priorities from quantity to improvement of quality. Vietnam regards education and human resource development as key requirements for accelerating the country's progress to becoming a knowledge economy.

The chosen path of education development in Vietnam recognizes the profound mismatch between the new competencies demanded from students in the knowledge society, and the teaching skills and approaches with which graduates of the current teacher training system are equipped. A central priority in the new strategic goals for education, therefore, is for teachers to be able to adopt methodologies to create more student-centered and activity-based classrooms that will prepare a future workforce to

negotiate the intellectual demands and changing environment of a modern knowledge-based market economy.

In Vietnam: “Education for All” action plan for primary and lower secondary levels share the following general strategies:

- *All teachers receive 30 days of in-service training per year from 2003; and all teachers meet national standards by 2010.*
- *All teachers will receive “teaching guides” for specific grades and subjects each year.*
- *Curriculum, teaching methods, and textbooks will be “continuously improved,” and a “continuous assessment” system will be implemented.*

Policies, discourse and practices are already changing at the central level - demonstrating important preconditions for changing classroom practice. At lower levels, there is also increasing regulatory and procedural awareness as well as occasional examples of promising practice.

Now a new discourse of change and innovation has permeated the education system of Vietnam, the next challenge is to help teachers, administrators, and teacher training institutions to understand the practical impact and implementation methods of the new goals that have been established. This is an urgent task and also a patient one as Vietnam steadily strives to improve the quality of teacher training and builds capacity to do so across the whole country.

Summary

- Improved access in basic education and beyond does not itself mainly lead to improved quality or greater success in pupil learning.
- Improved standards and quality of learning depend on improved standards and quality in teaching (and therefore also teacher training and teacher development).
- Standards and quality of teacher training and development for secondary school teachers in less developed countries are disturbingly low.
- Secondary school teachers lack *confidence* as well as *competence*, due to the erosion of their traditional authority that has been based on subject knowledge.
- Secondary school teaching in less developed countries finds it hard to attract qualified teachers and has alarmingly high rates of teacher attrition.
- Secondary teacher training is inefficient and fragmented. Teachers are prepared as individuals, subject learning is separated from teacher training, initial training is disconnected from ongoing professional development, and individual teacher development is pursued apart from whole school improvement.
- Most less developed countries have limited awareness of successful or promising reform strategies, and limited capacity to gather, interpret and analyze system-wide achievement data that might prompt and guide their improvement efforts.
- Courses for policy-level workers can increase awareness of and capacity to interpret reform alternatives and achievement data systems, and build cross-national networks to interpret and act on the policy implications of what they learn together.

Implications and Explorations

- The donor support and intervention agenda in education must now move beyond access to quality.
- Standards frameworks and improved subject qualifications are necessary but not sufficient conditions for improved teacher quality.
- Teacher education and training itself needs to be reconceptualized and reinvented as lifelong learning, on a developmental continuum that integrates acquisition of subject knowledge with pedagogical content knowledge and that integrally connects initial training to continuing professional development, leadership development, whole-school improvement, and developing schools as professional learning communities.
- Initiatives for increasing awareness of reform alternatives need to concentrate not only on the *content* of different reforms but also on the *process* of implementing them and of building capacity among teachers to be successful in them.
- Efforts to increase skill and capacity in collecting, interpreting and acting on achievement data, need to be developed locally in systems of *assessment for learning* as well as nationally in systems of *assessment of learning*.
- Clearer and more meaningful typologies of countries need to be developed so countries can meaningfully examine and learn from their performance records in relation to countries of similar types.

Further and Higher Education

Beyond and sometimes beside conventional secondary education is the training and education that most directly abuts the world of employment and the economy: technical and vocational education and training, and tertiary education.

Technical, Vocational and Educational Training

Some of the most obvious connections between lifelong learning and the knowledge economy are to be found in the provision of technical and vocational education and training (TVET). Comprehensive studies of 20 countries and 70 case studies in Sub Saharan Africa (15.0), four case studies in the Middle East and North Africa (3.0) and eight studies in Latin America and Caribbean countries (4.0) addressed TVET issues.

Technological change and the increased competition flowing from the liberalization of trade require higher skills and productivity among workers. Skilled and well-educated workers are more likely to make use of new technology to adapt existing knowledge and processes to new purposes, to continue learning throughout their lives and careers, and to take up more productive employment over time. Yet the challenges of knowledge and skill development through TVET in developing and even some transitional economies are enormous. They include

- widespread *poverty and incapacity* to take up training benefits.
- extensive unemployment in and dominance of *informal economies*.
- reduced opportunities and expectations for *women and key minorities*.
- disruptive effects of widening *war and insecurity*.

- pervasive problems of *ill health and early mortality*.

While these considerable challenges are widespread, they are also configured differently across different countries.

In *Sub Saharan Africa* (15.0), for example, while investment in people's productivity and skills through TVET raises the incomes of economically vulnerable groups, and reduces poverty, investment in skills development has become more urgent and also more difficult as wars have proliferated and health crises have intensified in the region. In particular, HIV/AIDS is depleting scarce human capital and amplifying the need to replace the skills being lost across a wide range of occupations. Apart from exceptions like Uganda, Ghana and Mauritius, wage employment in the modern sector is largely stagnant, real wages have fallen, and unemployment among educated youth is substantial and increasing.

The sub-Saharan African study shows that the principal challenge for African economies over the next decade will be to find and develop productive employment for the 7 to 10 million workers entering the labor force annually, as a consequence of historically rapid population growth, and a swelling of the labor force by today's school-leavers. Currently, most entrants to the labor market have no alternative but to seek work in the informal economy, which has grown sharply since the 1970s. Other than in South Africa and Mauritius, as many as 85 percent of total employees are engaged in the informal economy with most of this in smallholder agriculture.

Yet, in TVET, as elsewhere, Africa is more than a continent of deficits and dysfunctions. There are considerable strengths, achievements and opportunities on which TVET reforms can be built. For instance, the Trust Fund reports found that African

enterprises provide a substantial amount of formal and informal training along similar lines to that found in middle-income and developed countries. Moreover, a promising record of TVET reforms has led to new governance arrangements and the establishment of national coordinating bodies and training authorities in sub-Saharan Africa which have often given stakeholders authority to develop training markets and allocate resources.

Yet, very significant challenges remain, especially within the vast informal economy, where smaller enterprises train less frequently, or use only traditional apprenticeships that perpetuate conventional technologies and that lack standards or quality assurance. In this informal sector, investments in skill development along with complementary social programs such as access to secure workplaces, credit and technology, can play an important role in reducing poverty, particularly for women and vulnerable groups. Tax credits, expense deductions and training levies can be helpful here, though these are hard to administer and to shield from mismanagement and corruption in the informal sector.

Training for the informal sector necessarily has to be flexible in its delivery. For those who undergo it, training also needs to have an immediate application if it is to justify their investment. In these conditions, even the poor will contribute to the cost of their training. While full cost recovery is rarely attempted or achieved, training subsidies in the informal sector are justified on the grounds of social equity and efficiency – and they also create a more secure climate in which further investment is possible.

Although the benefits of training in the informal sector are considerable, taking these interventions to scale, sustaining them over time and using them to transfer skills and jobs into the formal sector remain a challenge. Measures mentioned by the Trust

Fund Reports that might help governments scale up and sustain their efforts in TVET, include:

- *Improving the quality of public training* by making it more flexible and responsive to changing markets.
- Building and building on the significant *capacity of a broad network* of non-government training institutions and enterprises that includes NGOs, religious-based providers, and for-profit trainers. This network addresses the search for profit alongside the social objectives of providing skills development for the disadvantaged, women and the poor in inexpensive but essential areas such as information technology, commerce, and sewing and tailoring – as well as the essential foundations of literacy training.
- *Targeting niche markets in small enterprises* with good growth prospects, such as in Madagascar where training efforts have concentrated on small suppliers of intermediate goods for processing and exporting.
- One reform not mentioned in the Trust Fund reports is the establishment of *prior learning assessment and portable training credits*, for individuals who have acquired skills such as ICT or agricultural techniques in the informal economy, and want to use them for or transfer them to training within the formal economy.
- Teaching methods tend to *emphasize rote memorization* and reward passive learning rather than imparting higher-order, knowledge economy skills, and they promote overspecialization in narrowly defined fields of training rather than more generic and transferable competencies. Because of poor civil service pay, it is hard to recruit experienced workers to become high caliber instructors.

- TVET has *low status*, compared to general education, resulting in poor quality programs, diminished acceptance among students and parents and over-representation of students from lower socio-economic backgrounds. TVET will never be an instrument for the knowledge economy unless it becomes a higher status quality option for students.
- Few enterprises in the region provide the *in-service training* for their staff that would enhance their competitiveness.
- As in Sub Saharan Africa, large numbers of people in the Middle East and North Africa acquire their skills in the *informal sector* of the economy. Many of them are school dropouts, with low levels of schooling, who start their working lives in traditional apprenticeships. These offer narrowly defined skills which are acquired exclusively on the job, with limited opportunities for lifelong learning. Apprentices work with no contracts, and pay for their training either directly in cash or indirectly via reduced wages. Exploitation of young workers as cheap labor is common. Knowledge and skill transfers from expert to apprentice are also often limited by fear of competition from those who are being taught and by the use of traditional technologies.

In summary, TVET in the Middle East and North African countries suffers from excessive centralization, low status, poor quality and accountability criteria, and difficulties developing and accrediting learning and competencies in the informal economy. The Trust Fund reports argue that one of the most promising ways forward is

to develop more private partnerships to create more flexible and demand-driven patterns of training. This shift of direction might be enhanced by:

- Making public funding conditional on producing relevant outcomes.
- Creating better pathways between general and vocational education and training schemes.
- Decentralizing provision to give management greater autonomy and flexibility.
- Giving private training institutions better access to public funding and subsidies.
- In addition (though the Trust Fund reports do not mention it), improving the pay, conditions and career incentives for TVET trainers to help raise the status of the field.

In the Latin America/Caribbean countries (4.0), eight country cases focus on vocationally-oriented learning for young and older adults, primarily through a range of education and training opportunities offered and undertaken outside of formal schooling through publicly-funded adult education, publicly-organized training systems, employers in the workplace, and private training establishments.

Successful lifelong learning, the reports show, requires a foundation of a full cycle of secondary education, which extends beyond content knowledge to include generic skills such as “learning to learn.” Yet while all eight countries already have some elements of a lifelong learning system, these are often inconsistent, obsolete, inefficient or ineffective. Indeed, no country in the region has yet developed policies within a clear framework of lifelong learning that could foster the learning that was needed, address gaps and overlaps, and leverage private providers and funders.

As a result, a substantial share of post-school age adults still lack the minimum levels of competencies and skills needed for jobs in the modern labor market. Much of the lifelong learning that does exist in the region is supplied by private firms (mostly large and often operating in the knowledge economy) and private institutions through on-the-job or formal vocational training directly related to the work done by these firms. Essentially, this lifelong learning takes the form of education and training for targeted groups of post-school age adults.

The articulation between formal schooling and post-school lifelong learning is weak. Deficiencies in formal schooling have necessitated the provision of “compensatory” foundation learning, via public adult education, that has still not reached large numbers of the adults who need it or provided them with jobs in the formal economy.

The lack of universal and effective secondary education, along with the fact that most post-secondary lifelong learning is left to private initiative, leads to increasing inequalities at this later stage. It is those with higher levels of formal education and those who already have jobs who are more likely to engage in post-school lifelong learning.

The evidence in this region therefore suggests that countries should focus on improving access to and improving the quality of secondary education as a strong foundation for lifelong learning, and then on developing a more systematic and integrated approach to lifelong learning beyond that point, which encompasses and strengthens partnerships between both private and public contributions.

Promising Practice

Educational plazas in Mexico (4.0) demonstrate the potential for community centered learning and skills development. At the end of 2000, with the advent of a new administration, a new Federal Commission - the National Council of Education for Life and Work (CONEVyT) - was created to promote and develop adult education.

The project was installed at convenient “Community Plazas” where the provision of learning spaces for adults and their advisors held out many opportunities for learning and skill improvement. Community Plazas have rooms for studying in the traditional sense, as well as space for a minimum of ten computers linked to a local server and the internet. Community members can also receive educational material and video courses by connecting to the Mexican educational satellite system.

The Plazas introduce adults to computer-assisted learning through multiple options, with CD’s being used as a first step so that adults can follow assigned modules on a computer.

1,814 Plazas exist across all states of Mexico and 27 are located in the United States. In institutional plazas, all expenses are paid by CONEVyT-INEA. In collaborative ones, plazas are installed at technical schools with computing equipment being shared with the community 50% of the time. Thirty eight plazas are donations from companies. The implementation of Plazas depends on local conditions, the availability of locales, the willingness of communities to participate, and the existence of equipped schools in strategic places.

Communities contribute the locales such as schools, county buildings, and churches. For the institutional Plazas, there is a direct one-time investment of

US\$45,000. The federal agency pays for two positions for persons in charge of operations at US\$300 per month each as well as operational expenses (power, Internet connection, printed materials, telephone, etc.), though only about 50% of the Plazas are connected to the internet.

The Plazas honor adult education principles and are used as a meeting point for participants and their advisors. In some, many regular students use the computers. Much work remains to be done to convince adults to use the computers to learn and accredit subject matter. Even though a portal has been developed (www.conevyt.org.mx), there are not yet sufficient materials available. Online exams are being tested in the Federal District. Efforts to training personnel in ways that embrace a culture of lifelong learning supporting self-direction, ownership, innovation, and creativity are continuing and remain challenging. However, the core principles of plazas – that they are community based and directed; have a demand based orientation; embrace technology; involve partnership with businesses; and accommodate participants' work and family lives through flexible scheduling - hold out significant promise for this approach.

Tertiary Education

Beyond secondary education, the tertiary sector in all countries offers even scarcer access to educational opportunities. Yet it is here that the highest levels of contribution to the knowledge economy can obviously be made – in a sector that continuously creates and produces new knowledge. In view of this potential, the Trust Fund financed projects to support the development of policy analyses and strategic documents for seven Central and Eastern European countries in the area of tertiary education and innovation systems (14.0). The participating countries were Armenia,

Latvia Macedonia, Romania, Russia, Serbia and Slovakia. In these new European economies, which are also post-Soviet societies, the expansion of tertiary education provision in the last fifteen years has not changed its basic character or quality in terms of teaching methods, quality of learning, acquisition of skills, and so forth. Public universities and other training institutions run the risk of becoming irrelevant to a rapidly changing economy, private institutions are prone to reductions in quality and both sectors run the risk of declining accountability.

In Armenia, for example, the higher education system is rather uniform and not diversified in terms of academic degrees, study programs and modes of study. First cycle degrees and full time study are the most prevalent pattern. Public higher education institutions in Armenia are not able to meet growing demand for educational services. They do not provide equity of access; they exercise a monopoly over privileged services; they do not modernize or diversify their pedagogies; and they do not provide alternative or personalized educational paths to enable more people to have access to higher education.

Universities in Romania, by contrast, have undergone reform from the very first moments of post-Communist transition to a market economy and democracy. Reforms initially aimed at eliminating courses that had become obsolete in the light of new alternatives then concentrated on building a coherent legal framework to ensure more effective coordination. More recent reforms include

- more flexible study programs,
- national standards for institutional accreditation,
- a transferable credit system,

- increased global financing for tertiary education,
- complex quality indicators leading to performance rankings of universities,
- allocating disproportionately greater funding to the most dynamic and effective higher education institutions.

The Republic of Macedonia has concentrated its reform efforts on improving the quality of tertiary education. However, these efforts have been pursued under the shadow of political strife, which has led to shifting governments and policy directions, poor strategic planning, weak co-ordination, limited internal capacity and inconsistent leadership. Political stability seems to be an essential prerequisite for successful reform in this case.

In stark contrast, Latvia has significantly expanded higher education provision and take-up, both regionally and through a new private sector. It has also introduced a quality assurance system, instituted a system of student loans, and upgraded as well as developed new study programs. The author of the Latvian report recommends a more differentiated and means-tested approach to financial support for students and greater state investment in research and development activities and infrastructure.

In summary, the participating country teams were able to identify progressive and relevant policy objectives that are in line with European trends though they also identified a need for changes in the way governments influence the tertiary sector through policies, incentives and quality assurance systems.

Career Development

One of the ways to address the increasing mismatch between educational outcomes and knowledge economy needs between general and vocational education, as well as between the informal and formal economy, is through improved career information and guidance systems. Seven case studies of public policy in career guidance carried out in Chile, the Philippines, Poland, Romania, Russia, South Africa and Turkey, addressed efforts to develop such systems.

Career guidance policies and services can support economic efficiency by making the labor market operate more effectively. Potentially, they can ensure that the individual decisions through which the labor market works are well-informed and carefully-considered; and they can reduce some areas of market failure such as dropouts from education and training, or mismatches between supply and demand. Career guidance policies and services can lubricate institutional reforms designed to improve the functioning of the market and the efficient use of allocation of resources for human capital development. Advocates also argue that these measures can promote social equality and inclusion, by improving and broadening access of the disadvantaged and the poor to educational and labor market opportunities. Within democratic societies, career guidance seeks to reconcile policy goals with the rights of individuals to make free decisions about their own lives.

Based on the case-study analyses, four general conclusions were reached, that have relevance for middle-income countries which are trying to develop and improve their career guidance services.

- Career guidance services need to be organized as a coherent system, with multiple stakeholders developing different but complementary elements of service delivery.
- While they have a key role in developing career guidance services, governments should not be viewed as sole providers.
- Restrictions on public resources require priorities to be established. These include an initial focus on improving career and educational information, followed by investing in self-help services, exploiting the use of information and communications technology, improving staff training, and developing incentives to encourage the private and NGO sectors to develop and deliver services.
- An evidence-base of client demand, service cost, and service impact needs to be developed to guide and defend investments.

Some examples of new models of service delivery attuned to this emerging rationale are evident within the case studies, but these need to be scaled-up through more systemic policies including:

- strengthening structures for policy co-ordination and strategic leadership;
- exploring the role of legislation;
- collecting improved financial information and reviewing the role of markets;
- assuring quality;
- building an evidence base; and
- examining the role of international support in enabling middle-income countries to benefit from experiences, materials and systems developed in other countries.

Beyond policy and frameworks of access, the effectiveness of guidance and counseling ultimately depends on the quality of counselors, their understanding of skill needs and workplaces, and the range and usefulness of their professional networks. A missing element in the report on guidance and counseling, therefore, is attention to its quality and to the measures that would improve that quality.

Summary

- Further training, higher education and effective career guidance are *essential* to knowledge economy development, social inclusion and meaningful lifelong learning.
- The *quality* of further and higher education and training is meager in most developing countries and many transitional economies.
- *Poor basic education* assigns too much of these later learning and training activities to a remedial role.
- *Pedagogies* are conservative, content is traditional and assessment procedures are restrictive – *out of step with knowledge economy needs*.
- *Public systems are over-centralized*, inflexible and insufficiently accountable – unresponsive to the differing needs and circumstances of varying students with highly demanding lives.
- *New providers* – private, religious and NGOs – are often more promising, flexible and client responsive, but lacking in access to public subsidy.
- *Pathways* between general, vocational and tertiary education are insufficient, underdeveloped and unclear.
- The *low status of TVET* in many countries impedes quality of delivery and effectiveness of impact.
- Training in the often-vast *informal economy* is most valued when it has immediate application, but it transfers poorly through training credits or skills competencies into the more advanced formal economy.
- While tertiary education is expanding in some countries, many systems that

operate in a post-totalitarian, post-colonial or politically unstable context are afflicted by *continuing traditions of inflexibility and bureaucracy*.

- *Career guidance systems* can improve the relationship between skill supply and demand in knowledge economies and also increase access to education and training for the disadvantaged and the poor. Such systems are most effective when they are coherently administered, provided by a range of institutions, sequenced according to ascending priorities, and guided by an ongoing evidence base of access and impact.

Recommendations and Explorations

- Diversify and articulate the range of provision for lifelong learning across many partners.
- Develop multiple pathways between systems and levels to improve flexibility and responsiveness.
- Improve quality and quality assurance by devising incentives to attract, retain and develop higher caliber teaching staff in higher status systems.
- Introduce systems of transferable credits and prior learning assessments to assist movement from the informal to informal economy.
- Address and directly engage with the political and professional norms of post-totalitarian, post-colonial and politically unstable societies that inhibit the long range planning and flexibility of delivery essential in matching skills and training to future knowledge economy objectives.
- Improve structures and develop leadership at all levels to produce a more extensive, higher quality and increasingly flexible system of further and higher education or training.

Networks and Partnerships

Knowledge societies are network societies (Castells 2002). Instant digital communication and extensive travel allow more and more people to be connected across time and space in professional, friendship and even criminal networks. In network societies, increased communication and travel mean that migrants who seek better

economic opportunities abroad need not sever their ties to or communications with families and friends in their homeland. Network societies also encourage greater knowledge sharing among partners with a mutual interest in increased prosperity – fostering increased collaboration above and beyond the public/private divide.

Several Trust Fund projects addressed networks and partnerships as forms of organization and patterns of development that promote economic development and lifelong learning. These include studies of Diasporas networks, initiatives in developing greater corporate social responsibility towards the community, and public and private partnerships.

Diasporas Networks

Diasporas are globally distributed populations that are connected by common faith, ethnicity, or national identity, and that activate and renew these connections by networking locally, globally and back to their homeland. The Jewish and Ishmael diasporas are perhaps among the best known, but any group that spreads out from its homeland and remains connected to it and among one other constitutes a diasporas.

Diasporas networks provide one powerful means for developing economies to access knowledge, skills and investment from elsewhere. The Knowledge and Skills project sponsored studies about the role of Diasporas (6.0) in relation to a number of countries including Armenia, Chile, India, China, South Africa, Mexico, Israel, and Scotland and also drew on literature about experiences in other countries.

Global migration of skilled labor to more developed economies has typically been viewed as a loss or '*brain drain*' in the less developed countries of origin. Yet these

papers show that changes in the global circulation of high skilled and low skilled labor from poor economies to rich ones now show signs of a more economically promising back-and-forth movement or Diaspora network. In India and greater China, for example, it is now more pertinent to talk about '*brain circulation*' and '*brain exchange*' rather than '*brain drain*'. While talented students still go abroad to continue their studies and work in the advanced economies, when they became entrepreneurs or managers of multinational firms, they then often use their own global networks, and especially those of their Diasporas, to reinvest in and help build new establishments in their home countries.

Even lower skilled emigrants are finding new career possibilities beyond dead-end jobs in the “secondary” labor markets of the advanced economies – participating in more “open migration chains” which allow migrants to move to the progressively more complex educational opportunities and job tasks that are necessary to work in the global environment. At their best, these emerging migration ladders comprise a virtuous cycle of co-development of both migrant human capital and home country institutions. Search networks, especially good expatriate networks, can help to identify and surmount obstacles to reinvestment, and can access the relevant technical knowledge in other countries that will assist the home country.

Not all networks, the research on diasporas shows, are productive or beneficial (A. Hargreaves & Fink, 2006) and more data on who works with whom and in what ways would be beneficial. Examining the methodologies and approaches of social network analysis could be especially helpful in this regard (Wellman & Berkowitz, 1988). Diasporas networks also seem to benefit most when others act on the opportunities they

provide and finance projects that involve them: one example being Mexico where well-designed Diaspora programs have contributed to the creation of both new public sector initiatives and new industrial policy.

Private/Public Partnerships

Knowledge exchange, transfer and creation benefit when people build, develop and participate in institutional partnerships. In knowledge economies, some of the most interesting and promising partnerships span the public/private sector. Beyond a time which depended on the state to plan, guide and invest in economic development; or a world where investment bypassed the seemingly moribund public sector to be channeled into the free market; public-private partnerships bring together two different sectors and their distinctive, complementary and interactive contributions in pursuit of the mutual interest of increased economic and social development.

Several examples of successful and sophisticated cross-institutional partnerships were spread across the Trust fund project studies. For example in Benin (15.0), informal sector business associations are fully engaged as partners in the selection of training candidates, provide some of the locations for training, monitor the training and at times contribute to the payment of instructors. In this and similar cases in West and Central Africa, the involvement of trades with partner institutions has contributed to the upgrade of master craftsman skills, ensures that training is of sufficient quality, is meeting identified needs of small business and is creating fruitful employment for trainees.

Corporate Social Responsibility

While public institutions work more closely with private organizations to promote effective lifelong learning and training associated with economic development, private businesses and organizations can in turn contribute to social projects that benefit the public good and improve the investment climate of security and stability in which economic development occurs. One of the key trends in this second sort of public/private partnership is the movement towards greater corporate social responsibility (CSR).

Multinational enterprises operating in middle and low income countries have faced increasing pressure from activists, consumers, shareholders and even the financial institutions that back them, to demonstrate responsible business practices in their operations abroad. Motivated largely by the desire to protect the reputation of the firm, most CSR efforts have focused on issues such as monitoring working conditions in global supply chains (e.g. in low-skill manufacturing), ensuring environmental sustainability (e.g. in agriculture), and improving quality of life in communities that are heavily dependent on single industries such as mining.

The collapse of Enron and other high profile corporations that put profits before principles has amplified the receptivity to CSR initiatives (Batstone, 2003; Jackson & Nelson, 2004). And while some critics argue that corporations are little more than institutional psychopaths, caring about other people's good only when it suits their own interests (Barkan , 2005), deeper moral imperatives drive many businesses and corporations to be responsible, sustainable and profitable all at the same time (Arena, 2004; Erickson & Lorentzen, 2004; Hawken, Lovins, & Lovins, 1999; McDonough & Braungart, 2002). Indeed, there is evidence that companies which operate according to

principles of responsible and sustainable practice, produce higher, long-term yields on shareholder investments than companies which do not (Jackson & Nelson, 2004).

Many multinational enterprises bring new technologies, require new skills and invest in training in the locations they choose for business operations, yet very little is known about whether and how such investment in human capital through enterprise-based training is linked to the firm's efforts to become more socially responsible.

One Trust Fund project (13.0) sought to explore the links between multinational and human capital development, with a particular focus on CSR, in terms of whether training programs are seen as part of their effort to demonstrate social responsibility and whether the enhancement of corporate image can change the policy levers which attract additional investment in training.

Thirty multinationals that had developed CSR training initiatives were selected for qualitative study, to provide examples of how good CSR training practices might contribute to human capital development and the creation of broader social value. One of the papers itemized a key set of characteristics in general good CSR practices that can lead to the development of more systemic strategies.

- **Comprehension.** Multinationals have a clear understanding of their role as a key social player. They grasp their specific and strategic capabilities for transferring know-how to host countries, where they build human capacity for sustainable economic development.
- **Creation of win-win initiatives.** Multinationals try to address the population's need for both core business competencies and meeting strategic social goals – integrating these into the strategic vision and decision-making processes of the

business. In this respect, firms develop and embed CSR training initiatives not only to solve society's structural weaknesses but also to develop strategies for improving business performance.

- **Collaboration.** Firms committed to CSR demonstrate the capacity for building effective partnerships and collaborations with the public and social sector, especially with governments. They focus on areas that overlap with public policy, and that leverage private sector contributions without damaging the public good.
- **Creativity.** Multinationals think beyond conventional business wisdom and stimulate social and business innovation.
- **Commitment.** Companies engage in CSR in a sustained way, over time, through building greater capacity at the local level.

A second paper (13.0) uses employer surveys in five developing countries across the continents to examine criteria and determinants of effective training. These include but are not restricted to the criteria contained in international product and management standards (ISO certification). This survey reveals that

- Globalization, including *international product and management standards*, in the form of foreign ownership and the activity of exporting firms, increases engagement in training and capacity building.
- Demanding *international standards* will need an increase in the technical capabilities and capacities of many workers, if they are to generate higher and more consistent quality of production and management. Standards themselves are

not sufficient levers for change unless there is commitment to developing people's capacity to adhere to them.

- *Labor unions* are potentially important contributors to the upgrading of workforce skills in developing countries.
- *Corporate Social Responsibility* can contribute to the firm's training decisions by *promoting values* such as environmental or "green" production and consumption that are then incorporated into international standards and provide a framework for increased training activities.

Promising Practices

The importance of and overlap between networks/diasporas, public/private partnerships and corporate social responsibility is illustrated in three key examples of promising practice that emerged in the Trust Fund reports.

1. *In 1997, Ramón L. García, a Chilean applied geneticist and biotechnology entrepreneur with a Ph.D. from Iowa State University contacted Fundación Chile. The Foundation is a highly successful private/public innovation organization which, among other accomplishments, helps provide the technical infrastructure that allows Chilean agribusiness to develop domestically viable variants of crops typical of California's Central Valley.*

Garcia is the CEO of Interlink Biotechnologies, a Princeton, NJ, company he co-founded in 1991. Interlink had developed a discovery platform for identifying novel chemical entities derived from micro-organisms for use in new pharmaceuticals and

enzyme additives for human food, animal feed and bio-control agents. Interlink also marketed its technical expertise to other firms that were interested in transferring and licensing new biotechnologies. After jointly reviewing their portfolios of initiatives, Fundación Chile and Interlink founded a new, co-owned company to undertake long term R&D projects needed to transfer technologies to Chile that were key to the continuing competitiveness of its rapidly growing agribusiness sector.

Without Garcia's combination of continuing, deep knowledge of Chile, advanced US (i.e. developed country) education, exposure to US managerial practice and experience as an entrepreneur, establishment of the new company would not have been possible. This company has successfully developed a technological platform for applying modern biotechnology to the improvement of grapes and stone fruits: two key export crops that are very important to the Chilean economy. The new company has been able to genetically modify grapes to make them resistance to diseases and it continues to develop the technology to introduce important quality traits in stone fruits. In addition, the company has been instrumental in developing a program for the development of pine trees resistant to a pervasive insect pest.

This biotechnological example is a microcosm of diasporas at work. It shows how they can co-evolve with their corresponding domestic institutions: one prompting improvement in the other, with key expatriates like Garcia acting as systems integrators who bring together key pieces of intellectual property, and with Foundations acting as host facilitators – in this case, assembling research teams in Chile to apply resources to the solution of local economic problems. This diasporas network did not simply bridge existing Chilean capacities with new opportunities, but actually developed new and

stronger capacities. So Fundacion Chile has now developed new forms of network integration, project direction and partnerships in forestry, marine resources, agribusiness and environmental and chemical metrology. Though genetically modified crop development remains an environmentally controversial aspect of agricultural development and corporate social responsibility, this example does illustrate the potential of diasporas networks and public/private partnerships as a productive direction for training, investment and development.

2. *One of the best examples of public/private partnership is the growth of the asparagus industry in Peru (4.0). This hi-tech agro-industry has been built on a well-developed formal educational base, at the core of which is a public agricultural university, the Universidad Nacional de la Molina, in Lima. Most of the entrepreneurs in the asparagus industry were trained at La Molina. These entrepreneurs, in turn, learned new techniques in asparagus growing and processing from U.S. (green) and Spanish (white) asparagus growers. Peruvian entrepreneurs were brought to the U.S. by USAID to learn these new techniques. Spanish investors, on the other hand, came to Peru to take advantage of lower wages. In both cases, technology transfer took place and was adapted to Peruvian conditions – clearly, a valuable type of lifelong learning. Further, Peruvian entrepreneurs learned (and continue to learn) advanced techniques of irrigated desert agriculture by taking courses in Israel, a country that has advanced desert agriculture technology. The newest irrigation equipment in Peru also comes from Israel. Peru's asparagus producers are organized into an association that disseminates information and assists with marketing. In addition, the university at La Molina produces research on new export crops as well as pest and disease control, that is made*

available to asparagus producers, constantly adapted to local conditions, and taught by larger growers to technicians and small farmers. All this lifelong learning has high payoffs for economic development.

In addition to the high level skills represented by the agro-engineering graduates and researchers of La Molina, Peru's formal education base includes a relatively high percentage of young people who have completed secondary school and acquired university training. Many of them are also the sons and daughters of farmers, who have the childhood background and agricultural experience – the indigenous and family capital – that equips them with the foundations and commitments to cultivate new agricultural products and work in agro-industry at a higher technical level. The existence of lifelong learning and training opportunities, especially on-the-job training in the private sector, combines well with these relatively high levels of formal education, to increase yields on capital investment in products such as asparagus, and to add value to the human capital investment represented by formal education. Overall, the highly successful asparagus industry in Peru flourishes because of a combination of complex partnerships between a public university, private investors, donor organizations, larger firms and smaller farmers and their professional interaction and association. It exemplifies the value of treating the public and private sectors not as opponents but as allies, working together to support lifelong learning and training that promotes the greater economic social good, and that is deserving of complementary rather than competitive investment.

3. *Unilever Indonesia has a factory in Surabaya at Rangkut. It treats water from the Brantas River to manufacture soap, toothpaste and shampoo, all of which*

require clean water to be used. It is therefore in Unilever's commercial interest to improve water quality in Indonesia and also part of its social and environmental responsibility as a local corporate citizen. In 2001, Unilever Indonesia approached the Environment Ministry to offer support for its Clean River program. To have a sustainable impact beyond a temporary clean up of the river, a holistic solution was required, involving and training everybody living along the river. "What we needed was not just a change in people's personal habits but a wholly different attitude towards the river; otherwise any short term improvement would soon disappear" stated Silvi Tirawaty, Unilever's project manager.

In consultation with the local government, Unilever agreed to adopt four villages along four kilometres and to work with the villagers and other stakeholders to come up with a solution that, if successful, could be applied in other communities. Unilever offered to provide management expertise to supply training on different issues (environmental protection, prevention of river pollution, waste treatment, etc.), to offer voluntary help and equipment, and to encourage the villagers to develop and sustain a self-help approach. "I never thought I would farm fish in this river. It was too polluted. Now, I make a living from it," one full-time fish farmer remarked.

Overall, the work on multinationals and corporate social responsibility recommends including local representative voices to help address the specifics of the immediate culture in connecting national needs (especially in terms of social value) to business strategies and competencies. One way to do this, it is proposed in the Trust Fund reports, is by establishing a CSR Agency at the national level that develops CSR initiatives and awareness by bringing together and integrating government, the private

sector and the organization of civil society. Regional integration is also advocated; defining an agenda for regional educational priorities and developing a network of organizations and sectors to coordinate CSR training initiatives across the region.

Summary

- *Networks and partnerships* across and beyond public, private and voluntary organizations as well as dispersed individuals are essential to the sophisticated knowledge sharing, complex training development and broad capacity building that characterize high performing knowledge economies and continuous lifelong learning.
- At their best, *diasporas networks* are an important but underutilized asset for creating spirals (or “brain exchanges”) of knowledge, training, investment, development and capacity between countries of origin and the more economically developed host countries to which emigrants are drawn.
- *Effective public/private partnerships* can enhance both economic and societal development, as well as effective lifelong learning by connecting indigenous skills and knowledge to solid public education and advanced university research capacity as well as to technological development and skills along with economic investment from overseas.
- *Corporate Social Responsibility* necessitates the development of partnerships and has the potential to stimulate and benefit from standards criteria and training activity in collaboration with local and regional voices and agencies – though not enough is yet known about how well this potential is realized.

Recommendations and Explorations

- *More research* is needed on what distinguishes good from bad diasporas *networks*, on how best to support them, and how best to scale them up.
- Sophisticated quantitative methodologies of *social network analysis* should be employed to chart (and thereby evaluate) networks, their activities and effects more precisely.
- In a world where partnerships assume increasing importance, investment in both *public and private* contributions to training development is warranted, as is investment in initiatives to connect the two sectors.
- Effective partnerships connect advanced technological knowledge and expertise, to the *indigenous knowledge* and *involvement* of the recipient culture, and to a solid foundation of basic and post-basic education within that culture.
- *Corporate Social Responsibility Agencies* might be worthwhile establishing at regional and national as well as possibly local levels to connect training investment to local knowledge, national practices and the creation of social value (including strong investment climates) as well as direct economic value.
- *More research* is needed on the interaction between training investment and Corporate Social Responsibility initiatives.

Technology

Networking is integral to knowledge economies. Networked forms of organization are the most prudent and efficient in the natural world – among cells, genes, species and ecosystems (Capra 2003). But economic development is dependent on available forms of energy, and the energy sources of the industrial revolution in the form of water, coal and steam bound people geographically to the localities where resources were present, concentrating people in factories and organizations around them (Castells 2002). The sources of industrial energy thereby gave rise to the widespread distribution of centralized, hierarchical and role-based patterns of organizational bureaucracy according to which modern systems and educational institutions were designed.

The knowledge economy is made possible by more dispersed and networked forms of communication and energy – in terms of digital, satellite and solar power – that do not confine operations or concentrate communities within particular places. Networked economies and societies both promote and depend on instantaneous, open access to and distribution as well as sharing of knowledge and communication across the world through ceaseless financial transactions, the ability to coordinate operational factory controls in several countries through computer command centers in another, the development of instantaneous information feedback loops from customer purchasing that enable just-in-time systems of marketing and distribution (Harvey 1991), and the proliferation of email, instant messaging, portable technology and virtual communities that enable instant communication and widespread global access to information as well as entertainment (remembering that the majority use of digital technology is currently entertainment rather than information driven) (Bigum and Kenway 1998). The

networked knowledge economy produces a workplace with new patterns of interaction and skill use that place demands on lifelong learning and pedagogy for “new basics”, such as creativity, teamwork, and problem solving (Lingard 1999). Paramount among these new basics is ability to learn and use skills in new technologies.

The need to acquire skills in information and computer technologies (ICT) places immense demands on educational systems in less developed and transitional economies. First, there are the logistical challenges of technical infrastructure, power and electricity. Availability of and financial support for distribution of hardware and software come next. Issues of equality of access between rich and poor, women and men, and people in rural and isolated communities versus urban areas are a pervasive problem running through all these issues of access in the quest to close the growing digital divide between advanced and less developed economies.

Beyond these issues of access, even more sophisticated challenges have to be addressed. Private sector involvement through the investment of multinational hardware and software companies can boost rates of early adoption of new technology, but then the options and financial capacity of countries to maintain, renew and expand hardware and software in a sustainable way, are limited. Efficient economic development in a knowledge-driven world depends on free and open access to shared knowledge in a world of global information (Castells 1998), yet these essential principles of openness remain unfulfilled and problematic in nations that are not yet fully fledged democracies.

The greatest challenges to effective educational implementation of ICT repeat the pervasive problem of educational change in knowledge economies generally- the inability of schools to undertake reform in teaching and learning. Without attention to

transformation in teaching and learning, the educational promise of technological change will always remain stillborn.

Four specific Trust Fund projects (1.0, 2.0, 7.0, 17.0) focused on issues of technology in countries as diverse as Bangladesh, Chile, Mexico, Brazil, Costa Rica, El Salvador, The Gambia, India, Jordan, Panama, the Philippines, South Africa and Uganda. Many other projects also make reference to technology and discuss attempts to use it in order to develop greater capacity for improvement. Through large-scale surveys or via small projects in distant and rural schools, these four varied reports sought to discern the current status and potential of various forms of ICT implementation in schools, communities and workplaces.

In terms of physical access, the reports show that schools still typically install computers separately in a small lab, in the library if there is one, or in the administrator's office. Computers are rarely found in classrooms, which makes it almost impossible to integrate them effectively into the teaching and learning process.

“...Nearly half the students surveyed who want access to computers after school do not have it...half the teachers do not use computers outside class hours...half the schools don't keep their computer laboratories open after hours...girls use computers less frequently than boys... (1.0).

In addition to issues of infrastructure, physical access and needs for improved technical support, challenges of access are even greater in rural areas where costs per student are greater. ICT adoption also raises political issues that need to be addressed more overtly. First, some projects (for instance in Chile), have found that access to and use of open source software (compared to that supplied by large multinational companies) significantly improves not only initial adoption rates but also long term, sustainable and renewable use of new technologies in education. Involvement by large

multinational computer companies in ICT installation seems to enhance early adoption but at the cost of long-term renewability and inclusiveness of access. Second, effective ICT use in knowledge building and knowledge creation depends on a large degree of openness of access to ideas and information across disciplines and borders. How will countries that are not yet fully fledged democracies be affected by and address their own limits to information openness? Lack of information openness contributed to the collapse of Cold War economies (Castells 1998), but China's economy is prospering despite certain restrictions on internet access.

For adoption of technology to be successful, even equal and open access is not enough. ICT is more than a separate subject or skill set. Its effective development requires seamless integration into the processes of teaching and learning. This calls for teachers to engage with newer, better, higher quality pedagogies that can use technology to develop the new basics of the knowledge economy. Issues of hardware and software now need to be accompanied by what we call the challenges of *mindware* – the development and organization of thinking, learning and quality teaching that need to precede, parallel then prosper from the benefits of ICT adoption.

“The most important lesson from past initiatives is that a technology-centered policy, i.e. one that focuses primarily on deploying machines, software and Internet connections, will not produce meaningful results or the expected impact on students’ learning. Although machines and networks are a fundamental component in any ICT policy, to achieve effective gains in students’ learning, improved teaching practices and more efficient management at all levels (classroom, school, district and nation), the focus should reside on people and how to improve and develop their skills and practices with the help of ICT.” (1.0)

One way to advance improvements that connect ICT adoption to quality teaching and learning is by promoting school-based participation in planning, developing and implementing technologically-driven change.

“ICT at schools will have little impact if teachers are not actively involved in all phases of their integration to the curriculum. In other words, a major obstacle to an adequate use of technology across all grade levels and in the curriculum is the lack of a critical mass of teachers who feel comfortable in using the technology and can provide support and exemplary instances of good practice to those who are still not fluent with technology (17.0)”

....the schools have low levels of ICT use and integration-with no difference between public and private schools....the introduction of computers has not diminished the central roles of teachers (1.0)

It is noteworthy that in Trust Fund surveys, half the teachers surveyed feel they have indeed played an important role in ICT planning.

In technology implementation, as elsewhere, effective teacher learning and involvement depends on equally effective processes of learning and involvement among school leaders. In the Trust Fund surveys, one third of administrators report being frustrated by the lack of clear policies to integrate ICT in education (1.0), but almost all feel that ICT integration is a vital part of broader educational policy reforms. Among all the people who have participated in the planning and decision-making process to bring ICTs to schools, the heads-of-school feel that they have had the greatest impact. Clearly, principals or head-teachers are the key leaders on the ground in terms of developing effective and sustainable ICT implementation, and improving the quality of teaching in general. Yet the Trust Fund studies give little sense of their role or of the kinds of support and training that are necessary for them to become effective leaders of knowledge economy learning.

Promising Practice

Among all the ICT projects we reviewed, one of the most promising and impactful was the ENLACES project in Chile (17.0). In co-operation with both public and private partners, universities, parents, school owners, and administrators, this project sought to provide diverse leadership and local representation in order to ensure that technology might improve and enhance learning across their country.

The success of this project seems to have been founded on the principles that effective ICT adoption requires strong representative leadership, partnership with a variety of key players, ongoing staff development, informed judgment about technology and specific strategies for isolated and rural schools.

- The project established a leadership team with both pedagogical and technological expertise which had the role of planning the implementation and sustainability of the project over the long term. The team assumed enough autonomy from state bureaucracy to enable it to move expeditiously yet still maintain communication with the Ministry of Education as the major policy making agency.*
- ENLACES was able to build partnerships with key stakeholders including teachers, school owners and administrators, the private sector, parents, universities and politicians. Universities in particular can both contribute to and benefit from partnerships with schools and communities in ICT development.*
- As with any educational innovation, teachers are the key to classroom success. In ENLACES, staff development for teachers continues for at least two years with some activities extending beyond that period. Support is also sensitively differentiated based on differences in teachers' previous experience and attitude.*

- *A successful ICT program requires an adequate resource base.*
- *A majority of Chilean classroom teachers have PCs and Internet at home, and more than 80% have successfully completed two-year training in ICT with Enlaces. These teachers have achieved familiarity with the basic uses of technology—in particular with Internet, word processing, spreadsheet and presentation software. They have also had a chance to learn and use some special purpose software in their teaching.*
- *Quality digital content in the form of CD and web-based resources enables teachers to access information and materials to an unprecedented degree. At the same time, ENLACES has found that teachers are selective and will only use material that fits with their existing teaching practice and the curriculum. This continues to pose the question about the need for overall pedagogical change alongside technological implementation.*

Rural schools pose different and more complex challenges than urban schools, but they also offer unique opportunities for fostering better learning by using ICT. Therefore, rural schools receive special considerations and use distinct strategies in Chile. Rural schools also have become an important tool in infusing technology into their surrounding communities. In the Chilean approach to Rural Education, the teacher-training dimension is called Acompañamiento (accompaniment), and is based on the following premises;

- *The integration of technology into cultural practices where it is not currently present is a progressive process that requires time (at least 2 school years).*
- *An external supporter (or facilitator) demonstrates the use of ICT in the classroom with students and thus facilitates the appropriation of technology for teachers. The facilitator does not replace the teacher, since she or he remains as the key educator and participant in the teaching role.*
- *The facilitator participates regularly in the classroom (once a month), and is expected to shift the role from a more central one in the beginning to a more peripheral one as the process evolves. The Ministry of Education promotes monthly meetings at which rural teachers from nearby schools meet to jointly design and reflect on their pedagogical practices with the support of a facilitator. These meetings are part of a more encompassing entity called the “Microcentro” (microcenter), which consists of a reunion of schoolteachers from a specific neighboring area, and which constitutes what they call a “community of practice”.*
- *The microcenter provides an ideal opportunity to incorporate joint design, reflection and on-going support for the manner in which technology is introduced into rural classrooms. The facilitator who visits ICT school classrooms also participates in the monthly meetings of the microcenter, working with teachers to design classroom activities before the next school visit the following month. Three-hour reflection meetings are working sessions with a group of teachers from nearby schools who receive in-classroom support from the same facilitator. Intensive ICT workshops provide teachers from a microcenter with focused*

instruction in the use of ICT. There are four workshops distributed throughout the year, each one concentrated in three-day periods. This approach is more cost-effective than weekly sessions, and it allows time for teachers to practice at their schools between workshops.

The primary purpose in supporting technology in rural classrooms is not only to improve teaching and learning in general but more specifically to improve learning in curricular areas such as early literacy and mathematics. For Rural-Enlaces, taking this challenge seriously has meant that the pedagogical role of ICT is not merely a technological challenge, but a major disciplinary opportunity that involves the national curriculum, local needs, the teachers' own background and current practices, and availability of resources.

The challenge for the future of ICT in Chile as it approaches basic computer literacy for many of its teachers is the same one still facing developed countries. How do you move the use of technology as a substitute for existing school practices in writing, revising, making graphs and charts, or gathering information that was typically stored in the library, to a tool that spawns and supports new pedagogy and extends thinking beyond traditional classroom processes to advanced knowledge economy levels?

Conclusion

The five project areas we have reviewed in this chapter are not mutually exclusive or discrete. Strong partnerships use advanced technology. The link between education and economic growth strengthens as the rate of technological transfer increases. More effective use of technology depends on better quality pedagogies and higher quality

programs in teacher education. Investment climates try to change and not merely adapt to the contexts of partnership that include public provision.

In the next chapter, we take these five projects together, to identify common and significant themes that run across all of them and that are integral to successful and sustainable lifelong learning development within the context of becoming knowledge economies.

Summary

- Sophisticated and sustainable adoption and use of ICT is integral to the effective and advanced development of knowledge economies.
- Infrastructure and access; hardware and software continue to be prime targets for investment.
- Multinational investment in initial software improves rates of early adoption; but increased access to open source software may be a more sustainable solution in the long run.
- Effective ICT adoption and integration requires substantial, systemic and parallel attention to changing the nature and improving the quality of teaching and learning so it can employ and develop the new basics of knowledge economy skills.
- Effective ICT depends on committed and knowledgeable school-level leadership.
- School-level, teacher involvement in planning for the implementation and sustainability of ICT significantly enhances the prospects of success.
- Ongoing staff development is as important as initial investment and

implementation in the continued success of ICT.

- Specific strategies are required for ICT adoption in poor and rural schools.

Recommendations and Explorations

Fostering successful and sustainable implementation of information and computer technology as a way to develop knowledge economy skills through life learning will require more attention to

- Increasing access to and availability of open-source software.
- Providing continuing staff development and technical support.
- Making pedagogical change a key and parallel priority.
- Increasing the knowledge and involvement of teachers and leaders in ICT planning.

V

Significant Themes

Introduction

The 17 Trust Fund Projects addressed topics as diverse as teacher training, technical and vocational education and corporate social responsibility; they encompassed all inhabited continents – though the geographical coverage of the different projects varied a great deal; and they employed methodologies as diverse as large-scale surveys, collections of case studies, literature reviews, secondary analyses of existing data sets, and taught course interventions. The key findings and implications of each project were elicited and summarized in the previous chapter. Across this very diverse range of investigations and interventions, eight significant themes and issues that cut across clusters of projects also emerged in our analysis and review – and we turn our attention to them here. In the final chapter, we then briefly list what gaps of importance remain within this field that might be worth addressing by the World Bank and DfID through further investigation or intervention.

The significant cross-case themes are:

- The *growing divide* in education and training opportunities and achievements between included and marginalized populations.
- Affirmation of the significance of *lifelong learning and training*, alongside a need to widen the definition of lifelong learning more broadly, and to specify the knowledge economy content of training more clearly and precisely.
- The movement beyond issues of access to *questions of quality* in the lifelong learning and training needs of developing and transitional economies, and the difficulty of addressing these quality questions with

existing strategies and methodologies; and the weakness or absence of educational information and data systems at national and local levels that might otherwise serve as quality assurance checks and as ways for schools and systems to learn their way forward towards improvement.

- The persistence and pervasiveness of *traditional pedagogies* that serve as obstacles to innovation, and that are unsuited to the development of knowledge and skills appropriate for contemporary knowledge economies.
- The efforts to link *technology* transfer to skill development alongside the problems of developing sufficient initial capacity as a starting point from which this upward spiral can commence.
- The contrast in quality between *public and private* forms of training provision, alongside an emerging trend to forge partnerships between the two sectors.
- The importance of *culture, context and traditional cultural practices* as obstacles and also opportunities for educational and economic innovation and intervention.
- The existence and implementation of a broad *theory of change* that often seems unsuited to many of the cultures and contexts to which it is being applied, that may no longer be appropriate to patterns of and needs for improvement in contemporary, globalized knowledge economies, and that show signs of being superseded by a more culturally appropriate, locally inclusive, partnership-based and sustainable theory of change.

1. The Growing Divide

It is undeniable that increased access to and quality of education, training and use of technology lead to improved educational opportunities and enhanced economic development. However, it is also clear that current patterns of training access and provision are creating a disturbing escalator effect that is widening the gaps in achievement and participation between included and excluded populations.

Those who have initial access to further education and training are the most likely to take up other opportunities for yet more training and education. The more educated people become, the more likely they are to seek further educational opportunities as they become available, to embrace technology, have a computer in the home and use information networks to find answers to pressing questions. Once on the escalator of opportunity and achievement, they rise to higher levels, other escalators, or lateral walkways of even greater opportunities and all their accompanying benefits,. Skill upgrading and technology transfer also operate in virtuous, self-reinforcing upward trajectories; reinforcing these pathways of opportunity.

Those who do not get on the escalator, or who are scarcely aware it is there, are increasingly left behind, trapped in unemployment or the vast sector of the informal economy where training opportunities are few and far between, are more like traditional apprenticeships, and provide them with few or no opportunities to develop the knowledge economy skills that will help them transition into and thereby develop the formal economy.

Currently, therefore, while increased and long overdue training opportunities and provisions commonly lead to improvement for some and to overall economic

development in many cases (though sometimes more to the benefit of employers than to the wages of employees), these experiences of training appear to be exacerbating rather than alleviating the economic and achievement gaps between the wealthier and poorer populations in developing economies. Attention to widening the scope, reach and capture of initial training provision right into the informal economy, so that it is as inclusive and puts as many people on the escalator of opportunity as possible, now appears to be a key priority.

2. Lifelong Learning and Training

Many of the studies and reports either examine or use the notion of lifelong learning as a framework for thinking about and implementing various forms of skills training particularly as it relates to the knowledge economy. Conceptualizations of lifelong learning vary across the projects. One of the most comprehensive is the following:

A lifelong learning framework encompasses learning throughout the lifecycle, from early childhood through retirement. It encompasses formal learning (schools, training institutions, universities); non-formal learning (structured on-the-job training); and informal learning (skills learned from family members or people in the community). It allows people to access learning opportunities as they need them rather than because they have reached a certain age (9.1 p)

In many projects however, lifelong learning is equated with more specific kinds of training. For instance, lifelong learning in the Dominican labor force (4.3) describes training provided for adults as “lifelong learning activity”. The eight reports about “Lifelong Learning in China” (5.0) assume that all forms of vocational and educational training amount to lifelong learning. Lifelong learning and access to training are treated as being synonymous. In addition, reports on efforts to integrate technical and vocational

education and training into the knowledge economy never refer to a broader lifelong learning framework at all.

As we saw in Chapter III, a lifelong learning framework encompasses learning throughout the life cycle, from early childhood to retirement. It includes formal, non-formal, and informal education and training. *Formal education and training* includes structured programs that are recognized by the formal education system and lead to approved certificates. *Non-formal education and training* includes structured programs that are not recognized by the national system, such as apprenticeship training programs and formally organized on-the-job training. *Informal education and training* includes unstructured learning, which can take place almost anywhere, including the home, community or workplace, and it incorporates unstructured on-the-job training – the most common form of workplace learning.

Cognizant of the importance and potential impact of this broad understanding of lifelong learning, the report of lifelong learning in Latin America refers to and draws on the definition of lifelong learning put forward by OECD in 2003.

In its broadest terms, a lifelong learning approach calls for a sweeping shift in policy orientation, from schools and programs to learners and learning....lifelong learning is now widely understood to mean learning activities and engagement that encompass all learning over the life span. It is the focus on learning -- its breadth, progression, and continuity -- that marks lifelong learning as a departure from other, sector-based policy orientations....Lifelong learning broadly addresses civic and personal interests as well as labor market demands.
(ref)

Our analysis of the projects of the Knowledge and Skills Trust Fund points to a significant gap between the theory and rhetoric of lifelong learning for the new economy, and the actual practices and policies of governments and most workplaces. While the

rhetoric talks about global competitiveness, most workers scrape out a living in the informal economy; while the rhetoric refers to knowledge jobs, most employment is more menial in nature; while the rhetoric emphasizes ongoing skills training for all, it is predominantly the well educated in larger firms who have access to skills training; and while the rhetoric discusses the value of knowledge work, proportionally few jobs and little of the content in the training that is offered in developing economies actually conforms to the “knowledge work” category.

This suggests the need for a more robust image of lifelong learning that is much more than a focus on skill development, and that is appropriate to the reality of workers’ experience in developing countries. This image is one that emerges where the individual has the skills, dispositions and values to continually access information and build knowledge not only for the workplace but for the family, community and society. The lifelong learner is one who has initiative, is a problem-solver, is creative and innovative in making the most of life chances and who contributes to the greater good.

The importance of this general treatment of lifelong learning in theory compared to practice is that a robust and inclusive vision of lifelong learning needs to be affirmed and applied in all projects focused on knowledge economy objectives; that World Bank DfID staff might be advised to develop internal quality assurance mechanisms to ensure that this more robust and appropriate understanding of lifelong learning is interpreted and implemented consistently in practice and not reduced to the technical procedures of traditional training; that the content of training initiatives is monitored to ensure that it appropriately addresses knowledge economy and lifelong learning objectives; and that

lifelong learning initiatives are pursued in the more challenging informal and non-formal sectors as well as the more customary formal sector of training development.

3. Quality

The agenda for educational improvement in developing and transitional economies is moving from one of access to one of quality. In the attempt to transform developing countries into knowledge economies, improved or even universal access to basic, then post-basic education, is a necessary but not a sufficient condition for significant improvement. Countries seeking to evolve into complex knowledge economies now require the attraction and development of high quality teachers, and high quality practices of teaching and learning, if they are to become successful.

Yet outside Eastern Europe, well qualified teachers who provide good quality education are a scarce resource. The low status of technical and vocational education in many countries, for example, makes it hard to attract high caliber candidates from business and commerce, which then reinforces their lowered status even further. The secondary education sector finds it almost as hard to attract suitably qualified people, especially male teachers, and teachers of high demand subjects such as mathematics and sciences. Teacher education for secondary schools is typically fragmented, disconnected from subject learning on the one hand and excellent school practice on the other, and tends to perpetuate traditional pedagogies unsuited to knowledge economy requirements. Low pay for teachers also restricts the attractiveness of teaching as a career and makes it hard for teachers to engage in continuous professional development and lifelong learning, when they must also undertake parallel paid employment to make ends meet.

Many of the conventional methodologies for assessing, measuring and monitoring teacher quality, and many of the accepted and affordable strategies for trying to develop such quality, fall far short of sufficiency in a sophisticated knowledge age.

It is not nearly so easy to quantify quality as it is to measure levels of access. Numbers and types of qualified teachers can serve as one proxy for quality, but the content of teacher preparation courses often builds little capability to develop and deliver knowledge economy pedagogies. Standards frameworks can provide clear pointers towards where and how quality should be improved; they are readily available in and transportable from other countries; and they are affordable to develop and adopt – but standards imported from other countries may be too far ahead of the contexts in which they are now being applied, and they have little value unless there are clear strategies and resource commitments to develop teachers' capacity to meet them.

Finally, though even the most rudimentary quality assurance systems of data and information are needed in many countries (especially in relation to technical and vocational education), such information (including test score data), is only meaningful and motivational for those who use it if it allows comparisons with similar countries that perform at a different level (rather than highly successful developed ones that are impossible to emulate), and if it provides local information and feedback about the settings that people can immediately affect. These mechanisms are currently weak or absent in many developing country contexts.

More promising strategies suggested for improving the quality of teacher education involve questions of reconceptualization and reorganization – from consecutive

to concurrent provision, on a career-long continuum of professional learning that is integrated with school-level and system-wide improvement initiatives.

Of course, arguably the most evident but also undiscussable lever for improving teacher quality is increasing teacher pay, either across the board, or differentially in relation to performance – as a way to attract higher caliber educators to the teaching profession and to remove their need to take parallel jobs elsewhere.

4. Pedagogy

Fast moving and flexible knowledge economies require knowledge workers who exhibit creativity and flexibility, who are innovation-oriented, who are committed to lifelong learning and respond well to needs for retraining, who can share information and develop solutions openly and collaboratively, and who are skilled in the use of modern technologies (A. Hargreaves, 2003). Secure and open knowledge societies which provide the conditions in which knowledge economies flourish call for citizens who value and contribute to the public good, who can work and live with increasing cultural and religious diversity, who can develop open and trusting relationships with others and can resolve conflicts peacefully, who have a cosmopolitan knowledge of, interest in and active engagement with cultures in other parts of the world, who can care for others in strong communities, who are resilient in the face of adversity and who use the natural world and its resources sustainably (Hartwell and Vargas-Baron 1998).

Creative knowledge economies and secure knowledge societies go hand in hand (Hargreaves 2003). Their development and maintenance place economic demands on the

schools and educational systems which are responsible for cultivating the skills and dispositions that are essential in knowledge-driven world, that is swathed in insecurity.

Teaching and learning in the knowledge society have to be centered around the learner, able to foster creativity and problem-solving capacity, amenable to collaborative and team-based organization, ready to encompass a broad curriculum that is not confined to the minimal requirements of technical training or the basics of literacy and numeracy, able to incorporate new technology, and sensitive to offering flexible and personalized forms of delivery (D. Hargreaves, 1983) – as in some of the best emerging tertiary education programs in Eastern Europe.

Yet the evidence of the Trust Fund reports is that in secondary schools, much of the Tertiary sphere, technical and vocational education, teacher preparation and other areas of lifelong learning, pedagogies remain stubbornly traditional and woefully inadequate for knowledge economy needs. New technologies tend to be absorbed into rather than to transform traditional classroom pedagogies, secondary school teacher preparation continues to be highly subject based and heavily didactic, and poorly qualified teachers in the lower status areas of technical and vocational education have little capacity or confidence to teach more creatively.

Clearly, one of the greatest challenges for donor agencies in the years ahead is how to break this vicious and debilitating cycle of poor teaching quality and low grade pedagogy, and to devise more appropriate ways of measuring and documenting the effects of future interventions in this regard.

10. Technology

The Knowledge and Skills Trust Fund reports make many references to efforts to link increasingly sophisticated uses of technology with greater skill development; resulting in upward spirals of improvement in developing economies.

Some successes are described of larger, export-oriented firms introducing sophisticated technologies and providing appropriate training so that local workers can use it effectively, though the danger remains that when advanced technology is imported from highly developed economies, it can be too far ahead of local capacity – even where additional training is provided.

Lower-tech solutions – such as the distribution of very cheap mobile phone technology to small rural entrepreneurs in India and Bangladesh (a movement that has largely post-dated the Trust Fund Reports) – may sometimes provide more sustainable options in very poor countries and regions, developing local capacity to a point that might be able to sustain higher tech solutions later. One case of the development of lower tech learning options among nomadic people is described in the Trust Fund reports, but at the time of writing the project was in the early stages of implementation.

One especially impressive case of technology transfer linked to increased training, that is described in the reports, is the asparagus growing industry in Peru. This used innovative university expertise and the importation of high-tech solutions for storage and distribution, from overseas, to convert the indigenous capital of traditional farming knowledge into a modern, global, technologically enhanced agro-business.

Ideally, development of technological expertise and capability begins in school, and several initiatives to develop such education and training are described in the reports. But the preference shown for initiatives driven by multinationals with the use of their

hardware and software, can limit long-term scaling-up and sustainability, compared to the more affordable and open-access solutions offered by open-source software. As in the early days of introducing information and computer-based technologies into schools in developed economies, the existing evidence is that apart from a few exceptions such as the ENLACES project in Chile, new technologies are largely being tacked on to existing school structures and incorporated into traditional classroom pedagogies, rather than being an automatic lever for transforming the character and quality of teaching and learning in ways that are appropriate for knowledge economy needs.

11. Public and Private Responsibilities

Across the reports, the most consistent patterns of success in knowledge and skills development are associated with private rather than public initiatives. So the reports encourage greater private sector involvement and initiatives in the realm of technical and vocational education and training; and they advocate easement of the training levies that they pay. The private sector appears to have greater capacity to customize training to firm-specific needs and to respond flexibly to changing requirements.

By contrast, public sector practice and provision is portrayed as bureaucratic, inflexible, outdated, uncompetitive and sometimes corrupt. One of the trends across the reports, therefore, is to explore ways to increase private sector involvement and investment in knowledge and skills development, by easing training levies and other restrictions, by instituting greater deregulation of services, and by channeling proportionately larger amounts of donor support from the public to the private sector.

Yet there are signs throughout the reports of the limits to this strategy of shifting more support to the private sector. Investment in the vast informal economy which yields few or no immediate returns is much better orchestrated by the public sector, for example. Sustainable investment in technology-based education may result more from continuing free access to open source software than from private corporate donations of hardware and software which carry costs further down the line. And in Africa, many of the most successful initiatives in the informal economy are led by voluntary and religious organizations, and other NGOs.

More generally, emerging global trends suggest a more complex mix of public and private strategies as the path to economic success – for instance in China where development zoning is highly regulated, and in Malaysia which renewed its economy by unpegging its currency from the dollar and by imposing selected trade tariffs (Stiglitz, 2003). Thus, the reports point to examples of a successful mixed economy of higher education provision in certain Eastern Central European countries, of public/private partnerships as in the Peruvian asparagus growing industry, of the tendency of diasporas networks to make both public and private reinvestments in their own countries, and of a growing tendency for corporations to adopt more or less sincere stances of corporate social responsibility to the wider community and society.

In summary, from a tendency to put public and private sector investment against one other, there are emerging and encouraging signs of the value of supporting both sectors, especially where they work in partnership with one another.

12. Culture and Context

The capacity to provide effective support for knowledge and skills development is profoundly influenced by the political and social climate for investment. For instance, technical and vocational education is accorded low status in many societies, but not in all. In the post Cold-War years, in Eastern and Central Europe, tertiary education is flourishing in some of the Baltic countries, but languishing further to the South and East. And almost everywhere, but especially in the Middle East and North Africa, repeated concerns are raised that traditional family and community cultures are unreceptive to change, and that outdated political structures and processes erect considerable obstacles to progress.

Hitherto, in line with conventional economic thinking, there has been a tendency to treat these contextual factors as unalterable “givens” or “externalities” inconducive to economic intervention and inexplicable in terms of rational choice behavior (Daly, 1996; Nadeau, 2003). The result has been a tendency to try and circumvent cultural and political obstacles by building an investment by-pass within and through the private system or to employ models of technology, standards frameworks, data management and decentralization that are imported from developed and often predominantly Anglophone societies, with little understanding of or regard for how the cultures into which they are being inserted will nuance or nullify them over time. As the development agenda moves from institutional provision and access, to the culture and quality of teaching, learning and training, the likelihood of failed implementation due to such cultural misunderstanding is magnified even further.

Yet case study data throughout the reports show glimpses of emerging efforts to work *with* local cultures whenever possible, identifying and building on the social capital

and other assets they contain, rather than viewing them largely as impediments and deficits. For example, the asparagus growing industry of Peru is intelligently based on an appreciation of the indigenous capital of existing agricultural knowledge and skills contained in local cultures. Low cost and sustainable teacher education innovations in places like rural Cambodia work with rather than against the existing realities of rural isolation. Providing curriculum materials through simple and inexpensive audio-technology may be more appropriate for Mongolian nomadic peoples, than trying to implement the more commonly advocated strategy of computer technology. Diasporas networks reconnect successful business people with the host cultures from which they emigrated. And open source software is a more realistic option than multi-nationally licensed materials in poor and rural communities.

Post 9/11, post-Rwanda and amid the ongoing uncertainty in Iraq and Iran, it is clear that the international development agenda is now also a cultural and political one of struggling for secure nationhood and open societies, as a context for and complement to the prior emphasis of the World Bank DfID and other donor agencies on economic intervention, private investment and the promotion of greater Free Trade.

The political and cultural implications of living in an age of insecurity (A. Hargreaves, 2003), coupled with the palpable success of economic development strategies in India, China and Malaysia that have not conformed to accepted models of economic globalization, have led former senior World Bank economist Joseph Stiglitz (2004) and others (e.g. Saul 2006), to advocate more complex models of mixed and varied public and private support and intervention strategies, that address cultural and

political as well as economic change, as a more promising path for international development.

Alongside this needed shift in strategic thinking to directly address issues of culture and quality, new methodologies and disciplines will also need to be drawn on to elucidate the issues more accurately and appropriately that are more case study based, collaborative, anthropological and sociological in nature. These will make it more possible to undertake effective cultural asset audits of the countries and contexts in which interventions are proposed, to incentivize change in unconducive political and bureaucratic regimes, and to establish effective relationships of collaboration with public, private and voluntary organizations in these countries.

13. Theories of Change

The seventeen Trust Fund reports represent the beginnings of a shift in educational change and reform strategy – underpinned by a parallel transformation in an overall theory of change that underpins strategic initiatives. We refer to these as established and emergent theories of change within the World Bank and DfID, among similar donor agencies, and even in some of the developed country contexts from which change theories and practices are commonly borrowed.

The established theory of change has emphasized structures and educational access. Centrally imposed standards frameworks and performance targets have been advocated to provide a common sense of direction and a yardstick for accountability, while decentralized management and private incentives and funding have been promoted as ways to deliver results more flexibly and effectively, without the hindrance or expense

of centralized state bureaucracies. Assessment of learning, in the form of tested achievement, is regarded as a way to measure and monitor program accountability, and to prompt increased attention to improvement by making international comparisons of performance public. In all this, traditional culture is a restriction on modernization, more than a resource for its development.

The emergent theory of change, adjusting to the fast-growing reach of a knowledge economy world, in an age of increasing insecurity, moves beyond issues of access to questions of quality. Standards are defined in ways that bring them closer to the realities of existing practice with more attention being paid to developing people's capacity to meet higher standards, than to adhering to the paper standards themselves. Neither centralization nor decentralization, public nor private investment, are objects of ideological advocacy, but areas for pragmatic judgment, where the balance and mix of centralized/decentralized, public/private is decided according to what is most "fit for purpose" in the country and culture concerned.

In the emergent theory of change, imposed strategies of standardization and privatization are replaced by a greater emphasis on public/private partnerships, network-based and peer-driven forms of improvement, and more flexible, just-in-time, localized and personalized forms of program delivery. Assessment of learning in the form of data used for summative quality assurance once educational outputs are completed, is replaced by assessment *for learning*, where data are used to inform ongoing decisions and adjustments in quality and processes in order to produce better outcomes. In the emergent theory of change, existing cultures are regarded as containing usable assets for modernization as well as presenting impediments to it.

The quest for quality and creativity and strengthened community that the movement towards knowledge economies and knowledge societies demands, calls for greater prominence to be given to the emergent theory of educational change and its application; for high quality disciplinary expertise in sociology, anthropology and political science to be drawn upon in addition to the existing disciplines of economics, so we can recognize this quality and these qualities where they exist; and for new methodologies to be developed and embraced that can measure and monitor the degree to which quality and needed qualities are being achieved in ways that accurately and appropriately do justice to the complexity of their subject matter.

One of the Trust Fund projects explicitly taught comparative reform models to senior policy makers in developing countries. It would be helpful also to include in such cases an awareness of contrasting theories of educational change that underpin such policy developments.

9. Towards a Typology of Countries Policies and Progress

Developing countries, by and large, have similar goals for the investment in and ongoing training and education of their populaces. It is clear that if they are linked to the improvement of quality and to robust approaches to lifelong learning, such investments reap rewards for these countries' economies and their people. But countries vary in their geography, historical perspectives, cultures, traditions, politics, and practical considerations. The 17 projects in the K&STF work provide some insights into these variations. However, because of their diverse purposes, methodologies, data that vary from case studies to surveys to summations of government policy, and disparities in rigor

and quality, the 17 projects, as a collection, do not provide an adequate basis for providing an overall typology to enable similarly placed countries to make direct comparisons from which they can learn and improve. However, the themes across the studies do suggest possible frameworks and criteria from which such a typology might be developed.

Most typologies classify countries *historically* e.g. post colonial, post apartheid, post conflict; *economically* e.g. poor, transitional, developed; *politically* e.g. open or closed, democratic or totalitarian, trusting or corrupt and in terms of *investment* e.g. subsistence, partial investment, full investment (adapted from (Carnoy & Samoff, 1990).

For instance, one World Bank typology compares countries in terms of investment and progress in education and skills training (Cuadra & Moreno, 2005). This typology begins by combining *stock indicators* such as educational attainment with *flow indicators* such as the gross enrollment ratio, in order to help summarize a country's present situation with respect to educational access. The stock indicator shows the state of a country's educated population and reflects past efforts. The flow indicator supplies information about the current efforts made by the government and its citizens to provide and take advantage of opportunities to acquire a secondary school education.

This typology provides examples of how countries can be grouped according to these stock and flow indicators. For instance, a number of low-income countries (i.e. poor economies) have a low stock of population who have completed secondary education or more, and their current efforts to provide secondary education are relatively modest. Most of the countries in this situation are in Africa and South Asia, but some are in Latin America and East Asia. Meanwhile, middle income countries may be investing in

improving educational opportunities but still need to take corrective measures to elevate educational attainment. Transitional economies, and even more advanced ones have historically provided good access to secondary education and continue to do so.

While this kind of categorization provides a helpful way to clarify countries and their developmental trajectories, it says very little about what kind of education developing countries should provide to equip their young people and workers for the world they face.

Cuadra and Moreno, drawing on Porter (Porter, 1998a, 1998b) therefore offer a threefold taxonomy to overcome these shortcomings. At the heart of this taxonomy is the degree to which the national economy is embedded in relation to economic, political-legal, and domestic-regional-global axes. Their work shows that the more deeply an economy is embedded within the domestic-regional-global axis of activities, the greater is its capacity and capability to absorb new learning and initiate innovation which leads in turn to national development. This capacity and capability increases the effective demand for educated manpower and improved educational systems. The broader and deeper are the linkages across the axis, the greater is the dependence on an educated citizenry. While this taxonomy compares nations, it is also important to note that within a nation there can be pockets and populations who are positioned differently.

From this perspective of capacity to absorb new learning and be innovative, a country's economy can be viewed as either *factor driven*, *investment driven*, or *innovation driven*.

1. In the *factor-driven economy* basic factor conditions, such as low-cost labor and access to natural resources are the dominant sources of competitive advantage and exports. Firms produce commodities or relatively simple products designed in other, more advanced countries. Technology is assimilated through imports, foreign direct investment, and imitation. A factor-driven economy is highly sensitive to world economic cycles, commodity price trends, and exchange rate fluctuations. This sensitivity in turn dictates the sensitivity of effective demand for education, especially secondary education.

2. In the *investment-driven economy*, efficiency in producing standard products and services becomes the dominant source of competitive advantage. Heavy investment in efficient infrastructure, a business-friendly government administration, and strong investment incentives as well as access to capital, allow major improvements in productivity. The products and services produced become more sophisticated, but technology and designs still largely come from abroad. Technology is accessed through licensing, joint ventures, foreign direct investment, and imitation. Countries at this stage, however, do not only assimilate foreign technology but also develop the capacity to improve on it. Companies serve a mix of original equipment manufacturing customers and their own customers. An investment-driven economy is concentrated in manufacturing and outsourced service exports. It is susceptible to financial crisis and to external, sector-specific demand shocks.

3. In the *innovation-driven economy*, the ability to produce innovative products and services at the frontier of global technology, using the most advanced methods,

becomes the dominant source of competitive advantage. The national business environment is characterized by strength in all areas and by the presence of deep clusters of innovation and development. Institutions and incentives supporting innovation are well developed. Companies compete by pursuing unique strategies that are often global in scope. An economy of this type has a high share of services and is resilient in the face of external shocks.

Taxonomies and typologies such as this allow country comparisons that can provide a basis for economic and investment strategies. What the 17 K&STF projects can add to models such as this, are further investment, capacity-building and policy implementation dimensions along which countries can progress as they strive to improve quality, develop lifelong learning and bring their overall education, skills and training efforts in line with the demands of a modern knowledge economy and knowledge society.

The following table identifies a number of promising dimensions or pathways suggested by the cross case analysis. Not all of the pathways are fully developed in the 17 studies and where that is the case the final section of this report on Gaps identifies where more research and development work is needed. Although these pathways are presented separately, they are most productive when they interlock and work together to build synergy and create a culture of lifelong learning, innovation and creativity that is the very foundation of a knowledge economy and knowledge society.

Table 1. Interconnected Pathways: From Access to Quality



Dimension	Basic Level, Growth	Moving Forward	High Performance,
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	Inhibiting	→	Growth Promoting
Access	Increasing access and equity Access is standardized and homogeneous		Improving quality for all Access is flexible and responsive
Agencies	Private vs. Public Individual agencies occasionally competing		Private and Public together Promotion and provision of incentives for cross-sector, multiple agency networks and partnerships
Investment in training and skill development	Low levels of participation, barriers, lack of incentives, poor quality Input based (supply driven)		Provision of incentives, removal of barriers to private sector investment, NGO and individual investment in training and skills development, attention to quality Outcome based (demand driven)
Pathways	Inflexible, invisible or at times obstructive to movement from school to workplace Badly prepared, poorly informed or entirely absent career guidance program		Flexible, transparent, supported pathways between school and the workplace Quality-based, well-informed, intricately networked career guidance program
Quality of Teaching and Learning	Curriculum content is obsolete and irrelevant to current needs Pedagogy is predominantly lecture, copying and memorization		Curriculum is personalized, flexible, continually updated and locally as well as economically relevant Pedagogy promotes knowledge economy and LLL qualities of active inquiry, co-operation, innovation, creativity and application

	Assessment <i>of</i> learning is summative		Assessment <i>for</i> learning is formative
Technology	Focused on hardware, software and the technology itself Multinational provision of hardware and software		Focused on appropriate pedagogy, teacher development and improved capacity Movement towards open-access and more sustainable open-source software
Teacher Education	Traditional, one-time subject-based training Discrete training focused on individual teaching		Continuous teacher capacity building Professional learning communities, connected to ongoing school improvement
Further and Higher Education	Technical and Vocational Education and Training (TVET) is low status and unintegrated Tertiary Education is traditional, elitist and closed		TVET is high status and well integrated Tertiary Education is innovative, transparent and open
Change and Educational Reform	Focused on test results, compliance and order System data used to draw summative international and internal comparisons Alignment Bureaucratic (about doing things right)		Focused on quality, outcomes, capacity building, and leadership development System data used continuously to inform and instigate improvement Cohesion Performance orientated (about doing the right things well)

	Uniformity and compliance Educational change is mandated in cultures of compliance and even fear Unaddressed, unintegrated and self-perpetuating informal economy Reforms are poorly-resourced, episodic, temporary, lacking in follow-through and sustainability		Local and cultural sensitive within a broad framework Educational change is a way of life and seen as an opportunity to grow and improve Clear strategies for effecting transition between informal and formal economies Reforms are continuous, integrated, sufficiently prudent, and build sustainable capacity for continuation
Culture and Context	Local indigenous traditions, knowledge, and experience are viewed as impediments or irrelevances Culture and context are treated as unalterable externalities		Indigenous traditions are regarded as convertible cultural capital and also often as having social value Culture and context are seen as legitimate and necessary objects of engagement and intervention

It is only through a systemic approach where progress along each dimension occurs in relation to the others that lasting, sustainable progress can be made in adapting the educational system to the principles of the knowledge economy and knowledge society that less developed countries increasingly aspire to become.

Implications

- It is important to find more and better ways to intervene in the *informal economy* as the prime target for educational and economic development in many countries
- Training programs and initiatives should be monitored more carefully to ascertain the extent to which they include *knowledge economy content*.
- *Lifelong learning principles* should be explicitly and persistently expressed in all training initiatives, so that lifelong learning and training are not equated as being the same, and these should be evidenced in clear indicators of lifelong learning in action.
- There should be a greater explicit focus on overall *quality* and knowledge economy qualities of educational provision, drawing on appropriate disciplines and methodologies in support of that end.
- Intervention strategy must now reach into the heart of changing traditional classroom *pedagogy* in teacher education, technology implementation, technical and vocational education, and elsewhere.
- *Technology* implementation should increasingly sponsor the sustainable use of open source software, and should concentrate more on developing the pedagogy and human capacity to implement new technology effectively.
- The antagonism between *public and private* provision should be replaced by a mixed economy or partnership-based pragmatic approach to finding the best “fit for purpose” intervention strategy for particular cultures in question.
- *Cultural and political factors* that affect the climate for investment must no longer

be treated as untreatable “externalities”, but as legitimate areas for policy inclusion and intervention.

- Interventions should be preceded by cultural asset audits, to ascertain existing levels and types of *indigenous cultural capital* in a region or society that are potentially convertible to knowledge economy capital (though not merely reducible to or exploitable by it).
- Courses for senior policy makers should include content covering different *theories of change* and change process, and the relevance of different change theories for intervention strategy should be subject to explicit review.
- Typologies of development that guide investment strategy must take increasing account of *political and cultural variables* as well as economic ones.

Conclusion

In the push for increasing prosperity and for putting an end to poverty (Sachs, 2006), it is worth remembering for moral and ethical reasons as well as economically expedient ones, that the economic sphere cannot be isolated or insulated from the civil and political spheres that surround it. These other spheres are not mere "externalities" nor more or less propitious investment climates. They are also a consequence of trade and investment strategy - a consequence that is realized in political stability or insecurity, and in human betterment or misery. Free trade, economic globalization and untrammelled privatization have brought economic and social benefits for some, but in their most

unfettered forms, they have also contributed to increased indebtedness in Africa, decelerating growth rates in Latin America, ingrained corruption and criminality across much of the former Soviet Union, the reactive rise of religious fundamentalism within the Islamic world especially, and the resurgence of negative nationalism, racism and genocide among the Balkans and other regions where globalization did not make nation states irrelevant but compounded the boundaries of political geography with the hardening psychic borders of ethnically intolerant minds. To these insecurities of the present, climatic consequences of unrestricted production and consumption will add further instabilities in the future through shrinking resources, accelerating migrations and powder kegs of human volatility.

These present and future developments will push the World bank, DfID and similar organizations to revisit their enduring dilemma of whether to be agencies of financial donation and investment only, or of human development and global security more widely. The old order of funding and support promoted economic privatization and financial deregulation, leaving civil society and the public sphere to fend for themselves in the hope that, because of the knowledge economy dividend, progress would ultimately prevail. In a world of growing inequality, insecurity and instability, an emerging new order is struggling to define a different path that will connect the economic world to the social order, that will bring together private investment and public life, that will care about quality of life as well as job opportunity, and that will not ignore or eradicate traditional cultures, or exploit them simply as convertible capital. This emerging order will connect economic development to human dignity and global security because the greater public good will be served by it and because further economic development and

self-interest will also depend on it. The seventeen Trust Fund projects contain the educational seeds of this new investment order. If planted and propagated, the principles and practices they represent may finally begin to make large parts of the world significantly places to work and to live.

VI

Gaps and Future Directions

The Trust Fund reports have given rise to significant findings – the link between economic opportunity and development and educational training; the connection of this link to upward spirals of technology implementation and integration; the importance of developing clear emphases on and broad interpretations of lifelong learning; the shifting terrain of policy intervention from educational access to improvement of pedagogical quality and systemic quality assurance; the struggle to make strides in the low status technical and vocational educational sector and the even greater struggle to make any worthwhile training impacts in the vast informal economy.

Among these often disheartening trends and findings, emergent signs of promise and of positive new practices are evident in the report – the power of public-private partnerships in a world where these sectors had often been regarded as opposed; the emerging recognition being given to the voluntary and religious sectors in terms of their contribution to training and development; the untapped power of diasporas in an increasingly network-driven world; the potential of lower-cost, more sustainable technology initiatives such as audio-based learning and open source software to provide first steps on to the escalator of development and opportunity; and the credence given to case study reports and methodologies alongside conventional econometric analyses as ways of deriving insight from the secret successes of interesting outlier initiatives, and into the indigenous capital of cultures where interventions are being attempted.

Implicitly, or explicitly, our review of the Trust Fund reports also exposes and highlights a number of gaps in research and strategic knowledge that might set a useful agenda for further inquiry and intervention strategy by the World Bank, DfID and other donor agencies.

School-to-work Transition

- How are developing and transition countries building national qualification systems? How do those systems contribute to articulating secondary education, vocational training, tertiary education and lifelong learning approaches?
- How do such systems articulate between and among countries? How do they add to labor mobility and what is their impact on migration?
- What is the impact of certification systems on the employability of graduates, mobility of workers, etc.?
- How many students drop out of post-compulsory education before receiving a diploma and, most importantly, what happens to them, in terms of employment, mobility, further learning opportunities, etc.?
- Under what conditions do private and corporate partnerships strengthen or weaken access to knowledge economy and knowledge society opportunities?
- How well-integrated are the certification systems regarding labor market information about relative scarcities (i.e, which certified skills are more scarce), and how well do schools in middle-income or poor countries relay information to students on what the various certification systems and labor market information systems have to say about the job market?
- What are the characteristics of higher education programs with strong labor market linkages in developing countries? (e.g. locally-relevant fields of study, governance with civil society/industry participation, internships/practical training, applied academic research, etc.?)
- What measures can be taken to significantly increase literacy achievement in basic education so that lifelong learning is not disproportionately directed to remediating deficits in literacy among adults in training programs?

Informal Economy

- How can we document more effectively what skills and competencies are actually being learned in the informal economy, whether these are relevant to knowledge economy objectives and what successful strategies currently exist for transitioning workers with these skills into the formal economy through prior learning assessment etc?
- What homegrown, local models of learning, teaching and training hold promise for wider adaptation within a low-cost, long-lasting and sustainable process for improving teaching quality and developing knowledge economy and society skills and competencies?
- What are the more effective community-based models for developing competencies? How might these have an impact on skills and labor?

Competency-based, skill-based and outcome-oriented curriculum reform

- Is there a viable version of the so-called 21st century Key Competencies taking shape in developing countries? What is the role of those competencies and standards in both citizenship education and school to work transition?
- How can post-compulsory offerings be diversified through alternative pathways, without creating more *cul-de-sacs* of failure?
- How do non-university tertiary education programs develop effective competencies in developing countries?
- How do systems of standards and competencies need to be developed in ways that are appropriately ambitious yet also sufficiently realistic, given existing levels of capacity in developing and transitional countries?
- What tools or strategies can be identified or devised that locate and link standards frameworks and capacity levels so that they interact and propel one another through upward spirals of development and improvement?

Education and Labor Markets

- What measures have been and can be taken to raise the status and attractiveness of TVET within less developed and emerging economies?
- What reforms can be implemented to improve the effectiveness of TVET and thereby increase its attractiveness?
- What types of second-chance education and training programs for school dropouts currently exist in developing countries? How effective are they at helping participants link to the labor market?
- What types of formal and non-formal education and training programs lead to better short term employment outcomes as well as improved capacity for lifelong learning?
- What measures are tertiary education institutions in developing countries taking to avoid outward migration and retain their highly skilled graduates?
- Where have universities partnered successfully with business as well as social and community agencies to initiate successful development and training initiatives for the knowledge economy. What are the key characteristics of these partnerships? How might they be replicated elsewhere?

Human resource policies (teachers and leaders within educational institutions)

- What are the relative payoffs of professional learning communities vs. models of prescribed instruction as ways of developing and delivering quality teaching and learning in less developed and transitional economies?
- Given the connection of leadership to learning outcomes, what current policies and strategies of leadership for learning in less developed and transitional economies are being proposed and which ones are most beneficial for their impact on student learning via developing and supporting teaching quality?

- What kind of pre-service and in-service training best supports various educational reform goals and agendas, such as competency-based curriculum, outcome-oriented instruction, decentralization, etc.?
- How are teacher education studies – and specialized institutions – being positioned in contemporary higher education institutions?
- What performance measures are being used or introduced to assess quality of faculty at tertiary education institutions in developing countries? How effective are they? (tenure, output measures, etc.). What incentives or rewards are being introduced to improve teaching quality?
- How and to what extent are training and development strategies in teacher education being aligned with ambitious but achievable standards and competencies frameworks for teachers and teacher educators alike?
- What alternative models for delivering teacher education other than short-term, consecutive ones can be developed that contribute simultaneously to improving individual teacher quality and the quality of pedagogy and organization in existing schools?
- In countries with increasing institutional autonomy in tertiary education, how are such institutions building human resource management capacity? (Capacity to employ, promote, diversify incentives, and terminate faculty and staff effectively.)

Quality Teaching and Teaching Quality in a Knowledge Society

- What does quality teaching look like in developing or emerging settings within a knowledge economy framework and what factors beyond standards frameworks are necessary to create it?
- Which are the most pertinent and useful alternative delivery modes, methodological approaches and teaching skills in a knowledge society?
- How do emerging quality assurance systems evaluate teaching and learning? What is the impact of quality assurance mechanisms on teaching and learning in tertiary education?

Monitoring and Evaluation

- How can policy and administrative systems in less developed and transitional economies develop cultures of assessment FOR learning and not merely assessment OF learning?
- What is the evidence and what are the indicators that knowledge economy skills and new basics are being taught and learned in practice? How can labor market outcomes be assessed for youths who are taught the new skills and competences?
- What is the impact, in tertiary education, of the expansion of quality assurance regimes, on the assessment of teaching and learning for the knowledge economy?

- What are the scaled up possibilities for collecting and applying local data about market opportunities and saturation, as a way to guide just-in-time, localized training initiatives.

Role of ICTs

- What successful models exist of ICT adoption, where there are clear benefits for the improvement of teaching and learning in relation to knowledge economy skills and competencies and for effective quality instruction in general?
- To what extent have ICTs become a new environment of communication, socialization and networking for young people, even leading to new forms of citizenship? What are the implications of ICT implementation for secondary and tertiary education, in particular concerning curriculum reform and teaching/learning methodology?
- How are tertiary education institutions in the developing world evolving with the advent of wireless technology and cheaper, more powerful technology? Are they lagging or leapfrogging? What is the impact on teaching, learning and research?
- What are the relative benefits for start-up and sustainability of multinational based vs. more open-source driven uses of software?

Science and Technology

- How can international aid be used for accelerating technological learning in less developed and transitional economies at different levels of development?
- How can “aid-enabled” technological learning contribute to improving developing countries’ productivity and competitiveness in the global knowledge economy? What lessons should be drawn from past Overseas Development Aid projects with science and technology components?
- How can developing countries maximize their technological learning from FDI and international R&D cooperation? In this connection, what should be the role of public-private partnerships?
- How can science and technology capacity building in developing countries help to meet the development goals in socially and environmentally sustainable ways?
- What can less developed and transitional countries do to alleviate or even reverse the ‘brain drain’ as a major obstacle to national human capital accumulation?
- What low cost, lower tech solutions (e.g. mobile phone technologies, audio materials) provide the best initial leverage in moving many people in less developed countries on to the escalator of training and opportunity?

Culture and Context

- What assets or forms of local cultural capital are contained in indigenous cultures and traditional families and communities that are pertinent to learning and training in a knowledge economy and society? How can reform and intervention programs effectively audit, then capitalize on these forms of indigenous capital?
- In an era of quality improvement, which disciplines and strategies will best help international aid and donor agencies to understand and work successfully and productively with local and national cultures where development initiatives are being attempted?
- How can existing typologies of development be further modified to account for and integrate the varying paths to development taken by different countries in recent times, and in an age of insecurity to account for key social and political influences in post-conflict, post-totalitarian, post-colonial and post-apartheid regimes?

Change and Sustainability

- As a complement to teaching reform alternatives to key policymakers, what are the reliable, evidence-based aspects of *change process* (implementation, leadership, capacity-building, sustainability, etc.) that could be included within these courses, and what methods of instruction on these courses best represent these principles of change process, and assure successful subsequent implementation by the participants?
- What home-grown, local, capacity-building models of learning, teaching and training hold the best promise for wider adaptation within a low-cost, long-lasting and sustainable process for improving teaching quality and developing knowledge economy and society skills and competencies?
- What measurable indicators of sustainability can be developed that would serve as useful guides and quality assurance mechanisms for steering and evaluating intervention by international donor agencies in the areas of education, training and development? Drawing on Hargreaves and Fink (A. Hargreaves & Fink, 2006) how might these indicators include attention to the following key components of sustainability.
 - *depth* of attention to actual knowledge economy competencies, authentic lifelong learning and quality teaching and pedagogy
 - *endurance* of initiatives and their success over time beyond the initial period of funding and implementation
 - *breadth* of “scaled up” impact across many institutions, systems and even societies through locally adaptable models that motivate and secure shared involvement and responsibility
 - *justice* of ensuring that training and lifelong learning inclusively benefit all, not just those who have already received some of it or who already work outside the informal economy
 - *diversity* of schemes that have a “fit-for-purpose” response to local contexts and that link and network partners together in support of their development

- *conservation* not eradication of existing knowledge and tradition whenever possible as powerful sources of indigenous capital
- *resourcefulness* in terms of affordable use of long-term financial resources, prudent (not depleting) uses of human energy and resources, and environmentally sustainable use of natural resources.

Conclusion

Education creates the future. Lifelong Learning is about all our future. Sustainable lifelong learning promotes and protects the quality of that future. These are challenging directions for anyone. In developing and transitional economies, they can often seem overwhelming. Yet in the Trust Fund reports, the outlier cases especially show that though the obstacles are formidable, the ends are neither unimaginable nor unachievable.

We need new paradigms, strategic visions, and global commitments to achieving the end

of development in a knowledge driven world.

There are signs in these projects that the World Bank and DfID are on the cusp of embracing the new directions that are needed - drawing on new disciplines and methodologies, developing and supporting new networks and partnerships, and bringing together public, private and other sectors to improve the quality and address the content and character of lifelong learning and training. If they are successful, as we move from an age of access to a deeper culture of quality, there is a chance that these new directions will help bring about a more prosperous, secure and sustainable future for the next generation of learners, citizens and workers, across all parts of our planet.

- Aho, E., Pitkaren, K., & Salberg, P. (2006). *Policy Development and Reform Principles in Basic and Secondary Education in Finland since 1968*. Washington: World Bank, Education Unit.
- Arena, C. (2004). *Cause for success: 10 companies that put profits second and came in first : how solving the world's problems improves corporate health, growth, and competitive edge*. Novato, Calif.: New World Library.
- Batstone, D. (2003). *Saving the corporate soul & (who knows?) maybe your own*. San Francisco, CA: Jossey-Bass.
- Bell, D. (1976). *The coming of post-industrial society*. New York: Basic Books.
- Brown, P., Green, A., & Lauder, H. (2001). *High skills: Globalization, competitiveness, and skill formation*. New York: Oxford University Press.
- Brown, P., & Lauder, H. (2001). *Capitalism and social progress: The future of society in a global economy*. Basingstoke, Hampshire; New York: Palgrave.
- Carnoy, M., & Castells, M. (1997). *Sustainable flexibility: A prospective study on work, family and society in the information age (Working Papers)*. Paris: OECD.
- Carnoy, M., & Samoff, J. (1990). *Educational and social transitions in the third world*. Princeton: University Press.
- Cuadra, E., & Moreno, J. (2005). *Expanding opportunities and building competencies for young people: A new agenda for secondary education*. Washington, D.C.: World Bank.
- Daly, H. E. (1996). *For the common good: Redirecting the economy toward community, the environment, and a sustainable future*. Boston, MA: Beacon Press.
- Drucker, P. (1993). *Post-capitalist society*. New York: Harper Collins.
- Erickson, G., & Lorentzen, L. (2004). *Raising the bar: Integrity and passion in life and business: The story of Clif Bar, Inc*. San Francisco, CA: Jossey Bass.
- Fullan, M. (2001). *Leading in a culture of change*. San Francisco: Jossey-Bass/Wiley.
- Griffin, C. (1999). Lifelong learning and social democracy. *International Journal of Lifelong Education*, 18(5), 329-342.
- Griffin, C. (2000). *Lifelong Learning: Policy, Strategy and Culture*. Retrieved January, 2006, from www.open.ac.uk/lifelonglearning
- Halsey, A. J., Floud, J., & Anderson, C. A. (1961). *Education, economy and society*. London: Collier-MacMillan.
- Hargreaves, A. (2003). *Teaching in the knowledge society: Education in the age of insecurity*. New York: Teachers College Press.
- Hargreaves, A., & Fink, D. (2006). *Sustainable Leadership*. San Francisco: Jossey Bass/John Wiley & Sons.
- Hargreaves, D. (1983). *The teaching of art and the art of teaching: Towards an alternative view of aesthetic learning*. Lewes, Sussex: The Falmer Press.
- Hawken, P., Lovins, A., & Lovins, L. H. (1999). *Natural capitalism: Creating the next industrial revolution*. New York, NY: Little, Brown and Company.

- Hord, S. M. (1997). *Professional learning communities: communities of continuous inquiry and improvement*. Austin, TX: Southwest Educational Development Laboratories.
- Jackson, I., & Nelson, J. (2004). *Profits with principles: Seven strategies for delivering value with values*. New York: Doubleday.
- Knapp, M., Copland, M., & Talbert, J. (2003). *Leading for learning: Reflective tools for school and district leaders*. Seattle: University of Washington Center for the Study of Teaching and Policy.
- Knapper, C., & Cropley, A. (1991). *Lifelong Learning and Higher Education* (2nd ed.). London: Kogan Page.
- Laver, P. (1996). *Lifelong Learning - Key Issues*. Canberra: National Board of Employment, Education and Training. AGPS.
- Leithwood, K., Jantzi, D., & Steinbach, R. (1999). *Changing leadership for changing times*. Buckingham, UK: Open University Press.
- Longworth, N., & Davies, W. K. (1996). *Lifelong Learning*. London: Kogan Page.
- McDonough, W., & Braungart, M. (2002). *Cradle to cradle: Remaking the way we make things*. New York: North Point Press.
- McLaughlin, M., & Talbert, J. (2001). *Professional communities and the work of high school teaching*. Chicago: University of Chicago Press.
- Nadeau, R. L. (2003). *The wealth of nature: How mainstream economics has failed the environment*. New York, NY: Columbia University Press.
- OECD. (2004a). 10.
- OECD. (2004b). *Innovation in the Knowledge Economy. Implications for Education and Learning*. Paris: OECD.
- OECD. (2005). *Teachers matter: Attracting, Developing and Retaining Effective Teachers*. Paris, France: OECD.
- Porter, M. (1998a). *Clusters and competition: New agendas for companies, governments, and institutions*. In *On Competition*. Boston: Harvard Business School Press.
- Porter, M. (1998b). *The competitive advantage of nations*. New York: Free Press.
- Reich, R. (2001). *The future of success*. New York: Alfred A. Knopf.
- Sachs, J. (2006). *The End of Poverty: Economic possibilities for our time*: Penguin.
- Silins, H., & Mulford, B. (2002). *Leadership and school results*. In K. Leithwood, P. Hallinger, K. S. Louis, P. Furman-Brown, B. Gronn, W. Mulford & K. Riley (Eds.), *Second international handbook of educational leadership and administration* (pp. 561-612). Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Soros, G. (2002). *George Soros on globalization*. New York: Perseus Books.
- Stiglitz, J. (2003). *Globalization and its discontents*: W. W. Norton & Company.
- Tymms, P. (2004). *Are standards rising in English primary schools?* *British Educational Research Journal*, 30(4), 477-494.
- UNESCO. (2005). *Asia-Pacific Regional Strategy for Education for Sustainable Development (Working Paper)*. Bangkok: UNESCO.
- Wellman, B., & Berkowitz, S. D. (1988). *Social structures : A network approach*. New York: Cambridge University Press.

